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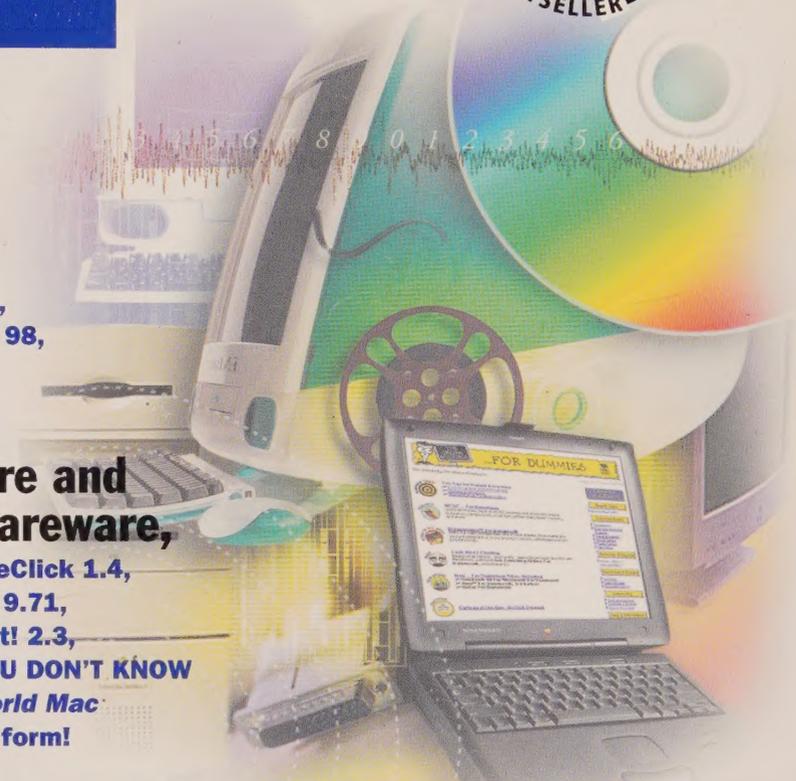
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5th EDITION

David Pogue & Joseph Schorr

Macworld's "Desktop Critic" Columnist

Macworld's "Secrets" Columnist

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Readers love *Macworld Mac Secrets*

"I've just purchased your new edition of *Mac Secrets* from Amazon.com in the States, and I had to drop you a line to say it's the best! Brilliant — thank you so much. And we LOVED your Microsoft spoof song on the CD. Here's a computer book I can actually understand."

—Caroline Hartford, UK

"As a teacher who is the computer support person at our school, I want to thank you for the great job you did on *Mac Secrets 5th Edition*! I use it constantly in supporting our eclectic herd of Macs. Just getting a working copy of the MacLink translators made the book worthwhile, not to mention all the great trouble-shooting tips. It was a wonderful idea to put the text of the 4th edition on the CD-ROM as well, for those of us with older Macs, who need information on System 7.5 and earlier."

—Matt Taylor, Beverly, MA

"You really have yourself in a box this time with the 5th Edition of *Macworld Mac Secrets*. I received it promptly from the online book outfit and without a doubt it is the best, most easily read, and understandable Mac book I have ever been blessed with. The book explains many items in and about the Mac that I took for granted but did not fully understand, and that I could not correct when things went wrong! YOUR problem is that I don't think you can top this book."

—Gershom Mailman, M.D.,

That Secrets book has been the most informative book I've ever read. It's so dog-eared, I've had to cover it entirely with duct tape to keep it together. And ever since I got it, I've treated it like my own child, not leaving it in the car alone, making sure I can see it at all times from my desk, etc. You could tell it was written by a true Mac User. It's the mixture of humor, down-to-earthness, and pure simplicity. Anyway, I love it.

—April A. Ackerman, San Jose, CA

A page-turner! I've been using Macs since the first little putty-colored marvel, and I still find myself reading every word. A terrific compendium of all the stuff you wish could remember when you need it!

—Dale Lyles Newnan, GA

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"The best Mac book of the year."

— *Boston Computer Society*

"Would you believe that a $50 book could improve your productivity more than $500 worth of RAM? Believe it."

—*San Diego Mac Users' Group*

"The newly definitive Macintosh reference work, replacing the venerable *Macintosh Bible*."

—*The Washington Post*

"If you can only buy one book, you won◊t be sorry if you buy this one."

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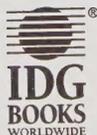
"*Mac SECRETS* should ship with every Mac that is sold."

—*Quill Services Web Book Reviews*

" A gold mine of undocumented secrets."

—Mac Professionals Book Club

Macworld® Mac®
Secrets®, 5th Edition

David Pogue and Joseph Schorr

Macworld® Mac® Secrets®, 5th Edition

Published by
IDG Books Worldwide, Inc.
An International Data Group Company
919 E. Hillsdale Blvd., Suite 400
Foster City, CA 94404
www.idgbooks.com (IDG Books Worldwide Web site)

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Credits

About the Authors

David Pogue graduated summa cum laude from Yale in 1985. After several years conducting Broadway shows in New York, he began writing his back-page column, "The Desktop Critic," for *Macworld* magazine in 1991.

David is the author of *Macs For Dummies*, the #1 bestselling Macintosh book since its publication in 1992 — in all of its 17 languages and six editions. In addition to the previous editions of *Macworld Mac Secrets*, he has also authored or co-authored *Magic For Dummies*, *Opera For Dummies*, *Classical Music For Dummies*, *The iMac For Dummies*, and *PalmPilot: The Ultimate Guide*. He's been profiled in *USA Today* and the *New York Times*, and on CBS' "48 Hours" and MSNBC's "The Site." You can reach David through his Web page (*www.davidpogue.com*) or via email (*david@pogueman.com*).

Joseph Schorr is a journalist and playwright. He writes the monthly "Secrets" column for *Macworld* magazine and his plays have been produced at Yale, Off-Off Broadway, and at Wolf Trap. A 1985 Yale graduate, he spent seven years as a reporter with *The Oregonian* newspaper, and is currently a software product manager in Portland, Oregon.

Joe co-wrote the original *Macworld Mac Secrets* while living in an absurdly remote town in the White Mountains of Arizona, where he communicated with the outside world solely via modem (address: *schorr@earthlink.net*).

Preface

Who Should Read This Book

There's no question that you'll get some good out of this book no matter how much of a Mac expert you are. Heck, even if you *throw away* the book, the accompanying 600MB of spectacular software will make you mighty glad you picked it up.

But we may as well admit that this book completely skips over the basics of using a Macintosh. If you don't already know how to point and click, open windows, insert a disk, use a menu, and open a control panel, we'd like to recommend *Macs For Dummies,* an outstanding beginner's book from IDG Books Worldwide. But because it was written by one of your present authors, we won't even mention it. That would be a conflict of interest.

As a matter of fact, here are the terms we're going to be tossing around without any definition:

⌘ *-key (command key), Apple menu, backup copy, click, control panel, cursor, Delete key, desktop, double-click, File menu, floppy disk, folder, font, hard drive, icon, K (kilobyte), keyboard, launch a program, MB (megabyte), menu, menu command, monitor, mouse, numeric keypad, Option key, point, quit a program, Return key, spacebar, scroll bar, System 7, title bar (of a window), Trash.*

On the other hand, this book doesn't go to the very technical ends of the Mac universe, either. It doesn't talk about programming in C language or using DAL or hooking up to a mainframe. And we wouldn't tell you what you can accomplish by going inside your Mac with a soldering gun — even if we knew.

This book is for everybody in the middle — everybody who's no longer impressed by the way the Trash changes shape when something's in it but wouldn't mind knowing how to change a file's icon or beat Word 98 into submission.

Secrets of This Book

The biggest secret to getting the most out of this book is understanding its structure. Each topic is divided into halves. The first part is a general discussion, like a miniarticle. It's followed by the secrets: undocumented, often never-before-published hints and tips for pushing your Mac to its max.

Part by Part

Here's how the primary book sections are broken down:

Part I: System Software Revealed unearths insider information about the free software that came with your Mac — namely, the System software that fills that Apple System CD-ROM or that mound of white System disks. But we won't mention only the Finder (and aliases and labels and Trash and the Desktop file), but also the important Installer, your control panels, your Apple menu, and all those Apple Extras. And, best of all, this part identifies all the System-folder clutter you can *throw out.*

Part II: Secrets of the Machine takes you into the actual mechanics of the Mac. You won't go so far in that you'll need a degree in electrical engineering; you'll just learn enough of the inner workings to be useful. This part, for example, actually gives a decent explanation of how to use virtual memory. It includes a Disk Chapter, a Memory Chapter, special coverage of the Power Macs and PowerBook laptops, and a new section on USB, the new gadget-connection technology introduced with the iMac. Chapters 12 and 13 even contain detailed Mac-by-Mac model descriptions so that you'll know what you bought, how it can be upgraded, and how much technology has marched on since you bought your machine.

Part III: Application Secrets covers the programs you probably use in day-to-day work: major players like AppleWorks (formerly ClarisWorks), Word, Excel, and FileMaker, as well as software like ResEdit that can help make the Mac more *yours.* This part is a whole book-within-a-book, with enough expert insight to make you say "Wow" at least once per page.

Why We Wrote This Book

DP: Everybody who's ever worked with a Mac already knows that you discard a file by moving its icon to the Trash can, that you select text by dragging across it, and that you end the day by choosing Shut Down from the Special menu. The world doesn't need another book to define *scroll bar.*

JS: So when we started writing this book, we worked from one simple, overarching concept: Under no circumstances would we define *scroll bar.*

DP: Instead, we decided to tell secrets: secrets about how a Mac really works, secrets that software programmers buried in programs but forgot to tell the manual writer, secrets that answer some of the most frequently asked (and seldom answered) questions about Macintosh computing, secrets like how to restore an ailing Mac to health.

JS: All those elusive, mystical ⌘-Option-Shift-Tab-Question Mark key sequences that are whispered at little-known user groups... The little animated surprises that lurk inside commercial programs...

DP: The trick to connecting two Macs together with a piece of phone wire or getting your PowerBook safely through the X-ray machine or making your icons invisible to prying eyes...

JS: ...at last, it's all been collected into one substantial paperback written by a couple of former college roommates.

DP: Is there anything else you think we should mention?

JS: Do the words *free software* mean anything to you?

DP: Good point. We've included an incredible stash of great programs on a CD-ROM at the end of the book.

JS: We were both sick of reading books that tell you about some great software and then send you to your local user group or store to find it. So we decided from the outset that this book would be different. If

Part IV: The World Online makes its debut in this edition. Now that the Internet has become an integral part of using the Mac — and an integral part of its software — we thought we'd better start demystifying that mother of all networks, too. Here you'll find chapters devoted to buying and understanding modems; America Online; Netscape Navigator and Microsoft Internet Explorer; writing your own Web pages; and dealing with e-mail (including junk e-mail).

Part V: Attachments is about everything you attach to your computer — printers (and, therefore, fonts), scanners, digital cameras, CD-ROM and DVD-ROM players, NuBus and PCI cards, and networks. At the end of this part is a troubleshooting chapter that, among other things, contains our Rule of Three: a troubleshooting trick that solves about 99% of typical mysterious Mac crashes and odd behaviors.

Appendix: The Secrets Software describes the hundreds of programs that come with this book.

Sidebars

Along the way, we intend to spice things up with special minitopics:

■ Each *Answer Man* sidebar contains an actual question asked by an actual imaginary Macintosh user, and our actual attempt to answer it.

■ A *Macintosh Secret* has, we suppose, much in common with a regular Hint or Trick or Tip. But to qualify for its own special sidebar, a Macintosh Secret has to have particular juiciness, a surprising element, or special pertinence to the discussion at hand.

---

we mention something you need, we included it with the book.

DP: And not only shareware. We've also included *commercial* software, from actual software companies like Apple, Microsoft, Netscape, Berkeley Systems, Extensis, MicroFrontier, DataViz, Westcode, Abbott Systems, and Power On. And we've even thrown in a couple of programs written especially for this book — totally exclusive software. All of this adds up to a book that delves into the inner workings of the machine, the hardware behind the hardware, the raw code, the...

JS: Wait a minute, this isn't going to be one of those horribly dry, technical, IBM-style books that probes the depths of programming and discusses things like — like DIP switches, is it?

DP: DIP switches won't even be mentioned.

JS: So then why is there a "DIP switch" entry in the index?

DP: Because you just *said* DIP switches. Once you say it, it goes in the index. Now it's part of the book.

JS: Just because I said it.

DP: Yes! That's how indexes work. So, anyway, we think this book will show you how to get the most from your Mac and increase the...

JS: So if I say "DOS," suddenly DOS is in the index?

DP: Right, so quit saying stuff like that. I'm trying to finish this obligatory introductory section...

JS: What about *AUTOEXEC.BAT?* And *COM1?* And *RS-422 port?*

DP: Stop it! Stop it!

JS: Just checking.

DP: Shall we begin?

JS: Let's.

- *Case Histories* are true stories from real life, reflecting the genuine agony of trying to solve a computer problem as deadlines loom. Of course, we've selected only stories with happy endings.

- *True Facts*, however, may not end happily. These are fun tidbits from the world of high-powered Silicon Valley politics: tales of Apple intrigue or Adobe warfare, and other trivia.

- As you can imagine, writing a tightly integrated book like this is difficult for one person. We found that it may even be tougher for two; sometimes we (JS and DP) simply couldn't agree. In those instances, you'll get both sides of the story in the form of a *Dialogue* between your co-authors. You'll hear the conservative, careful view (usually Joe's) versus the devil-may-care, it's-under-warranty-anyway stance (usually David's).

Finding the Good Parts

Finally, you'll find icons in the margin of this book. Here's what they're about:

Speed Tip icons are for people in such a hurry that they don't even have the time to scan our secrets for efficiency tips; these symbols mark our time-saving tips.

CD icons let you know that, whatever the current discussion is about, you don't have to go out and buy some program to make it work. The software you need is on a CD-ROM, right at the back of this book.

Strange But True icons indicate an oddity we bet you didn't know. Even though the Mac is the world's most self-explanatory computer, there's a lot of weirdness going on behind that plastic.
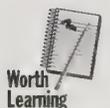
Worth Learning icons mark a technique most people don't bother with. But we, as seasoned veterans, have found a tip marked by this icon particularly worth making part of your work routine.

Contest Winner icons alert you to secrets submitted by readers — the best 50, in fact. These lucky 50 readers each received a free copy of this book, just as you'll receive a copy of the Sixth Edition if we choose *your* secret to publish (see the contest details later in this chapter).

Mac Basics icons debut with this edition. We're particularly proud that IDG Books is still a full-steam producer of Macintosh books, even as some of the more spineless publishers buy into the *Wall Street Journal*'s anti-Mac paranoia and abandon the market. The Mac Basics icon is there as a welcome to new *Mac Secrets* readers — and to existing Mac fans who may find surprising holes in their knowledge of what we consider to be the fundamentals.

Mac OS 8 icons mark information specific to Mac OS 8 or later. So many things changed in Mac OS 8 that we thought we'd point out these dramatic changes.

Mac OS 8.5 icons denote coverage of the OS version that debuted just as this book did: Mac OS 8.5 (and its subsequent decimal-point upgrades).

That bizarre arrow notation

As you read this edition, you'll notice frequent use of this notation: File ➪ Open. That's shorthand for "From the File menu, choose the Open command." This abbreviation style really pays off when you're asked to choose *submenus,* as in "Choose Insert ➪ Autotext ➪ Normal," and when you're supposed to open a nested folder ("Open your System Folder ➪ Apple Menu Items folder").

Why'd we incorporate this shorthand? Because we're all busy people, and the book is long enough as it is.

What's New in Secrets 5.0

As you know, computer years are like dog years — seven of them for one of our years. This edition hit the shelves nearly two years after the previous one; as a result, so many aspects of Macintosh life changed we had to overhaul the thing — almost all 1,300 pages of it.

You'll find changes on almost every page. We're especially proud of our Mac OS 8.5 (and later) coverage. You'll find new discussions of Mac OS 8 and 8.1; the HFS+ hard drive-formatting scheme; digital cameras; the iMac, G3 Power Macs, and G3 PowerBooks; USB devices; Photoshop 5, America Online 4, and Microsoft Office 98; Word macro viruses; Outlook Express and Claris Emailer; Netscape Navigator 4.x and Microsoft Internet Explorer 4.x; Quark 4 and PageMaker 6.5; G3 upgrade cards; AppleScript and MacsBug; and much more. And we had to double-check every single secret to make sure it still works.

CD

You might wonder what we *cut* to make way for all of this good new stuff. The answer is: just about every remaining shred of System 7 and 7.1 information. If your Mac still runs those operating systems that exited the scene in 1994, take joy from the fact that the cut material is still in the fourth edition — which you've got on the CD-ROM that accompanies this book!

Finally, we overhauled the software that comes with this book. We've included a delicious variety of commercial programs: OneClick, Action Files, You Don't Know Jack Lite, Color It, Extensis PhotoBevel, and MacLinkPlus are among them — software you could purchase on your own for literally hundreds of dollars. And we've included many times more hand-picked shareware and freeware programs; you'll never have to go scampering to the Web to find some useful utility we describe in the text.

You'll also find the complete text of this edition in electronic, searchable form on the CD-ROM. You may find that *Mac Secrets* on a PowerBook is actually easier to carry around than *Mac Secrets* itself. See the appendix for the complete list and descriptions of the CD goodies.

You Asked For It

By far the most frequent suggestions we receive from readers are:

■ **"Give us an electronic, searchable edition!"** You got it. The book in your hands is also on the accompanying CD-ROM in an electronic, searchable format. Now you can take *Mac Secrets* with you on your PowerBook, too.

■ **"Keep the book updated!"** That's the purpose of our free online updates (see "Free Electronic Updates," below) — and our Web page (*http://www.idgbooks.com/idgbooksonline/macsecrets*).

■ **"The book is too big! Sell it as separate volumes."** The publisher really did consider this suggestion — for about 11 seconds. We were told that this kind of packaging would jack up the cost of the book and prevent bookstore browsers from checking the book out (because it would have to be wrapped in plastic). Bummer.

And speaking of the feedback we get: send it on! (Our e-mail addresses are on page vi.) Point out our mistakes, please, and send us the secrets you uncover, and tell us how we could improve the next edition. We're secure people; we're prepared to suffer the slings and arrows of reader feedback if it'll produce a better book the next time around.

Free Electronic Updates

This may be the fifth *edition,* but you have to check the copyright page (that 10 9 8 7. . . business) to see which *printing* you have. Every few months — each time the publisher prints up a new batch — we update the material in this book.

So we had a wacky thought: instead of just sending the updates to our editor, why not post them on the Internet, where everybody can get at them? That's exactly what we've done. Each update document comes complete with page numbers, so you can make your copy match the latest printings! To find these free electronic updates, visit this book's Web page at *www.idgbooks.com/idgbooksonline/macsecrets*. This Web site lets you download our updates — and much more: contest results, updated shareware programs, and more.

Get Your Next Edition Free, or Win $500

It's the third annual *Mac Secrets* Mac secret contest!

This year's contest

Send us the coolest undocumented features, buried treasures, power-user shortcuts, authoritative corrections, ResEdit hacks, and secret About boxes. If you send us one that hasn't been published elsewhere, and we use it in the

next edition of this book, we'll send you the sixth edition of *Macworld Mac Secrets* at no charge when it's published. We'll award 50 free books this way (and, of course, we'll credit you in the book).

Furthermore, we'll once again award $500 to the absolute coolest, most amazing undocumented secret we receive.

Send your entries by e-mail to *david@pogueman.com* or *schorr@earthlink.net*, or, if you must, by U.S. mail to:

Mac Secrets Contest
IDG Books Worldwide, Inc.
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Last year's contest

No joke: fully 60 percent of the entries in the secrets contest for the edition in your hands were secrets that already appeared in the book! Another 20 percent were duplicated, alas — we've awarded the free books to the first submission we received.

Of the rest, some were too trivial, too technical, or based on software that is too old or too uncommon to appeal to our wide audience. Lots of these secrets were terrific things to know, but were already well documented in the software manuals. And 50, of course, were winners.

Once again this year, we didn't receive any single secret that was so amazing it merited the big $500 grand prize. Therefore, we've sent $250 to each of two lucky gentlemen: Lubomir Stroetmann, for his submission of 20 absolutely fresh and useful tricks; and Swedish reader Göran Svegler, who went so far as to write special software (the extremely cool Hi-Res Map) to include on our CD. Lubomir is from Denmark and Göran is from Sweden, which we assume is either (a) pure coincidence or (b) a secret Scandanavian plot to take over the world.

Where to Get Apple Software

As you read this book, you'll encounter frequent references to Apple updates, system patches, supplementary software, and so on. By far the simplest way to get this free Apple software is to download it (see Chapter 25 to find out how to get connected to the Internet or an online service).

- **On America Online:** Use keyword: AppleComputer.

- **On the Internet:** Download stuff from Apple's software sites at *ftp.support.apple.com* or *ftp.info.apple.com*.

Acknowledgments

The information in this book comes from many sources, the most important of which is our army of loyal and articulate readers. Since the last edition appeared, we received over 4,500 e-mail messages from readers around the planet: tricks, tips, clarifications, news, and encouragement. We read and replied to all of them — and used their input to shape the final product.

Over the years, various other knowledgeable, friendly Mac fans have left their marks on the evolving book, too. Gene Steinberg and John Stroud contributed several important chapters to the early editions. In this edition, you'll find a new chapter on tackling Mac-Windows compatibility issues — a chapter written by genius John Rizzo, who maintains the *mac-windows.com* Web site. New, too, is the chapter on creating Web sites, which had substantial input from Ted Alspach, and a chapter on America Online, drafted by Erfert Fenton.

We were thrilled to learn that once again, Dennis Cohen would be the book's technical editor, which in this case involved not just catching our gaffes but also contributing some astounding Mac secrets of his own. We're also proud to toast the various IDG Books editors who've shaped the book over the years: Marta Partington (first edition), Andy Cummings (second), Jim Grey and Joe Curran (third), Kevin Shafer (fourth), and Steve Klett and Katharine Dvorak (this edition). Josh Bernstein and Stefan Anthony each made special coverage possible — thanks dudes. Thanks, too, to IDG Books' Mike Roney, Walt Bruce, and John Kilcullen, who had the faith to keep producing great Mac books at a time when wussier publishers were leaving the market.

Finally, our gratitude gushes to those we wanted to spend more time with, but couldn't, while we were immersed in this project: Allison, for her constant support; Alexandria and Zachary; the lovely Dr. Pogue, son Kelly, and his upcoming sibling; our editors and friends at *Macworld* magazine; and Bullwinkle the Wonder Dog.

The Good Stuff on the CD-ROM

The CD-ROM that comes with this book includes over 100 outstanding, hand-picked shareware and freeware programs. Our gratitude and admiration go to the programmers who were (a) talented enough to write these programs, and (b) nice enough to give us permission to include them.

The CD-ROM with this book also comes with a number of *commercial* programs — an even more remarkable inclusion. After all, if you ran a software company, would you have enough security and faith to *give away* your company's crown jewels with a book like this?

But that's exactly what happened. The companies listed below have given us actual, functioning, non-time-limited software to include on the CD with this book. *You* get something great without having to pay for it. *They* hope you'll

like the stuff so much, you'll buy more of their software, or upgrade to the new versions. (Discount coupons to further entice you are in the back of the book.)

Here are the names of our friendly contacts at the participating software companies:

Abbott Systems: Ken Abbott

Aladdin Systems: Jonathan Kahn, Jennifer Lyng

Binary Software: Charles Haspel

DataViz: Scott Thomas

MicroFrontier: Ed Jones, Keith Woodard

Nova Development: Roger Bloxberg, Gary Gonzales

Olduvai Software: Gabriel Foux

Power On Software: Bob Leeds

WestCode Software: Rob Renstrom, Mark Brooks

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Part I

System Software Revealed

Chapter 1

Your First Software: The Finder

Finder: The Unknown Program

Do you remember the first program you ever ran on the Macintosh? We do. It was the Finder. The Finder is the program that displays your familiar startup world: the Trash can, icons, folders, and the Desktop.

Most people don't immediately think of the Finder as a *program*. After all, you don't double-click an icon to launch it, as you would with, say, Photoshop. And there's no Quit command in the Finder, as in other programs. The Finder is just always *there,* waiting as your home base, whenever you exit your other programs.

Nonetheless, the Finder *is* a program. Yes, it runs automatically when you turn on the Mac, but you *can* quit the Finder — and launch it again. It even shows up in the Application menu, along with any other programs you're running (see Figure 1-1).
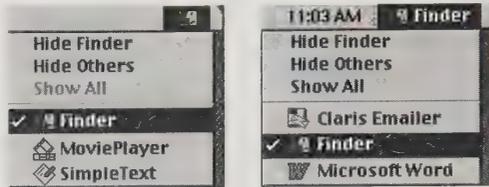
Figure 1-1: The Finder on the Application menu (at the right side of the menu bar), in Mac OS 8 (left) and Mac OS 8.5 (right).

The Finder is pure utility software: You don't actually do *work* there (in the sense of earning a living). Its functions all relate to managing your stuff: organizing, renaming, discarding, copying, and opening your documents, disks, and programs.

A Few Words about Icons

Before the Finder can perform any of its tasks, you must indicate which files you want to move (or rename, or discard, or whatever) by selecting their icons. Selecting something by highlighting its icon is the cornerstone of the entire Macintosh way of life. It's the Macintosh *interface*.

TRUE FACT

Interface? What interface?

Ever wonder what the three dots (the ellipsis . . .) mean when you see them in a menu item?

Here's what Apple's own interface bible, *Macintosh Human Interface Guidelines* (Addison-Wesley, 1992), has to say:

"The ellipsis character (. . .) after a menu item means that the command needs more information from the user before the operation executes. The ellipsis character *doesn't* simply mean that a dialog box or window will appear. For example, in the Finder File menu, the Get Info command doesn't have an ellipsis character and shouldn't. When you select a Finder object and choose Get Info, a window appears displaying information about the object. The window appearing simply completes the command."

Oh, yeah? Then how come the About this Computer command (or, on older Macs, About This Macintosh) in the menu has an ellipsis? All *it* does is bring up an info window, too!

Ah, well. Maybe they licensed that command from Microsoft.

Selecting icons

In the days before System 7, there was only one way to highlight an icon: by using the mouse. Today, you have a wealth of efficient keyboard shortcuts for selecting specific items. (When we say "System 7" or "7.x" in this book, by the way, we mean "7-point-anything." When we say "System 7.5," we mean "System 7.5-point-anything-or-7.6-point-anything." "Mac OS 8" generally means "8.0 or 8.1," and so on.)

Mac Basics

Here's an example of a typical maneuver that demonstrates the power of ignoring your mouse. Suppose that yesterday you were working on a document called *Valentine's Party Invite*, but you don't remember the folder in which you put it. You press ⌘-F (the shortcut for choosing Find from the File menu). The Find dialog box appears. You type *valen* and press the Return key.

In a moment, you're shown a list of every file on your hard drive whose name contains those letters. By pressing the up-arrow or down-arrow keys, you highlight the precise file for which you were looking. When your file is selected, you press ⌘-O to open the file for editing. During this entire process, you never had to move your hands from the keyboard to use the mouse.

Similarly, in a messy folder full of icons, you can highlight a specific file icon without even being able to spot it — just type the first few letters of the file's name. That's especially handy when you want, for example, to add or remove Fonts from your system. With the System Folder open, just type *FO* to highlight the Fonts folder and then press ⌘-O to open it. You've navigated through the clutter and confusion of the System Folder with just a few keystrokes.

Figure 1-2 shows some other keys you can press to select icons within a single window.
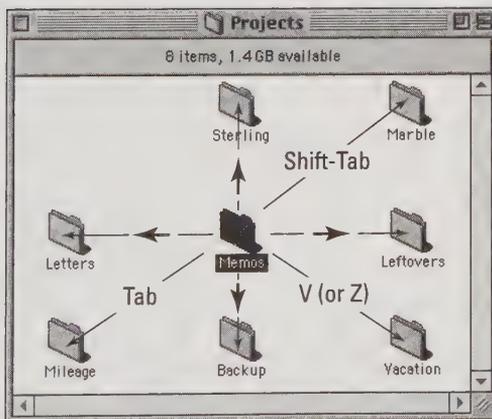
Figure 1-2: The arrow keys highlight adjacent icons. The Tab key finds the next icon in alphabetical order. You can press Shift-Tab to highlight the previous icon in the alphabet. If you type a letter, you'll jump to the icon whose name begins with that letter (or the next letter alphabetically).

To select a group of icons, press Shift and click each one in succession. To exclude a highlighted icon from a group, Shift-click it again. Of course, you can also select groups of icons by drag-enclosing them (see Figure 1-3). You can even select more than one icon in a window without using the mouse (read about Easy Access in Chapter 3).

After you've drag-selected icons as shown in Figure 1-3, by the way, don't forget that you can select additional groups of icons (or *de*select some of the ones you already highlighted) within the same window by Shift-dragging or Shift-clicking them. And for more far-flung selections, use the Find command (see Chapter 3).
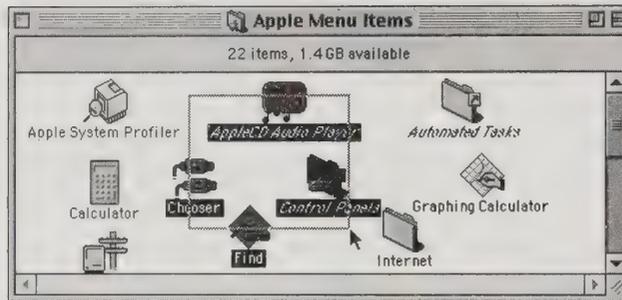
Figure 1-3: As you drag in a diagonal line, any icon even touched by the dotted-line selection rectangle gets selected. (This procedure works in list views, too.)

Speed Tip

After icons are selected, you can move all of them as a unit by dragging any *one* of them.

So who cares about avoiding the mouse? Efficiency fans, primarily. Every time you have to stop your work at the keyboard while one hand reaches for the mouse, you stop your flow of thinking (and typing). As you become more familiar with your Mac, you'll use the mouse less and get your work done more quickly.

But you can do much more with icons than just select them, as our first batch of Macintosh secrets clearly explains.

Icon Secrets

Make icons jump neatly into position . . . or not

OS 8

Mac OS 8 has a View ➪ View Options command. (In case you missed this in our Introduction to this book, that shorthand notation means "From the View menu, choose View Options.") That command is the successor to the Views control panel in Systems 7 through 7.6.

Anyway, as described in more detail in Chapter 2, this command (or control panel) enables you to specify that all your Finder icons should fall into points on a neat, invisible grid (see Figure 1-4). Here's the tip: If you press the ⌘ key while you drag an icon, you can set the icon down anywhere, even if it's not in a grid-defined position. (Technically, the Mac only cares whether or not the ⌘ key is being pressed when you *release* the mouse. You don't really have to press the key all the time you're dragging.)
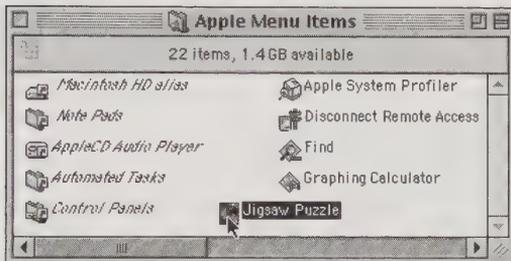
Figure 1-4: Even in a Small Icon view like this, the Finder aligns the icons in a grid — or not. It's up to you.

If the grid option *isn't* turned on, the ⌘ key has the opposite effect. It makes the icon you dragged jump *into* grid position.

If, like most people, you don't have the Finder grid permanently turned on, keep the ⌘ key in mind when you want to put a couple of icons exactly side-by-side. When you set each icon down while the ⌘ key is pressed, they'll jump into perfect horizontal alignment.

Change windows but keep your icons highlighted

You probably think that when you select a bunch of icons, any click in another window deselects them all. Even clicking in a window's title bar deselects all highlighted icons. Does that mean that you can never bring another window to the front without losing your selection?

No, you can do it — if you're running System 7-point-anything. Click the *scroll bar* or the *info strip* (where it says Name, Size, and so on) of the other window. Your icons in the first window stay selected.

(Evidently Apple didn't place a high value on this rarely-used feature; it got scrapped in Mac OS 8.)

Replace an icon

Mac Basics

Replacing an icon isn't really much of a secret anymore, but it's worth repeating in case you missed it. The bottom line: you can create your own icons for any file, folder, or disk. Imagine etching your initials onto a folder, reducing the size of the icons for unimportant files, and making your hard drive icon look like Neil Diamond.

Here's how to do it. First, highlight the icon you want to replace. Choose File ⇨ Get Info. When the Get Info box appears, click the icon in the upper-left corner (see Figure 1-5). Choose Copy from the Edit menu to copy this original icon to the Clipboard.
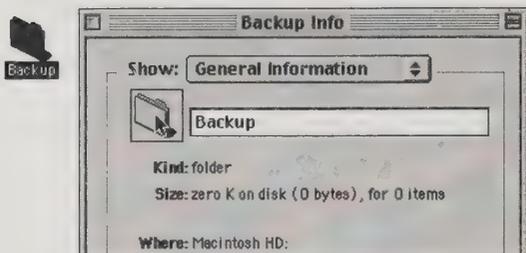
Figure 1-5: The first steps to replacing an icon: First, select the icon (left); then choose Get Info and click the icon in the dialog box that appears; then copy it.

CD

To customize the icon, launch a painting program — Color It, included on the *Mac Secrets* CD-ROM, is a great choice.

Choose Paste from the Edit menu so that the original icon appears where you can edit it (see Figure 1-6).
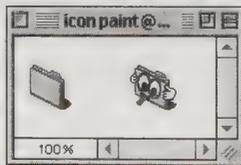
Figure 1-6: Paste the original icon into a painting program (left side of the window). Doctor it up (right). Copy it again and paste it back into the Get Info window of your file, disk, or folder.

Now, using the painting tools, create a replacement icon. Doctor the original, or just use the original as a size guideline and create something completely new. Try not to paint an icon larger than the size of a real icon, which is 32 pixels (screen dots) square. (If you create an image that's too large, it'll be squished unartistically into a 32-by-32 space when it's pasted as an icon.)

When you're finished, copy the new icon. Go back to the original icon's Get Info box, click the icon, and paste the replacement. (If it's too big, the Mac shrinks it to fit the square box, sometimes with lousy results.) That's it! You replaced the original icon.

If you're using color and you discover that the color leaks out of your new icon, go back into the painting program. Enclose any *light-colored* part of the icon with a dark outline. (Or just enclose the entire icon in a solid-outline square.) Repaste this modified icon into the Get Info box.

CD

If you're not artistically inclined, instead of doing your own artwork, you could simply copy one of the professionally drawn icons we've included on the *Mac Secrets* CD-ROM. Copy the icon out of *its* Get Info box, then paste into the Get Info box of your target file.

P.S. — The Mac won't let you change certain icons using the Get Info method: any open document icon; the special ones used for the System, Control Panels, Apple Menu Items, Extensions, and Startup Items folders; and the Trash. You, however, as the savvy owner of this book, can change these icons, using ResEdit. Check Chapter 21 for details.

P.P.S. — Some programs — notably AppleWorks/ClarisWorks — restore a document's original icon every time you save the document. Rats.

Keyboard-only icon replacement

Speed Tip

If you're going to do a lot of icon-replacing — and we hope you do — try this little-known secret. Open the Get Info box for the file whose icon you want to change. Instead of actually clicking the existing icon, you can just press Tab. If you follow this idea to its logical conclusion, you now see how it's possible to copy an icon onto a different file without ever touching the mouse: select an icon (by typing letters), Get Info on it (⌘-I), select its icon (by tabbing — twice, if you're in Mac OS 8.5 or later), copy the icon (⌘-C), close the Get Info window (⌘-W), select another icon (by typing letters), Get Info, tab, and paste (⌘-V) the icon into its new location.

Electronic Post-it notes

Use the method described in the previous tip to replace a folder's icon with a *plain white square* you copied from a graphics program. A floating piece of text appears (the file's name) with no icon attached.

You can use this idea for all kinds of interesting effects. For example, you can use it to give a Desktop folder a two-name title (see Figure 1-7, top). Or, handier still, you can duplicate this doctored folder endlessly. Just make sure that you give each copy a new folder name, such as *Meet Jennifer at noon today.* Then leave these notes strewn about your Desktop as little reminders (see Figure 1-7, bottom) — a quicker, low-tech version of the Stickies program.
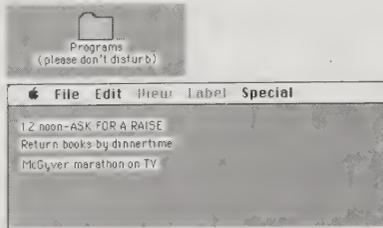
Figure 1-7: Using empty folders with invisible icons, you can make pieces of text seem to float on your Desktop.

Select icons in a list view

Selecting a group of icons in a list view is easy. Drag the cursor in any direction, starting anywhere. Each item in the list turns black as you move the cursor, and you have 'em.

Speed Tip

Here's the oft-ignored secret: To select an icon in a list view, you don't have to click on its name or icon. You can click on *any* component of the listed file info — the date, version number, size, whatever. Likewise, you can drag-select over any portion of the listed information to grab a *group* of icons (see Figure 1-8).
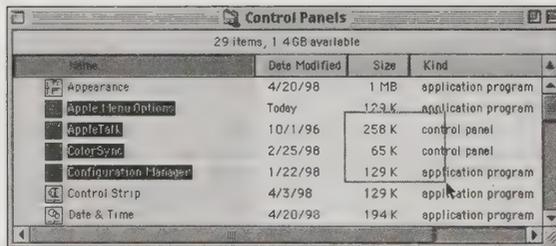
Figure 1-8: You can drag or select icons by any portion of their "rows" in a list view.

Make any file invisible

You can make any file — folder, document, or application — *completely* disappear from your Desktop. (This procedure isn't the same as making just its *icon* disappear, which you can do using the secret described earlier.)

CD

There's a good reason most people don't hide their icons regularly: It takes special tools. Fortunately, we've provided you with the ideal tool: FileTyper, included on the CD-ROM with this book. Drag the file or folder you want to make invisible onto the FileTyper icon. Click Invisible, and then Change. The deed is done.

To reverse the procedure, launch FileTyper. Choose File ⇨ Get Info. All files and folders, invisible or not, show up in the dialog box. Select and open the one you want to make appear, turn off the Invisible checkbox, and click Change.

The nice thing about an invisible document is that you can still open it from within a program. You can open an invisible Word file by using Word's Open command, for example; the invisible document shows up in the Open File list box just fine.

To launch or not to launch a program or document icon

You can use one of several ways to open a program or document icon that's staring you in the face in the Finder: Double-click it, select it, and press ⌘-O, and so on.

Speed Tip

There's only one way, however, to *stop* a document or program from opening after you launch it: Press ⌘-period. *Fast*. And repeatedly. If you press this keystroke *just* after launching a document or program, you go right back to the Finder as though you never opened a thing.

Renaming icons

In System 6 — maybe you're too young to remember — renaming file icons was too easy. When a file, folder, or disk was highlighted, anything you typed replaced the icon's name. All it took was a finger, a stack of papers, or a cable pressing continuously on a key while an icon was highlighted, and you wound up with an icon named *QQQQQQQQ*.

Apple engineers came up, therefore, with a new method of renaming icons under System 7, in which it's almost impossible to rename a file accidentally.

■ *If the icon is already selected,* press Enter or Return to make the "renaming rectangle" appear around the existing file name. Type the new name. (Figure 1-9 shows an icon before and after the renaming rectangle appears.)

Figure 1-9: You can only rename a file when its "renaming rectangle" is visible, as shown on the right. You don't have to delete the old name first; just start typing.

■ *If the icon isn't selected,* click the file name itself. After a moment — the moment of inactivity called the *rename delay* — the rectangle appears, signaling you that it's okay to type the new name.

MACINTOSH SECRET

The Last Easter Egg

An *Easter egg,* of course, is a credits screen hidden in software, buried by the programmers in such a way that only the savvy (or the *Mac Secrets* reader) knows how to trigger it.

Apple has been quietly removing some of the best Easter eggs from its system software (see Chapter 6 for a listing of some of the greats). Why? Because (so the theory goes) the bosses don't know about (and can't test) the Easter eggs, Easter eggs are inherently destabilizing. That's a problem for a company that wants to make the most stable operating system in the world.

One Easter egg, however, survives in the system software — and we didn't even know about it until this edition, even though we had unwittingly written about it three editions ago! Our original write-up said:

> You need a native-PowerPC-code, "thread-manager savvy" application (the Thread Manager is an extension that permits a certain degree of true multitasking, such as initializing a disk in the background).

Launch it while pressing the B and E keys — and you'll get a rolling list of credits.

Years passed. We forgot all about it — even when we read that as of Mac OS 8, *the Finder itself* was now thread-manager-savvy!

It took free book winner Patrick Thompson to point out that our Easter egg secret of *Mac Secrets, 2nd Edition,* was now available to anyone with a Power Mac!

"I'm not claiming I discovered it," he modestly wrote us. "I'm just saying I know that native-code, 'thread-manager savvy' applications aren't that widespread. The other day, while re-reading this section, I got to thinking, "Hey . . . isn't the new OS 8 Finder threaded and native? Let's see . . . " I gave it a shot, holding down the B and E keys while my system booted — and, lo and behold, a tiny box filled with scrolling credits appeared on my screen! Neat little list of credits and jokes, but you have to read fast."

Sometimes we astonish even ourselves.

Icon Renaming Secrets

Surviving the rename delay

First, here's why the rename delay exists. Everyone knows that you double-click an icon to launch it. But you may not realize that you can even double-click the file's *name* to open the icon. And that's why there's a pause between your first click and the moment the renaming rectangle appears. The Mac is waiting to make sure that you're not going to click *again*. In other words, it makes sure that you really meant to click just once (to edit the file's name) and not twice (to launch the file).

Worth Learning

We suggest that you don't bother waiting out the rename delay. If you've clicked an icon's name, you can make the renaming rectangle appear instantly just by moving the mouse — even a little twitch — or by pressing Return. Then you can begin typing the new name.

The Mac's wacky alphabet scheme

The Mac alphabetizes things a little bit oddly, in that spaces and symbols come before letter *A*. And 10, believe it or not, comes before 3 (see Figure 1-10).
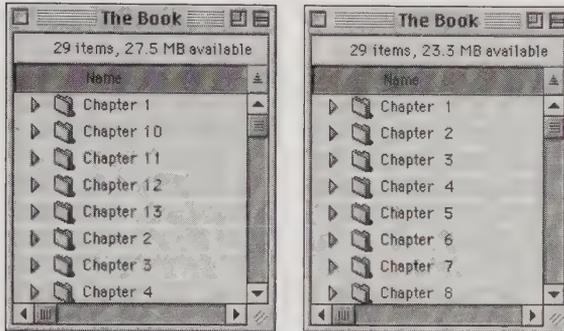
Figure 1-10: The Mac, apparently, can't count. As you can see at left, it believes that the number 10 comes before 2 (left). Use this secret to solve the problem (right).

To make a file appear first in an alphabetical list (in a list-view window, for example), type a space at the front of the name. To make the number 3 come before the number 10, therefore, put a space before the 3.

Strange But True

Incidentally, one symbol the Mac absolutely does not let you use when you name an icon is the colon (:). (That's because the Mac treats the colon as a "where is this file filed?" indicator. Use the Get Info command on a file on your hard drive some day and you'll see what we mean — the file, as far as the Mac is concerned, is on "Macintosh HD:Backup:Recent Projects:.")

When you're in the Finder, if you type a colon as part of a file name, the Mac substitutes a hyphen (-) without even so much as a by-your-leave.

Renaming is just like word processing

Speed Tip

The Edit menu's Cut, Copy, and Paste commands (and their keyboard equivalents) work while you're editing a file name. That's useful when you're naming a bunch of files, for example, in a row "Koyaanisqatsi 1," "Koyaanisqatsi 2," "Koyaanisqatsi 3," and so on. Just copy *Koyaanisqatsi* to the Clipboard. Then, each time a file's name is highlighted for renaming, press ⌘-V to paste the word, and type the rest of the file name (the digit, in this case).

Other typical Mac word-processing techniques work, too. You double-click a word to select it (instead of dragging through it), and highlighted text gets instantly replaced by anything you type (so that you don't have to delete the old file name before typing a new one).

If you begin typing a new name and suddenly realize that you're renaming the wrong icon, just press ⌘-Z, the Finder's Undo command. The icon's original name reappears. Alternate method: If, while typing in the new name for a file, you change your mind, press Delete until the entire name is gone. Then press Return — the original name reappears.

The power-user's arrow keys

Suppose you've just clicked an icon name. The renaming rectangle is ready; the file name is highlighted.

Speed Tip

Now suppose you just wanted to add a word to the *end* of that file's name. Instead of using your mouse and a microscope, painstakingly trying to plant the cursor at the end of the rectangle, just press the right-arrow or down-arrow key. You'll deposit the insertion-point cursor at the very end of the file name. (The *left*-arrow or *up*-arrow key pops the cursor at the *beginning* of the file name.)

The down-arrow and up-arrow keys are particularly useful because they make your insertion point leap to the end (or beginning) of the name, even if it's in the *middle* of the existing file name — the name doesn't have to be highlighted. (When the insertion point's in the middle of the name, on the other hand, the left-arrow and right-arrow keys simply move it one character at a time, forward or backward.)

Deactivating the renaming rectangle

We've already told you how to activate a selected icon's renaming rectangle: Press Enter or Return. Now we'll tell you how to *deactivate* it, so that your icon is still selected, but you're no longer in renaming mode: Press Return or Enter again.

And why would you want to do this? To select *another* icon without using the mouse. (If you tried to select another icon from the keyboard with the renaming rectangle active, you'd just end up renaming the currently selected icon.)

We should point out that there *is* one way to select another icon without first deactivating the renaming rectangle: Press Tab. This key always moves you to the next icon in alphabetical order, even if the current icon's name is selected for renaming.

A really amazing re-alphabetizing secret

Over and over again, in this book and others, you'll be told to put spaces in front of your icons' names if you want them to rise to the top of an alphabetical list. For example, a file called Zebra will come *before* one called Aardvark, as long as you put a space in front of the *Z*. You can put that trick to particularly good use in your Apple Menu Items folder, so that you can put your menu names in any order.

Trouble is, you can *see* those spaces. Your icons' names look stranger and stranger the more spaces you put in front of the actual names. Here's a much better way.

**Strange
But True**

Open the Note Pad. Press Return, thus creating a blank line. Select the blank line and copy it. Now click the name of the icon — the one you'd like to appear first alphabetically — in readiness for renaming it. Press the left-arrow key to move the cursor to the beginning of the file's name.

Now paste that invisible Return character you copied. The existing name seems to disappear; just press Enter, and it returns.

Incredibly, your renamed file now appears first in any alphabetical file list, but it doesn't *look* any different!

Furthermore, a file with *two* blank Returns at the beginning of its name comes before one with only one Return; a file with three appears even before that . . . and so on. April Fool's Day stunt: Use the blank-Return technique to make all the files in your System Folder appear in *reverse* alphabetical order. Amaze your friends!

Caution: This trick befuddles programs that refer to linked files. For example, a Quark or PageMaker document won't print with graphics files whose names you've doctored this way.

Renaming files en masse

You won't find yourself in this predicament often, but you will find yourself there someday: You've got a folder full of files that you'd like to rename in some consistent way. For example, suppose you've just finished creating all 1,294 Web pages for your breathtaking site — but you discover that Windows people need every file to end in *.htm* instead of *.html.* Don't tell us you're going to delete the last letter individually 1,294 times!

CD

Fortunately, you don't have to. Plenty of shareware programs will do that job for you — and even some commercial programs, such as OneClick (which is included with this book). Using an add-on OneClick palette like File Tools (also included), changing the names of huge scads of files in one stroke is a piece of cake. (See Chapter 22 for instructions on using OneClick.)

The longest file name

Everyone knows that the longest Mac file name is 31 letters. But what's the longest file name measured *horizontally?* It's 31 of the infinity symbol, which you produce by pressing Option-5. It looks like this: ∞. That's a *very* long file name. Keep that in mind the next time you're trying to create special visual effects on your Desktop . . . or making bar bets.

CASE HISTORY

The saga of the deadliest file name

In previous editions of this book, we pointed out with perverse pleasure the five-letter file name that would *trash your hard drive.* And that name was: *.Sony*.

We pointed out that the Mac's operating system believes files beginning with periods to be *drivers,* those invisible programs that run your disk drives, serial ports, and other jacks. If a file name begins with a period, the Mac can potentially get confused and treat that file as a device driver instead of a plain old data file. As it turns out, *.Sony* is the name of the driver that controls your *floppy drive*! If you gave a file that name, we said, the Mac may try to address it as though it's a floppy drive — and hard drive corruption would result.

Well, chaos poured down on us. The nasty e-mails began. "Your irresponsible journalism," went one, "has cost our school system thousands of dollars in consultant fees. Because you published the *.Sony* secret, our junior-high students have named files on every hard drive that way, and our entire System 7 network crashes constantly. Next time, think before you publish."

Another: "I want you to know that your book has caused tragedy and destruction in my neighborhood. Somebody apparently uploaded a file to my BBS named *.Sony*. And before I had a chance to stop it, 352 people downloaded it. Because of your ill-advised publishing of that fact, hundreds of people in my area are now experiencing system problems. I hope you're satisfied."

But just as we were starting to feel worried, we got one final message that made it all seem worthwhile. Manny Vera of Sony Corporation had spotted our secret. And according to Sony engineers, we had been 100 percent accurate in our report — except for one little detail. Apple and Sony had *patched* that particular booby-trap in System 7!

In other words, the system problems experienced by those unhappy e-mail writers had nothing to do with the *.Sony* secret. As System 7 users, they were probably having garden-variety extension conflicts.

We learned from that episode why this country has more lawyers per capita than any other in the world.

The Truth about Finder Windows

Ah, windows. No aspect of any computer has been the subject of so much attention — and so much litigation. Xerox, the developer of the concept of movable, overlapping panes to display computer information, sued Apple for ripping off the idea. And then Microsoft created Windows, and Apple sued Microsoft.

But heck, that'd be like Kleenex suing Puffs. You just can't keep a great idea down, and now windows have cropped up on every computer from NeXT to the Apple II.

Window-manipulation skill is particularly necessary in the Finder, when the mere act of opening your Extensions folder requires you to open *three* windows (hard drive, System Folder, Extensions). If you're not careful, your screen will clutter up with so many windows you can't get any work done.

Window management is becoming so important, in fact, that Apple has made window-manipulation a key focus of each system-software upgrade since System 6.x. The WindowShade feature first appeared in System 7.5, in which a double-click on a window's title bar "collapses" the window (see Chapter 4); draggable window edges and pop-up window tabs debuted in Mac OS 8; and title-bar icons first showed up in Mac OS 8.5.

Anatomy of a window

Mac Basics

A schematic drawing is worth a thousand words — that's what our mothers always told us. Here in Figure 1-11, then, is the complete list of doodads and places to click in a standard Macintosh window.
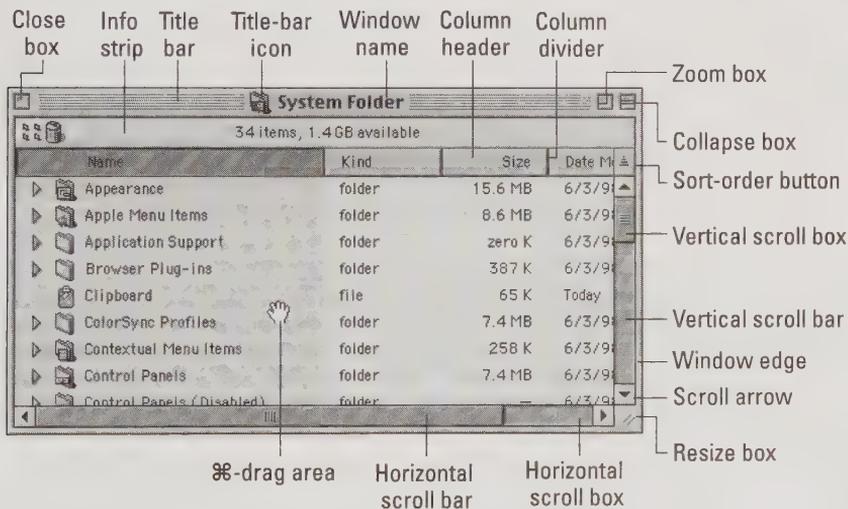
Figure 1-11: The complete list of places to click in a Mac OS 8.5 window.

■ **Close box** — Click here (or press ⌘-W) to close the window. Option-click (or press Option-⌘-W) to close *all* Finder windows.

■ **Info strip** — Shows how much space is left on your hard drive, the number of items in this window, and so on. If there's a tiny Trash icon at the left end (Mac OS 8.x), you're looking at a window whose folder is *in* the Trash at the moment. (Obviously, Figure 1-11 is a fake — we only rarely put our System folder in the Trash.)

OS-8

If four tiny squares appear at the left edge of the Info strip (Mac OS 8.x), meanwhile, you've turned on the Keep Arranged option for this window (by choosing View ⬩ View Options). (Obviously, Figure 1-11 is an even bigger fake — you can't "Keep Arranged" a list view.)

- **Title bar** — Drag anywhere in this strip to move the entire window. Double-click here to "windowshade" the window (hide all but its title bar), or Option-double-click to windowshade *all* open Finder windows — if you've turned on that feature in the Appearance control panel (Mac OS 8) or WindowShade control panel (System 7.x).

OS-8.5

- **Title-bar icon** (Mac OS 8.5) — Dragging this icon is exactly like dragging this window's folder. In other words, you can drag a window to the Trash, drag it to another disk for copying, drag it to another folder to re-file it, and so on — all while the window is still open.

- **Window name** — This name identifies the folder you opened into the window you're now viewing. ⌘-click to see a pop-up menu of folders that this one is inside of, as described in the upcoming secrets.

- **Column header** — Click here to sort the contents of a list-view window by this criterion: name, date, size, kind, and so on.

OS-8.5

In Mac OS 8.5, in fact, you can drag this header sideways. If you drag it to the far side of one of the other column headers, you succeed in actually moving the entire column, thus rearranging the columns' order.

- **Column divider** — In Mac OS 8.5 and later, this divider is a handle. Drag it horizontally to make its corresponding column (the column to its left) wider or narrower.

- **Zoom box** — Click to make the window exactly as large as it needs to be in order to show you all of its contents. Option-click to make the window fill the screen, obliterating anything else open on the Mac (in case of emergency when your boss or spouse wanders by and shouldn't know what you're working on, we guess). Reshrink the window to its previous dimensions by clicking the Zoom box again.

OS-8

- **Collapse box** (Mac OS 8.x) — This doodad rolls up ("windowshades") the window so that only its title bar is showing, giving you a better view to whatever's behind. Also known as the WindowShade box. Option-click to roll up *all* open Finder windows — a hilarious and delightful effect you've got to see for yourself. (And hear for yourself if you've turned on the sound effects for this feature.)

- **Vertical scroll box** — Drag up or down to shift your view, bringing more icons into view. If you're already seeing all icons, top to bottom, this box doesn't appear.

(OS 8.5)   In Mac OS 8.5 and later, the Appearance control panel offers a "Smart Scrolling" checkbox, which makes this box grow or shrink according to how much of the window you're seeing right now. If the scroll box is one-third the height of the window, then two-thirds of the icons in the window are out of sight.

- **Vertical scroll bar** — Click to scroll the window by a screenful at a time. (Click *above* the scroll box to see the icons above your current view, and below to see the icons below your current view.)

(OS 8)   ■ **Window edge** (Mac OS 8.x) — Drag to move the window. Thanks to this thin gray strip (which borders all four edges of the window), you can now position windows nearly off the screen.

- **Vertical scroll button** — Click to scroll the window one "line" at a time in the indicated direction. Click and hold for smooth scrolling.

- **Resize box** — Drag in any direction to change the window's size or shape.

- **Horizontal scroll bar, horizontal scroll box** — Like the vertical ones, but shifts your view from side to side.

(OS 8.5)   ■ **⌘-drag area** (Mac OS 8.5): While pressing the ⌘ key, drag anywhere inside the window itself to scroll the contents. A great time saver, because you can now scroll in two directions at once (instead of having to use first one scroll bar, and then the other).

You can also Control-click in this area (Mac OS 8.x) to make a pop-up menu appear at your cursor tip, offering an array of commands for adjusting your window's view — turning it into a list view, for example.

CASE HISTORY

Missing Kilobytes of the World

Free book winner (and ruthless proofreader) Martin Fuhrer succinctly solved a Mac mystery we're frequently e-mailed about: why the free space shown at the top of a disk's window doesn't seem to agree with the amount of stuff actually on the disk. Come along with us now as we join Martin's account already in progress:

I recently downloaded a shareware thing called Flags of the World, which is nothing more than a collection of hundreds of folders, each with a different flag picture pasted in as a custom icon, as explained in Chapter 1 of *Mac Secrets, 4th Edition.*

When I copied these folders onto a freshly formatted floppy, the size info strip in the window claimed that 611K of space was being taken up — by a collection of *empty folders*! The Size column of the list view asserted that the Flags of the World folder, which houses all the other folders, was taking up — yikes — only 2K.

It appears that list views, then, do not calculate the disk space taken up by *custom icons*. Mine was an extreme example, but the moral of the story: If in doubt, trust the size information strip at the top of the window, and ignore whatever the size column has to say.

Mac OS 8 window stunts

Along with its newer look and snazzier features (see Chapter 6), Mac OS 8 introduced a few wild new ways to massage your windows. After conducting extensive focus-group studies with Mac users, Apple's designers concluded that the average person needed help organizing icons — after all, who among us doesn't have a mess of icons sitting out on our desktops for easy access?

The solution to the problem came in two parts: *pop-up windows* and *spring-loaded folders*.

Pop-up windows

Want easy access to your frequently used windows — but don't want them actually sitting out on your screen, taking up space?

Then turn them into *pop-up windows,* as shown in Figure 1-12. When a window has been pop-upped, only its tab peeks out from the bottom of your screen. Click the tab to make the window spring upward into view. The pop-up window's real value: when you click anywhere outside this window, or when you double-click something *inside* it, the window snaps shut into a tab automatically. You never have to clean up after yourself.
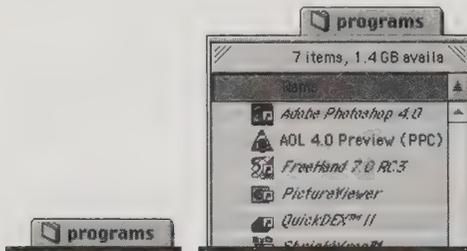
Figure 1-12: Click a pop-up window tab (left) to make the window's contents jump up (right).

You can turn an open window into a pop-up in either of two ways:

■ Choose View ⇨ as Pop-up window.

■ Drag a window (by its title bar) down, down, and down toward the bottom of your screen — until you see the dotted outline change shape to look like the tab it's destined to become.

There's only one difference between these two methods: When you let the *Mac* create your pop-up windows, it places each newly created tab tightly adjacent to the next one, left to right across your screen. When *you* make a window, you can place its tab anywhere you feel like — just drag it directly into position.

TRUE FACT

Pop-down, pop-out, pop-up windows
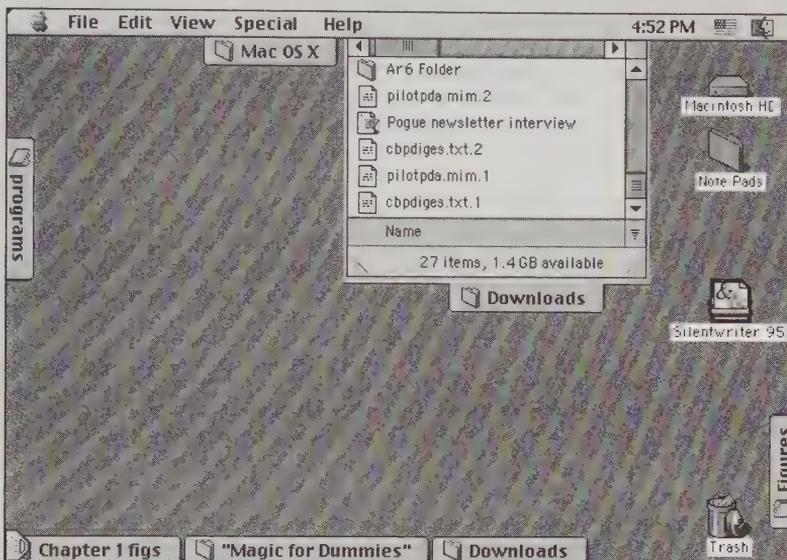
As we've mentioned, the purpose of pop-up windows is to give Mac users quick access to frequently used stuff — without having to leave icons out on the desktop.

We were surprised and delighted to learn, in fact, that in the early, beta-test versions of Mac OS 8, you could create these pop-up tab/windows on *any* edge of the screen, as shown above! They could spring out of the sides, the top, the bottom — anywhere.

Subsequent focus-group members, alas, found all that tabbing and popping too confusing; eventually, Apple's designers settled on bottom-feeding pop-ups only. Too bad, we say; we would have loved to have tabs everywhere we want to be.

Pop-up Window Secrets

Drag to open

Speed Tip

If you want to place an icon inside a pop-up window, there's no need to expand the window first. Just drag a file onto a pop-up window's *tab* at the bottom of the screen. The window pops open for you. As soon as you let go (to leave the icon inside the window) — or as soon as you change your mind in mid-drag and move the icon back out again — the window collapses back into its tabbed state.

Close shortcut

When you've finished working with a pop-up window, you can snap it back down to the bottom of the screen by pressing command-W — the same old keystroke you use to close regular windows.

Of course, all that does is take your pop-up windows back down to the bottom edge of the screen. If you want to get rid of them entirely, the magic keystroke is ⌘-Option-Shift-W. That one closes *all* windows of *every* kind, both traditional and pop-up, leaving your screen clean, clear, and window-free.

Expand with a click

Don't bother closing one pop-up window to make room for another. Expanding one pop-up window (with a single click on its window tab) automatically collapses the previous window, keeping things tidy.

To maximize the benefits of this one-click window switching, make your windows tall and narrow *before* collapsing them the first time. Then position the window tabs far enough apart so that you'll be able to see (and click) the collapsed tabs even when another pop-up window is expanded.

The program launcher

So what, exactly, can you do with pop-up windows? One of the best ideas is to create a software launching bay. Stuff a window with aliases of all the programs you use regularly. Put them in a list view. Make the window tall and skinny — and then pop-up-ize it, as shown in Figure 1-12.

From now on, you'll have instant access to your frequently used programs — and, as with all pop-up windows, the "drawer" of programs slams shut after you double-click one of the files inside it, leaving only the tidy tab behind.

This system works great when it comes to drag-and-dropping documents onto your programs. For example, suppose you've got a *.sit* (StuffIt) file you downloaded from the Internet. As you can read in Chapter 27, StuffIt Expander (included on the CD-ROM with this book) is the ideal decoder for downloaded files.

In this case, then, just drag the downloaded file *onto the tab* of your program-launcher window. It obediently pops up; continue your drag onto the Expander icon; then let go. The file decompresses instantly, the window slams shut into a tab, and you've got no folders or windows to clean up when the deed is done.

The skinniest pop-up tab

As we've noted, you can make a pop-up window either using the View menu's "as Pop-up window" command or by dragging a window to the bottom of the screen. The latter method gives you control over where the tab goes — but neither method gives you control over the *size* of the tab. You get a tab exactly as long as the window's name — no shorter. That's too bad if you want to cram more tabs across your screen than their names permit.

Contest Winner

That's where free book winner Steve Alper's trick comes in. To make a super-skinny pop-up window tab, first drag it high enough so that it turns back into a normal window. Drag the remaining tabs about a half-inch apart.

Now drag your open window's title bar down into that gap, as shown in Figure 1-13. Even though the dotted outline indicates that a big wide tab is about to be born, let go of the mouse. Sure enough, the Mac creates a new mini-tab, only as wide as the gap you left it. (If the tab is *really* narrow, "…" is all you get by way of title). You can even drag that mini-tab around at this point — it stays small.
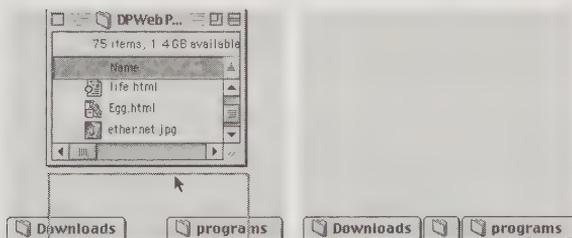
Figure 1-13: How skinny can you go? Make a narrow gap between tabs (left), and then drag a new window into the gap. It fits (right).

One window, front and center!

Ever want to close all Finder windows except the one in which you're working?

Here's a quick way. Turn your current window into a pop-up window. Now Option-click the close box of any other open window, which makes *all* normal Finder windows close (as you'll read later in this chapter). Finally, drag the pop-up window back upward until it becomes a normal window once again — in this case, the *only* open window, just as you desired.

Spring-loaded folders

OS 8

The other Mac OS 8 window-management innovation was *spring-loaded* folders. This feature lets you burrow deeply into nested folders — without having to open a bunch of windows as you go — or close them all after you're finished.

There are two ways to use spring-loaded folders:

- **Dragging a file.** When you drag an icon on top of a disk or folder, and you keep your finger pressed on the mouse button, the folder springs open into a full window, enabling you to drop a file directly into a nested folder. Using this technique, you can actually place an icon into a folder within a folder within a folder — with a single drag. When you release the mouse, all the windows you've opened (except the final one) snap shut again.

- **The click-and-a-half.** You can also burrow into multiple nested folders even if you're not dragging an icon — you might do so just to see what's in some nested folder, for example.

  To do this, point to a disk or folder icon and do a *click-and-a-half* — that is, push the mouse button down-up-down, and leave it down. The window opens; now, keeping your finger down, move the cursor over a folder icon in this window. And so on. You can continue opening window after window as long as you keep your finger down on the mouse button. When you arrive at the window you ultimately intended to reach, let go; all the windows except this innermost one snaps shut behind you.

You control the speed of this feature (or turn it off entirely) by choosing Edit ⇨ Preferences.

And here we have a conundrum. If you set the speed of the spring-loaded folders too high, you're likely to open all kinds of windows *accidentally* — that is, folder A opens, and before you even know what's happening, your still-hovering mouse opens folder B (which it happens to be resting over). Yet if you set the speed to medium or low, the feature takes too long to kick in when you *want* it to: you sit there staring at the little magnifying-glass icon, just waiting for something to happen.

Worth Learning

Our sneaky little workaround: Set the slider (in Edit ⇨ Preferences) to its fastest setting. And then, to avoid accidentally opening some subsequent window, get into the habit of *shooting for the strip* — that is, jerk your mouse to the title bar (or info strip) at the top of the window. Once there, you can pause, catch your breath, and take a look around your newly opened window; up here, your cursor can't trigger any more window-openings.

Better yet: in Mac OS 8.5 and later, tap the spacebar to make the folder spring open at your command!

Finder Window Secrets

Drag a window without bringing it forward

When two Finder windows overlap, you can bring the rear window forward (make it active) by clicking any visible part of it. But you knew that.

If you want to move a rear window *without* bringing it to the front, press the ⌘ key as you drag it. The window stays to the rear.

Reader Neil Thorne, in fact, discovered a logical extension of this trick in Mac OS 8.x — you can also move a window (without bringing it to the front) by ⌘-dragging any of its *edges*. In many ways, that's a much more useful trick than the title-bar-moving trick; the grabbing possibilities for moving a window are greatly multiplied.

The golden Option-key window trick: folders

There are several ways to open a folder. You can double-click, of course, or you can use any of the keyboard shortcuts outlined here. No matter how you open a folder, however, remember that the Option key is your anti-window-clutter power tool — any time you press Option as you open a window, the *previous* window closes itself.

This even works if you're just *switching* to a window that's *already* open — by double-clicking an open-folder icon. In fact, in System 7.5.3 through 8.1, it even works if you're double-clicking something from the list of stuff found with a Find File search; Option-click, and the Find File program quits itself.

The golden Option-key window trick: programs

Our automatic window-closing Option-key trick also works when you're opening a *program*. Open its icon with the Option key down, and the window it's in closes automatically.

CASE HISTORY

Balloon help-and-a-half

Some of the best discoveries about the Mac OS come from Mac Secrets *readers — whether they're hoping to get a free book out of the deal or just interested in the betterment of mankind, we can't say.*

But we were heartened by this observation from free book winner Leigh Blankenship:

Just a few minutes ago, I was flying through my drives and folders using that charming, spring-loaded, click-and-a-half technique.

I put the magnifying glass cursor on a broken alias (the alias of a folder that's no longer on the drive), and was stunned to see a help balloon pop up. (Balloon help was *not* turned on.) It told me that the folder alias couldn't be opened because the original couldn't be found.

How smart! No error message, no OK button to dismiss — just the help balloon. That's good interface design!

Free book winner Peter Fine, in fact, discovered that a similar help balloon pops up if you're dragging something onto the alias of a folder that came from a Zip, Jaz, or other disk that's not currently inserted.

Speed Tip

You can open a highlighted icon in any one of the following four ways:

- Press ⌘-O

- Press ⌘-down arrow

- Choose Open from the File menu

- Double-click the icon

The Option-key trick works in conjunction with any of those methods.

Backtrack to an outer window

Suppose you double-click the System Folder to open its window. Then you double-click the Control Panels folder to open *it*. You can jump back to the System Folder window (or any enclosing window) by pressing the ⌘ key as you click the current window's title. If you keep the mouse button pressed, a pop-up menu appears, from which you can choose the name of any folder you had to open in reaching your current location (see Figure 1-14).

Figure 1-14: The hidden folder-backtracking menu.

Useful combo trick: Use this keyboard trick *with* the golden Option-key trick described earlier — in other words, press *both* Option and ⌘ as you choose a window name from the title bar pop-up menu. The result: You backtrack to an outer window *and* close the window you were in.

Where is this folder?

You find yourself viewing the contents of a window called System Folder. But you have two hard disks, each with a System Folder. Which System Folder are you perusing?

The quick way to find out is to ⌘-click the title of the window (and hold the button down), exactly as described in the previous secret. In this case, of course, you're not trying to backtrack through windows; you just want to know which disk contains the folder at which you're looking. The disk name always appears at the bottom of the pop-up menu.

Strange But True

Of course, if the mystery folder is on the *Desktop,* you're out of luck. No secret pop-up menu pops up if you ⌘-click the title bar, because whatever's on the Desktop isn't inside *any* other folder. In this case, you have only one hope of determining what disk this folder belongs to: File ⇨ Get Info on it.

Close — and backtrack — windows from the keyboard

Strange But True

We're willing to bet that you're not using this trick right now — but that once you've tried it, you'll use it all the time: If you burrow into several consecutive nested folders, you can, of course, return to an outer folder using the hidden title-bar pop-up menu as described in the previous secret. But you can do the same thing from the keyboard by pressing ⌘-up-arrow to return, one nested folder at a time, to the outer window.

Or, once again, combine this trick with the golden Option-key trick described previously; that is, press Option-⌘-up arrow to close the window you're in *and* jump to the previous window.

Jump to the Desktop level from the keyboard

If a folder or disk window is open, you can select the Desktop level by pressing ⌘-Shift-Up arrow. (Why would you want to select the Desktop level? To select or open an icon on the Desktop, such as a disk icon you want to eject, without having to use the mouse.)

Combating the Mac OS 8 window bug

OS 8

If you're running Mac OS 8, you've probably noticed this small but irritating bug. Every now and then you open a folder full of files, only to find that the window is *empty* (or has some files missing). For a split second you panic — and then it dawns on you that the window *isn't* empty; you're actually looking at the *bottom* of the window, below the end of the list of files. Scroll back up to the top, and you find all your folders and files waiting exactly where they're suppose to be.

The solution: When this happens, press the Home key. Your faulty window obediently jumps to the very top of the window.

Quicker CD window opening

You'll find out later in this chapter why some disc windows — especially large-capacity ones filled with color icons, such as CD-ROM discs — seem to take so long to appear on your screen when you insert them. The Mac must take inventory of those discs' invisible *Desktop files,* learning about the size, shape, and colors of every single custom icon on board, before being able to proceed with displaying them in the disc's window.

Speed Tip

Of course, this delay is introduced because those windows have been programmed to open automatically when you insert the CD. If you're in a hurry, keep the Option key pressed while inserting the CD. You've just prevented the CD window from opening at all. (The same trick works for other kinds of removable disks.)

Sure, that means you can't see what's *on* the CD — but we're presuming you're intending to play some game, like Marathon 2 or You Don't Know Jack, that doesn't *require* the CD window to be open (just that the CD be inserted).

Militarizing your open windows

This chapter makes abundantly clear that you can move or resize your windows — with a lot of effort.

CD

If you install OneClick, the macro/toolbar program that comes with this book, however, you can reduce that effort to — well, one click. On the System Bar (the Control Strip-like strip at the bottom of your screen after you install OneClick), you'll find a window-management tile. Its pop-up menu offers two useful commands: Tile Windows (which neatly rearranges all open windows into equally sized, evenly spaced pans) or Cascade Windows (which overlaps them in a diagonal line). Either command beats manually lining them up any day. (See Chapter 22 for more on OneClick.)

Notes on "windowshading"

Deep in its heart, Apple must really believe in the *windowshading* principle — the notion that it's often handy to "roll up" a window so that only its thin title bar remains on the screen, thus revealing whatever's beneath. This feature has been kicked around from version to version of the system software — from a WindowShade control panel in System 7.5, to the Appearance control panel of Mac OS 8 through 8.5. Mac OS 8.x gives you two different ways to roll up a window — you can click the "collapse box" in the upper-right corner, for example, or double-click the title bar (if you've turned on that option in the Appearance control panel).

But you know what? They're on to something. We find ourselves windowshading windows more and more frequently. For example, we often windowshade an outgoing e-mail's window in Eudora, Outlook Express, or Claris Emailer — so that we can drag-and-drop a file from our desktop onto that windowshaded title bar (to enclose the file as an e-mail attachment).

OS 8

The Option key does something pretty wild in Mac OS 8 and later: If you're pressing it when you click the collapse box, *all* open Finder windows roll up (see Figure 1-15). (If you've got the sound feature turned on, the resulting sound effects — *whit, whit, whit, whit!* — makes this quite a display.)

Figure 1-10: With a single click, you can "hide all" of your windows at once. You can even bring back only windows when you're active — such as making the Scores folder into the Scrapbook window, as shown here.

The Point of Views: Lists, Icons, and Buttons

You can switch between these views using the Finder's View menu or — even better — by Control-clicking inside of a window, using Mac OS 8's contextual pop-up menus. (See Chapter 2 for all the details on these menus.)

List, Icon, and Button View Secrets ————————•

Viewing your icons as an outline

Icon views are pretty, but list views are generally more useful; in a list view you can determine, at a glance, a file's size, the date you last modified it, and other details.

Mac Basics

To switch to a list view, choose "as List" from the View menu. You can change how the list is sorted — by file name, file size, and so on — by choosing the appropriate command from the Sort List sub-menu. (In System 7.x, use any of the bottom commands in the View menu — everything except "by Icon" and "by Small Icon" — to display your icons as a sorted list.)

No need to return to the View menu every time you want to change the sort order, however. It's much quicker to click the appropriate *column heading* in the window (see Figure 1-16).
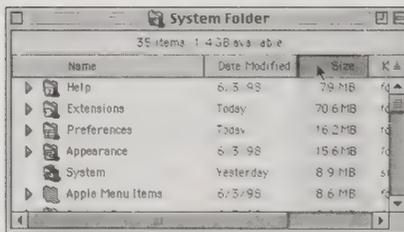
Figure 1-16: A quicker way to re-sort files in a window. Click Size, for example, to see largest files listed first.

Reversing the sort order

For years, the Finder only sorted list views in one direction — from biggest to smallest, most recent to oldest, and so on. There was no way to reverse the list, so that the smallest files (or oldest ones) were listed at the top of the list.

OS 8

And that's the way it was — until Mac OS 8.1. Under OS 8.1 and later, every window has a tiny, subtle sort-order button located just above the top arrow on the vertical scroll bar (see Figure 1-17). Clicking the button flips the "pyramid" indicator upside-down — and reverses the sort order in any list view.
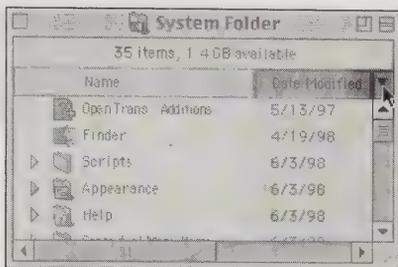
Figure 1-17: The Sort Order button, better known as the pyramid button, lets you reverse the order of a list-view sort.

Hiding list-view columns

When you examine files in a list view, you're probably used to seeing their names, kinds, modification dates, and so on. Of course, the more columns of information you see, the wider your windows are, and the more trouble it is to see two full windows side by side.

That's why we make it a point to hide columns of info we never use (the Labels column comes to mind). To ditch unnecessary columns, choose Views ⇨ View Options (Mac OS 8 and later) or open the Views control panel (System 7.x). There you'll discover checkboxes that control what columns of information appear in your list views. Click to deselect a check box — and turn off the corresponding list-view information.

Once you hide a column, you can no longer sort your files by that criterion; "by Label" disappears from the Sort List submenu, for example, when you turn off Labels in the Views Options dialog box. Still, it's space you wanted, and it's space you get.

Columns: Skinnier, wider, or rearranged

For years, Mac fans have ached for a way to change the *widths* of the columns in list views. A glance at Figure 1-17, for example, shows the problem: If the file names are short, the window is much wider than necessary. We've also longed for a way to *rearrange* the columns — putting the date column to the left of the "Kind" column, for example. And then there's the verbose date format: "Saturday, September 23, 1998" — for goodness' sake, you'd need a 35-inch monitor just to see one of these windows with all the columns displayed! Wouldn't life be sweeter if we could just see the dates displayed like "9-23-98"?

Fortunately, a solution awaits if you're using Mac OS 8 or later. The shareware program CoolViews, included with this book, lets you adjust list views in all of those ways and more (see Figure 1-18).

CD

Of course, if you've got Mac OS 8.5, you don't need CoolViews (at least, not as direly). For the first time in Mac history, this OS lets you drag a column divider to change the column's width — and drag the *name* of the column — the column header — to rearrange it completely.
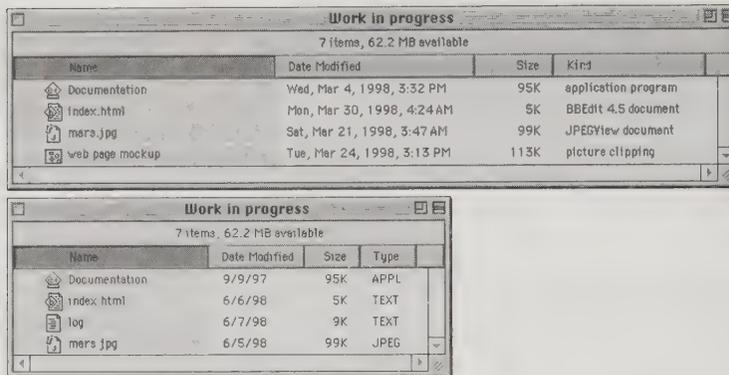
Figure 1-18: Who can see the problem with waste space in the top window? Anybody? Anybody? Fortunately, CoolViews or Mac OS 8.5 saves the day with adjustable columns and shorter dates (bottom).

Short, shorter, and shortest date formats

"Ah," but we can hear you protesting after having read the previous secret, "but CoolViews lets us have short date formats, like 4/4/99 instead of April 4, 1999! There's no checkbox to do this, even in Mac OS 8.5! We love this feature!"

So does Apple. You're right that there's no checkbox for this option — but in Mac OS 8.5, there's something even better. The Mac *automatically* switches to the short-date format — just as soon as you drag the Date column narrow enough to demand the shorter format.

In fact, the Finder does CoolViews one better: if you *continue* to shrink the Date column, your window adopts an even *more* concise date format — it lops off the time, as shown at the bottom of Figure 1-18. Now *that's* handy.

Tomorrow never comes

We're fond of Mac OS 8 and later, in large part because of its grace notes of intelligence and class. Example: your list views default to showing creation and modification dates as "Today" and "Yesterday" (instead of showing whatever the date is in written-out form).

But it doesn't hit you just how hard Apple's programmers worked until you try this little stunt: Open your Date & Time control panel. Change the date to tomorrow's date. Create a new document or folder — and then change the Date & Time control panel *back* to today's date.

Incredibly enough, when you view your new folder or document in a list view, you'll see the sight shown in Figure 1-19 — it's been date-stamped "Tomorrow!"
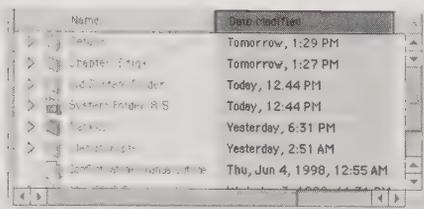
Figure 1-19: We've always known that Apple is a forward-thinking company — but this is ridiculous.

The complete list-view keyboard navigation guide

Mac Basics

You probably already know what happens when you click the little triangle — known by Apple as a *disclosure triangle*, but by the programmers as a *flippy triangle* — next to a folder name: It turns sideways, and the contents of its folder are listed in an indented format, like an outline (see Figure 1-20).
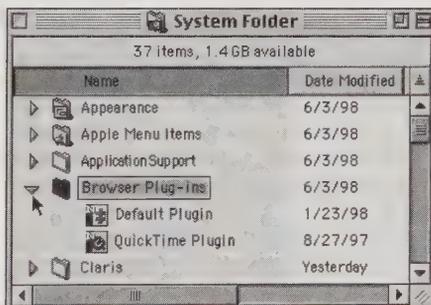
Figure 1-20: Click the triangle to see the contents of a folder without having to open the folder. You can also select the folder and press ⌘-right arrow.

It's more efficient to manipulate list-view folders by typing on the keyboard, however. Here's how:

- Type the first few letters of a file name to select it.

- Press the up-arrow or down-arrow keys to select icons higher and lower in the list.

- Press Tab to highlight the next file alphabetically. (Shift-Tab takes you to the *previous* file alphabetically.)

- After a folder is highlighted, press ⌘-right arrow to expand it (to see what's inside). Press ⌘-left arrow to collapse it again.

- Press ⌘-Option-right arrow to expand a selected folder *and* all folders nested inside it. Press ⌘-Option-left arrow to collapse a selected folder and all folders within it.

- Although this isn't exactly a mouse-free technique, you can also collapse or expand a folder *and* its subfolders by Option-clicking the triangle.

- Press the Page-Up or Page-Down keys (if you have an extended keyboard) to scroll the list of files up or down by a windowful. Press Home to jump to the top, or End to jump to the bottom.

- If you're looking for a file at the end of the alphabet, it's annoying that typing its first letter makes the file appear at the *bottom* of the window, so that you can't see what comes after it alphabetically. The solution is to press the End key and *then* type the first letter.

The all-at-once folder-collapsing trick

Worth Learning

Combine the folder-expanding and -collapsing shortcuts described in the previous secret with the Edit ⇨ Select All command, and you've got a powerful tool for quickly cleaning up your list-view windows.

Suppose you have a window containing dozens of expanded folders nested within expanded folders — a very, very long list view. Rather than scrolling endlessly up and down through such a list to find an item, you can collapse the whole thing down to a manageable size with just two keystrokes. First press ⌘-A to select all the files in the list. Then press ⌘-Option-left-arrow to collapse every selected folder simultaneously.

Strange But True

Now then: When you try this collapse-them-all-at-once maneuver, whatever you do, don't accidentally press ⌘-Option-*down*-arrow instead of ⌘-Option-left-arrow. As it turns out, ⌘-Option-down-arrow is the shortcut that *opens* folders and files. If you have hundreds of files selected and use that keystroke, your Mac will obediently attempt to open every selected program, folder, and document! You'll have no choice but to watch helplessly as document after document opens on your screen — until the Mac runs out of memory and gives up on the whole thing.

Slow-opening folder syndrome

If you expand all the folders and nested folders in a window and then close the window, you may find yourself waiting several seconds or longer the next time you try to open that window. That's because the Finder must mentally reconstruct the entire visual "outline" of all those nested folders before opening the window; you're forced to sit there and wait until the display is ready.

Speed Tip

In System 7-point-anything, here's a great antidote: Press Shift *just after* double-clicking the folder. Magically enough, the window opens — fast — with all its folders collapsed. Alternatively, you can press Shift while choosing Open from the File menu (or while pressing ⌘-O).

We've always loved this secret, but evidently Apple didn't. The Shift-key trick disappeared in Mac OS 8.

Showing free disk space in list views

Mac OS 8 always displays disk-space information in a strip at the top of each window. The strip shows how many items are in the window and how much space is left on the disk (see Figure 1-21).
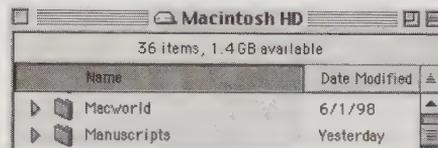
Figure 1-21: Whether or not this strip of disk information appears is up to you.

In System 7.x, this extra little bit of disk info always appears in icon view, but not in list views — unless you turn it on. Open your Views control panel and turn on the "Show disk info in header" checkbox.

The default window-view scheme

In System 7.x, of course, certain aspects of window views — the icon sizes, the "calculate folder sizes" setting, and other options — are universal, applying to every folder on your entire hard drive. However, you *can* specify, on a window-by-window basis, whether you see your icons as a list or as icons.

But what determines the list-view criteria for a new folder that's never been opened? How will its window appear? By icon? By name?

Answer: A new folder takes on the View-menu setting of the window in which it was *created.* If you create a new folder in your main hard drive window, which is viewed by small icon, the new folder's window will also appear by small icon.

In Mac OS 8, Apple changed things quite a bit: Thanks to the View ➪ View Options command, you can now set up different view options (including icon size, "calculate folder sizes" option, and so on) independently for *every window* on your hard drive.

Some people love this flexibility; others resent the requirement to set up their favorite settings independently for each window. But the same rule holds true: Any new folder takes on all the Mac OS 8 view settings of the window in which you created it.

Still, there are ways to change all your windows (in Mac OS 8 and 8.1) to some standard set of settings. You can use CoolViews or Finder View Settings, for example, both of which are included on the CD-ROM with this book.

OS 8.5 Fortunately, Apple finally got the hint in Mac OS 8.5. Now you can set up your preferred window-view settings by choosing Edit ⇨ Preferences ⇨ Views tab. Thereafter, you can open any folder, choose Views ⇨ View Options, and click the Set to Standard Views button (see Figure 1-22). Doing so applies your preferred standard settings to that window (and any new ones you create).
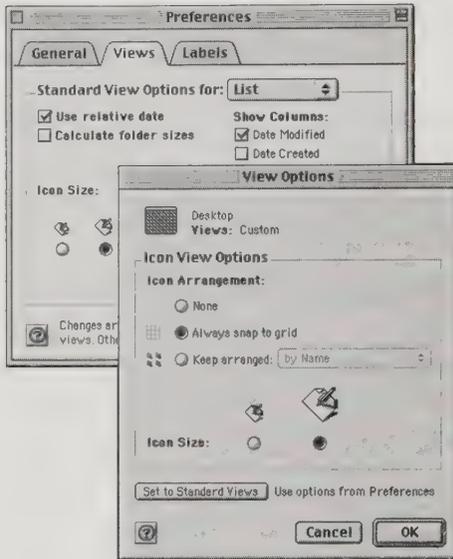
Figure 1-22: In Mac OS 8.5 and later, you can establish your favorite views settings in the Edit ⇨ Preferences box (left). Later, you can choose to "synchronize" any window with those standard views (by opening the window's View Options box, right).

Small icons and buttons on the Desktop

OS 8 In the old days of System 7, it was impossible to view the icons on your Desktop in anything other than full-size icon view. Not so with Mac OS 8. Now you can display desktop icons in small icon view (by choosing View ⇨ View Options and selecting the smallest-sized icon) — a sight you've probably never seen before. (You still can't make a *list view* out of the icons on your Desktop, although you can come close — use the smallest-icon view and — while you're still in the View Options dialog box — turn on one of the Keep Arranged options.)

Button view secrets

OS 8 The *button view* debuted in Mac OS 8. Choose View ⇨ as Buttons, and every icon in the active window (or the desktop) turns into big, E-Z launch jumbo buttons — in which a single click, not a double-click, opens the corresponding file, folder, or disk.

All of this is great for the very young, very inexperienced, or easily overwhelmed. Everybody's happy now except for one niggling detail: *How do you move a button*

icon? After all, you can't drag a button — the moment you click it, you launch it. Does this mean you can never file, move, or trash anything in button view?

Not if you know our little secret. Turns out you can select or drag a button-view icon *by its name,* as shown in Figure 1-23. In fact, you can even Shift-click the names of several buttons, thus making it possible to move them en masse.

At our Macworld Expo seminars, in fact, we've befuddled more than one audience member by showing a line of button icons at the bottom edge of our screen, also as shown in Figure 1-23 — so low that the icon names don't even appear. And now you know how we did it: By selecting those icons, plus another one higher on the screen, whose file name we used as a handle to move the whole group down below the screen's edge!

Figure 1-23: The mystery of the movable buttons: Drag by the file name (top). Bottom: Our hidden-name launching bay at the bottom of the screen . . . how'd we do that?

Copying Files

Has it ever struck you as odd that there's no command for copying a file? After all, making a copy of a file is one of the Finder's primary duties, and yet the method for copying a file to another disk by dragging it is something you just have to *know.* By scanning the menus, you'd never discover the secret.

Apple has improved copying speeds with each successive version of its system software. For example, Mac OS 8 introduced one of the biggest improvements in years: the ability to start multiple copying jobs at once — and then, while they churn away in the background, to get on with your work in other programs.

File Copying Secrets

Copying a file to another folder

You already know how to copy a file onto a different disk: Just drag its icon to the other disk's icon or window. But dragging an icon from one place to another on the *same* disk doesn't copy the file — it only moves the file.

If you want to *copy* a file on the same disk, press Option while you drag.

Copying from a disk onto the desktop

Suppose you want to copy a file or folder from a Zip disk (or floppy, or Jaz, or whatever) onto your hard drive. If you're like thousands of Mac users before you, your instinct might be to drag it out of the Zip disk's window directly onto the desktop.

Strange But True

But as reader Simon Kornblith points out, doing so doesn't make a copy at all! You've merely placed the file's icon onto the desktop — of the *Zip disk.* When you eject the disk, the icon vanishes from your desktop!

The trick, then, is to *Option-drag* an icon from the Zip as you drag onto your desktop. That makes a new copy — on your *hard drive's* desktop.

Changing the "copying files" message

While the Finder is copying files, you see a dialog box that says "Items remaining to copy: 2." If you're feeling particularly grumpy one day, you can change this message to say something different ("All I ever do is copy," for example). You can do this with ResEdit, as described in Chapter 21.

Manipulating icons from different windows at once

Speed Tip

If you think about it, you can't really select icons from different windows at once. As soon as you click an icon in one window, you deselect any highlighted icons in other windows.

There's a simple solution: Drag the icons to the Desktop first, even if the icons come from different disks (see Figure 1-24). From there, you can select all at once. After they are selected, you can drag them to the Trash, open them all (by pressing ⌘-O), or make a backup by dragging them all to a different disk.
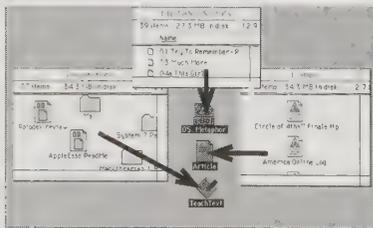
Figure 1-24: You can manipulate many icons at once, even if they come from different disks; just deposit them on the Desktop first.

When you're finished, you don't have to drag the icons painstakingly back to their original folder locations. Just select all the icons, then choose Put Away (⌘-Y) from the File menu.

Your First Database: The Desktop File

A *database,* of course, is an organized collection of repetitive information: a phone book, a set of flash cards, or FileMaker Pro, for example. Your Mac comes with a free database called the Desktop.

There's a Desktop database file on every single disk: floppy or hard, removable or fixed. But normally, the Desktop file is invisible; you, the user, aren't meant to interact with it. In theory, the Desktop database is used exclusively by the computer itself.

What's in the Desktop file

Mac Basics

The Desktop file stores information about the icons in your Finder universe: what their icon pictures look like; which file icons were created by which programs; what comments you typed into their Get Info boxes (the window that appears when you select an icon and choose Get Info from the File menu); what shape and position your windows are in; and how icons are displayed in each window (by name, by icon, and so on). Each time you insert a disk, the computer takes a moment to study the icons on it and record their vital statistics in your invisible Desktop database.

The presence of the Desktop database accounts for a number of mystifying events that may occur in your computing career:

■ You've never in your life seen a completely empty disk. Even a brand-new, freshly-initialized floppy disk starts out with 1K in disk. At last you know what's taking up that room: your invisible Desktop database.

CD

■ You view a disk using a program — such as FileTyper (included on the CD-ROM with this book), Find File (see Chapter 3), ResEdit, or even Word — that can "see" all files on your disk, including invisible files. And you see files called Desktop DB and Desktop DF.

Contrary to popular Mac-industry myth, DB doesn't stand for Database. It actually stands for Desktop BNDL. (BNDL is the four-letter code for bundle, which is what they call the relationship between a certain program or document and its icon. If you start getting blank generic icons on your Desktop one day, you know something's happened to your bundles — and, thus, something's corrupted in your invisible Desktop DB database.)

DF stands for Desktop Files. This is the database that records what files you have and where they are (in whatever folders).

Hereafter, though, we'll refer to this pair of files collectively as the Desktop file.

■ When you put a floppy, Zip disk, or CD into your disk drive, its icon never pops up onto the screen immediately. It always takes a few seconds. That's the time the Finder needs to consult the new disk's Desktop file to find out what the disk's icons should look like.

■ Every Mac book, manual, and magazine urges you never to turn off the Mac simply by flipping off the power switch. Instead, you're exhorted to use the Shut Down command in the Special menu, or press the on/off key on the keyboard, which always makes you wait several seconds before the screen goes dark.

Now you know the reason: The Mac must take a moment to update its database, reflecting any changes you made to the status of your files.

Curing a troubled Desktop file

Each time you insert a floppy disk or introduce new files onto your hard drive, your Desktop files store the pictures of any icons they've never seen before. File icons aren't insignificant in terms of disk space. A typical Mac program has not one, but *nine* different icons. They come in three sizes — corresponding to the three possible icon sizes in the Finder (see Chapter 2) — and in three degrees of colorfulness, depending on your monitor setting.

As all these icons are memorized (along with the Get Info comments you add to them and other information), the Desktop files grow. Over the months, they take up more and more space on your hard drive, and the potential for corruption (getting information mixed up) increases. After a while, several unpleasant symptoms may interfere with your work:

■ The icons for certain files may appear as generic, featureless pictures (see Figure 1-25). In this case, your Desktop database has lost track of which icon pictures belong with which icons.

Alarm Clock   Alarm Clock

Figure 1-25: When the Desktop file gets confused, a file that once had a pretty picture icon (left, before) may turn into a generic icon (right, after).

■ Windows take longer to open, files take longer to launch, and your system seems decidedly slower than it used to be. At this point, your Desktop files have to wade through so much superfluous information that you're actually having to wait for them.

■ When you start up the computer, the Finder seems to take a long time to appear. Once again, the Desktop files are having to struggle to produce the information needed to display your windows and icons correctly.

In these instances, the solution to overgrown Desktop files is simple: Force the Mac to reinspect the current status of icons and windows and create a new, slimmer Desktop database that's free of obsolete information. This process is called *rebuilding the Desktop*. Here's the best-known method:

Mac Basics

Restart the Mac. (For added safety, Apple suggests doing so with the Shift key down, although we have yet to see any evidence that turning your extensions off makes any difference.)

As it's starting up, press the ⌘ and Option keys down until you're finally asked if you want to rebuild the Desktop on the disk in question. If you have more than one disk — for example, a hard drive and a floppy in the disk drive — you'll be asked separately about each one.

Desktop File Secrets

Better rebuilding I: Use TechTool

When you rebuild the Desktop, you do great things for your Mac's overall health. There's only one circumstance under which rebuilding (using the ⌘-Option keystroke) doesn't work wonders: when the file itself is corrupted. Because ⌘-Option simply updates your existing Desktop database, your rebuilt file will maintain whatever corruption already existed.

CD

Better idea: Completely *delete* the Desktop files instead of just patching over them. That's a particular skill of TechTool, an important utility included with this book, as well as Conflict Catcher 8 (see the appendix). The next time the Mac starts up, these utilities generate a clean, virginal Desktop file, corruption-free. (They can even preserve your Get Info comments while they do the deed!)

Better rebuilding II: Use Find File

If you want to trash your outgoing Desktop file completely, as described in the previous secret, but you're stranded somewhere without your *Secrets* CD and TechTool, try this trick.

MACINTOSH SECRET

A more relaxing way to rebuild the Desktop

We always thought the most relaxing way to rebuild the Desktop file was to hit ⌘ and Option, click OK, then go away for vacation. But reader Yinche Tanada rebuilds his Desktop to the strains of Carly Simon. He writes:

I always have been a "rebuild the Desktop file" fan. But I get bored waiting for it to get done. Here's how I conquer my boredom.

First, I open the Apple CD Audio Player desk accessory. Next I switch to the Finder and "force quit" the Finder by pressing ⌘-Option-Esc. As the Finder is quitting, I press ⌘-Option to rebuild the Desktop. I click OK.

Finally, I click the Apple CD Audio Player window, click Play, and sit back to enjoy the music. Voila: it's a pleasure to rebuild the Desktop.

Launch your Find File program (from the menu, for example; see Chapter 3 for more on the Find program). While pressing Option, choose Visibility from the lower-left pop-up menu. From the pop-up menu, choose Invisible, as shown in Figure 1-26.
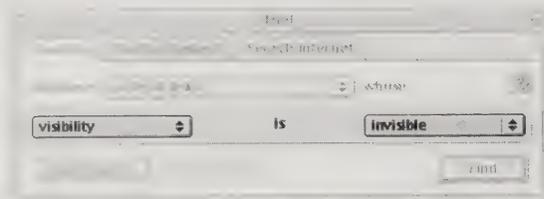
Figure 1-26: You can nuke your own Desktop files by searching for them, even though they're invisible. (This doesn't work in Mac OS 8.5 or later.)

In the resulting list of found files, you'll get an enlightening surprise: look at all the files that lurk, invisible, on your hard drive! Among them are your friends, the Desktop DB and DF files. Drag them directly to the Trash, acknowledging the peculiar error message that appears ("You must restart your Macintosh and immediately empty the Trash" — and look at your weird button selections: OK and No!).

When your Mac restarts, a new, virgin, smaller, more svelte Desktop file will be created. All you lose is your corruptions — and, by the way, the Get Info comments of your files (if any). (See Chapter 2 for details on Get Info and comments.)

The Mac OS Easy Open myth

In 1995, everyone from Apple to your favorite Mac magazines began some revisionist doctoring of the "rebuild the Desktop" procedure. The official method now follows:

■ Restart the Mac with the space bar down, so that Extensions Manager's window appears. (See Chapter 4 for details on Extensions Manager.)

■ Turn off all your extensions except Mac OS Easy Open.

■ Close Extensions Manager's window. As the restart proceeds, press ⌘ and Option until you're asked if you want the Desktop file rebuilt. Click OK.

■ Restart the Mac with the spacebar down. Turn all your extensions back on.

The reason for these shenanigans: if Mac OS Easy Open is turned off — *ever* — during a startup (whether with the Shift key or any other method), it forces *another* Desktop rebuild the *next* time you start up. (For the rationale, see Chapter 4.)
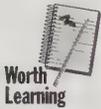
Worth Learning

Our feeling: Mac OS Easy Open is perfectly useful for people who frequently open text or graphics files whose parent programs they can't identify (see Chapters 4 and 16 for details). If you don't find it playing a role in your daily computing activities, however, consider the benefits of turning it off for good: your Mac loads faster, you have more RAM available to your machine, and — best of all — you never have to mess with this ridiculous rebuild-the-Desktop procedure.

Rebuild without restarting

It's common knowledge, as described previously, that you have to restart the Mac to rebuild the Desktop file.

Speed Tip

Not so. For this time-saving stunt, quit any programs you're running — except the Finder. Then press ⌘-Option-Esc. Your Mac asks if you're sure you want to *force quit* the Finder.

Yes, you're sure. Click Force Quit and then immediately press the rebuild-the-Desktop keys, ⌘ and Option. The Finder relaunches itself and, because you're pressing those magic keys, it asks if you want to rebuild the Desktop. You do.

Similarly, if you use At Ease (the desktop-hiding Apple utility designed for schools or families with kids), you can't rebuild your Desktop normally as the Mac is starting up. Instead, choose Go To Finder from the File menu; *now* press ⌘-Option as usual.

De-bloat a removable
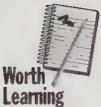
Worth Learning

To de-bloat a floppy disk (or *any* removable media — Zip, SyQuest, whatever), you don't have to restart the computer. Just hold down ⌘ and Option *as you insert the disk.* You'll get the "Rebuild?" dialog box right away.

Generic icons even after rebuilding

If your purpose in rebuilding the Desktop is to restore the color icons to documents that are appearing with generic blank ones, you'll probably be surprised when, time after time, they still show up blank.

Remember, though, that one of the Desktop file's functions is to associate documents with the applications that created them. If the parent application — which is, by the way, where those icons are stored to begin with — is no longer on your hard drive, rebuilding the Desktop does exactly what it's supposed to do. It successfully *strips away* icon images for programs that are no longer around, resulting in faster, more streamlined Finder behavior. Re-install the parent program, rebuild the Desktop, and the document icons will reappear.

Secrets of the Trash

As everyone knows, you delete a file by dragging its icon to the Trash can (or by using one of the equivalent commands or keystrokes). The Trash can icon bulges or overflows to show that something's inside. As long as the bulge is there, you can retrieve the file by double-clicking the Trash and dragging the icon out of the Trash window.

Behind the scenes, though, the Trash resembles a regular folder more than a trash chute. Any file you drag into the Trash can stay there *forever,* or until you choose Special ⇨ Empty Trash. (Your cheerful authors have met more than one beginner whose hard drive had mysteriously filled up, even though they had been diligently discarding old files. They had no clue that every file they'd ever dragged to the Trash was still sitting there, taking up hard-drive space, waiting for the Empty Trash command.)

And no wonder: The Trash *is* a folder — an invisible one. If you need convincing, look at the contents of your hard drive over a network (while seated at a different Mac). You'll see a folder on your disk called Trash. Every disk has a Trash folder, invisible or not.

Here are several clever tips for customizing the behavior of the Trash.

Trash Secrets

How to empty the Trash when files are locked

If you try to empty the Trash while locked files are inside, you'll get a message like the one in Figure 1-27. The solution is spelled out for you in the message: Press the Option key as you choose Special ⇨ Empty Trash. The Trash, locked files and all, will be emptied.

ANSWER MAN

That stubborn Trash thing

One or more items cannot be deleted because they are in use.

[OK]
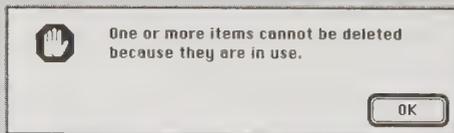
Q: *I'm trying to empty the Trash, but I get a message that says "One or more items cannot be deleted because they are in use." What's going on?*

A: It's telling the truth. You're no doubt running more than one program, and you're trying to throw away a file that's open by one of the programs you're running. Close the document, or even quit the program. Then you'll probably be able to empty the Trash with no problem. (If not, see Chapter 36.)

Oh, by the way: holding the Option key while choosing Empty Trash often succeeds in "letting go" of the stubborn, "untrashable" item.
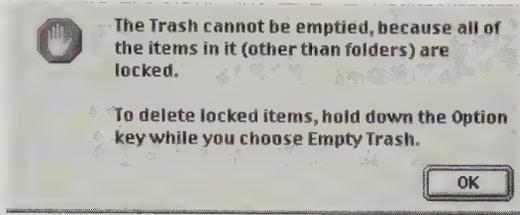
Figure 1-27: What you see when you try to empty the Trash if some of its contents are locked.

Speed Tip

But if you *know* that something in the Trash is locked, why even bother with that error message? Save time by pressing Option the first time; you won't encounter any error message at all.

The silence of the Trash

Whenever you choose Empty Trash from the Special menu, the Mac asks you to confirm your action. "The Trash contains 3 items, which use 542K of space. Are you sure you want to remove these items permanently?" says the dialog box.

Mac Basics

If you prefer not to be bothered with this message each time you empty the Trash, select the Trash can and choose File ⇨ Get Info. Click the "Warn before emptying" checkbox so that it's no longer selected. From now on, no confirmation message.

If you *usually* like the confirmation message, but you want to shut it up *just this time,* press your Option key while you choose Special ⇨ Empty Trash.

How to find out which files are locked

When you get a "locked files" message emptying the Trash, you may not always want to blast your locked files into oblivion by pressing Option. Sometimes you may want to see what you're about to delete.

To do so, double-click the Trash can to open it. As shown in Figure 1-28, look for the tiny padlock icon on the far right of the widened Trash window (System 7.x) or just after the file's name (Mac OS 8.x).
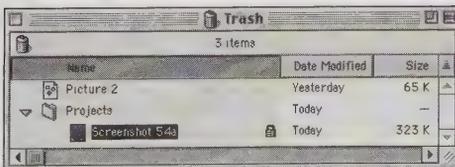
Figure 1-28: Find out which files aren't letting the Trash empty by looking for their padlock icons.

To unlock the file, click one of the locked icons, choose File ⇨ Get Info, and then click the Locked check box.

Why the Zip's still not empty

Q: *Hey, what's the deal? I've got a completely empty Zip disk. I'm trying to copy a 12MB file onto it from my hard drive, and the darned thing tells me there's not enough room! What gives?*

A: Your Zip disk is full. So how come it says 0 items? Because the items on the disk are in the Trash, which is an invisible folder on the disk.

All you have to do is choose Special ➪ Empty Trash, and everything in the Trash — regardless of what disks they came from — will be erased. Your disk will now be truly empty.

Rename, or redraw, the Trash

You may have noticed that the Mac won't let you rename the Trash can. Nor will it let you paste in a new icon, as you can for any other file or folder — at least not in the usual way.

This secret is only a referral to Chapter 21 (ResEdit). There you'll find the secret solution to renaming or replacing the Trash icon.

Strange But True

Although you can't replace the Trash's icon using the Finder alone, you *can* copy it — although not from the Trash's Get Info window, as you'd expect. Instead, make an alias of the Trash — and File ➪ Get Info on *that.* You'll have no problem copying the alias's icon.

All about Aliases

Authors of Mac books and manuals have described aliases as remote controls, beepers, signposts, stand-ins — the metaphors are almost endless.

The point is that although aliases may appear to be duplicates of existing files, they're not. They're just look-alike icons that provide a shortcut back to the original file they represent. If you make an alias of a folder, for example, double-clicking the alias opens the original folder — not a copy of it.

That's why aliases are frequently referred to as *pointers.* When you double-click an alias, the alias simply tells the Finder which file, folder, or disk you want to open and points the way back to the original item, wherever it may be (see Figure 1-29). That pointer-like quality may be why, in Mac OS 8.5, Apple differentiates an alias's icon from its original file's icon with the addition of a tiny arrow, as shown in Figure 1-29. (If the little arrow looks suspiciously like the little arrow on *shortcuts,* the Windows 95 equivalent of aliases, you're right. Was Bill Gates behind this?)

Figure 1-29: No matter where it is located or how it is renamed, an alias always points the Finder back to the file from which it was created.

In other words, you can stash a file in several places at once without having to make multiple copies of the file. You can keep a document or application neatly tucked away in one folder and place aliases of it in as many different locations as you like (see Figure 1-30).
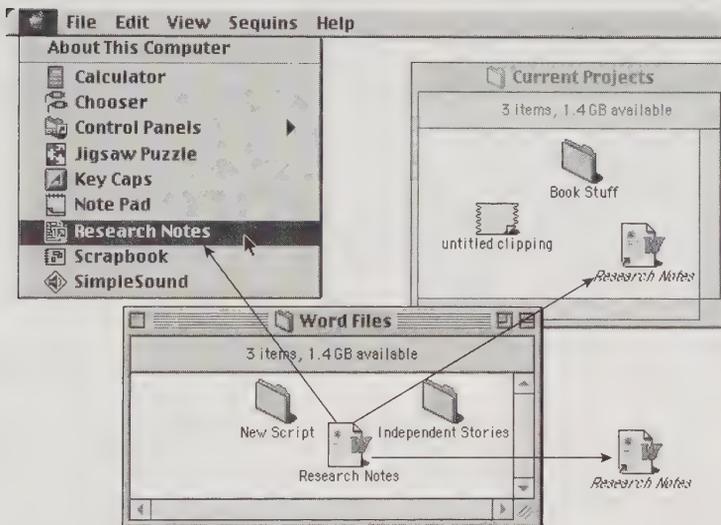
Figure 1-30: A Word file with multiple aliases placed in three convenient spots: the Desktop, the menu, and a folder for current projects.

Making an alias

Here's how you make an alias: Select a disk, file, or folder in the Finder, and then choose File ⇨ Make Alias. In Mac OS 8.x, you can also ⌘-Option-drag an icon. Either way, you now see what looks like an exact copy of the original item, overlapping slightly with the selected icon.

Mac Basics

The alias looks identical to the original icon in every way — except that its name appears in italics, has a little arrow superimposed on it (in Mac OS 8.5 and later), and may have the word "alias" appended to it (unless you made it by ⌘-Option-dragging to a different window). After you create the alias, you can rename it just like any other icon and drag it wherever you'd like, even to another disk drive.

ANSWER MAN

Breaking the alias chain

Q: I made several aliases of one document, but then unthinkingly changed the name of the original document. Will my aliases still work?

A: Remarkably, yes. An alias can always find the original file from which it was created — even when the original is renamed or moved to another folder. (In this way, aliases are *not* like "shortcuts" in Windows 95, which stop working if you move the original.) Unbeknownst to you, the Mac's system software assigns every file a unique ID number. Even duplicate copies of the same file get different ID numbers.

When an alias is created, it's programmed to open a file with a prescribed ID number. The name of the file doesn't matter. In fact, if you create a new document and give it exactly the same name as the original file from which you made an alias, the alias will ignore the new document and still find the original.

Here's where things get interesting. Suppose that you drag the new, identically named file into the *same folder* as the one to which the alias refers. The Mac asks if you want to replace the original file. If you say OK, then the alias *will* point to the new file instead of the old! And in Mac OS 8.5 or later, double-clicking a "broken" alias (whose original file has been deleted) prompts the OS to invite you to attach this alias to a *different* "parent" file. (You can also do so manually by using the File ⇨ Get Info command, and then clicking Select New Original.)

Smart little computer, isn't it?

Here are some of the best ways to use aliases to streamline your work:

- An all-time favorite: Add aliases of frequently used applications and documents to the menu. To do this, put the aliases in the Apple Menu Items folder (located within the System Folder). Because the menu is always available, you have continuous access to the files you use the most.

- Place aliases of files and folders you open frequently right on the Desktop.

- Make aliases of the *control panels* you use the most and put them in the menu, on the Desktop, on the Launcher (see Chapter 4), or in other convenient spots. Making an alias of a specific control panel saves you the step of choosing something from the ⇨ Control Panels menu.

  (It could have been worse. The Control Panels folder listed in your menu is *itself* an alias. If it weren't there, you'd *really* have to do some digging to get to a control panel.)

- Put aliases of the Trash in as many folders as you'd like (see Figure 1-31). Whenever you have to trash a file, you can just drop it in the nearest Trash can.
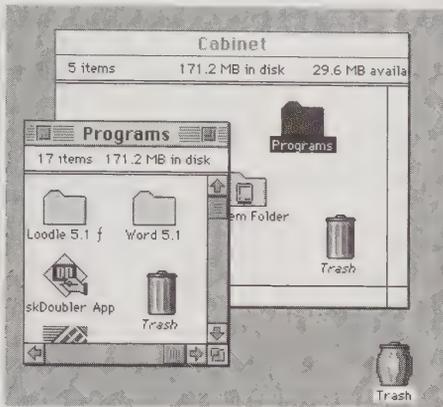
Figure 1-31: How many Trash cans? Multiple Trash cans are especially handy on big monitors. (Only the real thing bulges when it has contents, though.)

■ Aliases can greatly simplify setting up file sharing for users connected to a network. Here's how. When you're on a network and you've brought another Mac's hard disk onto your Desktop (see Chapter 35), make an alias of any shared program, document, or folder. When you're off-line and you'd like to reconnect, just double-click the alias. Your Mac automatically looks for the original item, locates it on the other Mac on the network, and pops it onto the screen. (If a password is required, you'll be asked for it first.)

■ Get this: the previous secret works even if you're thousands of miles away. That's right: if you made an alias of your office servers while you're connected to them using Apple Remote Access (ARA), then double-clicking that alias (presumably on your PowerBook) will automatically dial and tap into your office network.

■ Make an alias of your *hard disk* icon and put it into the Apple Menu Items folder. By sliding from submenu to submenu of your menu, you can choose and open any file or folder on your entire hard drive (see Figure 1-32).
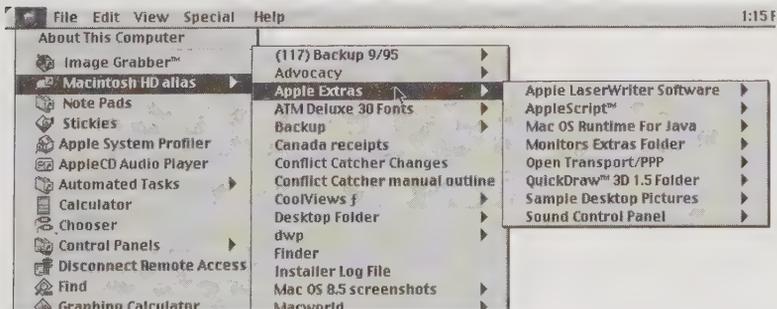
Figure 1-32: Submenu redux. You can access any folder or file on your hard disk without ever having to double-click an icon.

Finding the original file

Of course, at some point, you may actually need to find an *original* file and not its alias. If you want to copy a file to a removable disk, for example, you can't just drag the alias to the disk — you need the actual file.

If you forget where the original file is located, you can easily find it.

- *Mac OS 8 and later:* Highlight the alias. Choose File ➪ Show Original.

- *System 7.5:* Your menu contains a useful command called Useful Scripts. Among them is Find Original, which (of course) finds the original for a highlighted alias. See Chapter 22 for more on AppleScript, the technology behind the Useful Scripts.

  Alternatively, you can install Hidden Finder Features, included on the CD-ROM with this book. It lets you find the original by clicking the alias and pressing ⌘-R.

- *Systems before 7.5:* Select the alias and choose File ➪ Get Info. Just above the Comments bcx, a boldface heading says Original, followed by a hierarchical list pointing the way back to the original file. If the listing is *Macintosh HD: Word: Writing Projects: Research Notes*, for example, it means that the original file from which the alias was made is called Research Notes, and it's in the Writing Projects folder, within the Word folder, on the drive named Macintosh HD (see Figure 1-33).
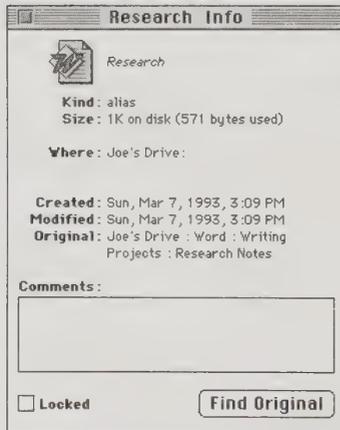
Figure 1-33: The Get Info box for an alias shows you where the original file is located and contains a Find Original button to take you there.

To access the original file, click the Find Original button at the lower-right corner of the Get Info box. The Finder opens the appropriate window and highlights the original item.

More alias notes

Some other points to keep in mind when working with aliases:

■ You can create an alias of virtually any disk, document, application, or folder. You can make aliases of your whole hard drive, a control panel, the System Folder — any item you'd like to be able to grab and open easily and quickly.

■ Aliases take up very little room — generally a few kilobytes each — so you can make as many as you'd like without crowding your hard drive. Even an alias representing a document several megabytes in size will take up no more than a few kilobytes. (The larger the hard drive, the larger the alias; for the rationale, see Chapter 8.)

■ A single item can have as many aliases as you'd like. So if having 15 aliases of a single item is going to save you a lot of opening and closing of folders and windows, go ahead and make them.

Avoid making aliases *of* aliases, though. You can certainly do it, but you increase the risk that, by accidentally throwing one of them away, you'll "break the chain" that points from alias to alias all the way back to the genuine file.

■ Talk about smart: When you double-click an alias whose original item has gone off to that great Trash can in the sky, the Mac (starting in Mac OS 8.5) actually offers to take care of the problem for you, as shown in Figure 1-34. Click Delete Alias to delete the orphaned alias; click Fix Alias to select a different file — a file to which you'd like this alias to point *now*.

Either way, we're grateful — we always prefer a dialog box that offers us action than one that just says, "You're dead in the water."
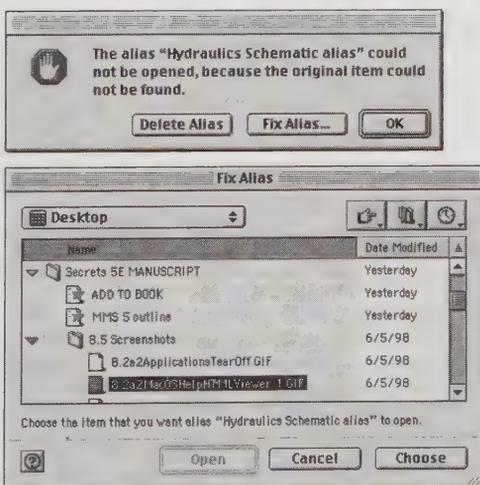
Figure 1-34: Mac OS 8.5 is smart enough to offer a way out when your alias is broken (top), enabling you to click Fix Alias and select a different file (bottom) to serve as the "original."

Alias Secrets ───■

Instant alias, without the "alias" suffix

If you're like millions of other Mac fans, you can't *stand* the way the word *alias* gets tacked onto the end of a new alias's name. Of *course* it's an alias — any fool can see that, thanks to the italicized name.

OS 8 Our brains are seething with ways to get rid of that "alias" suffix. You could use Mac OS 8 and create your aliases by ⌘-Option-dragging the original items out of their original windows; that method doesn't tack the word *suffix* onto the end. If you don't have Mac OS 8 or later, you can achieve the same effect by installing Hidden Finder Features, included with this book. It lets you make an alias of something just by Control-dragging it — without the word *alias* at the end.

You could even use ResEdit to change the Mac's default suffix to something else — such as a small, nearly invisible space. (See Chapter 21 for instructions.)

El cheapo disk archiving

Here's how you can have all your floppy-disk, Zip, Jaz, and SyQuest files stored on your hard disk — and yet not.

Make sure that your disks and cartridges all have distinct names and label them. Make aliases of all their contents and copy the aliases to your hard drive. (You should probably keep the aliases all in one folder.) Next time you need one of these files, double-click its alias on the hard drive. The Mac shrewdly calls for the appropriate disk or cartridge by name.

Your basic Startup Items trick

Make an alias of anything — a sound file, a program, a document, a control panel — and put it into the Startup Items folder inside your System Folder. Next time (and every time) you turn on the Mac, the original of that file or program behaves exactly as though you just double-clicked it. (Ditto, of course, for the Shutdown Items folder.)

■──■

Drag-and-Dropping Icons

Beginning with System 7, Mac fans have enjoyed a curious and useful option: you can drop a *document* icon onto an *application* icon to launch the former with the latter, no double-clicking required.

Your cheerful authors normally applaud features wherever they may occur. However, on this occasion, we must point out that, frankly, if a document icon is handy enough that you can drag it over to an application icon, why not

simply double-click the document icon to begin with? Is this the Emperor's new feature?

Mac Basics

Nope. The point here is that you can drag a document icon onto the icon of a program that *didn't create it,* as shown in Figure 1-35. The classic example is dragging a Read Me text file onto the AppleWorks/ClarisWorks program icon; in so doing, you open the document in that program. Or you can drag an alien downloaded Internet file onto the StuffIt Expander icon (see Chapter 27) to decode and expand it. Or you can open some generic TIFF, PICT, or GIF file you downloaded from the Web (created by God knows what graphics program) using a graphics program you *do* have, such as Color It, just by dropping the TIFF or GIF file onto Color It's icon.
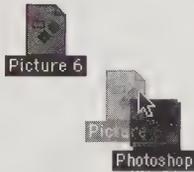
Figure 1-35: Drag-and-drop's more useful use: Open a document with a program that didn't create it.

In all of these drag-and-drop moments, you get immediate visual feedback as to whether your dropping action is going to accomplish anything: The program's icon gets highlighted. You can't, for example, open a Word document with Photoshop. If you try to drop the Word document's icon on the Photoshop icon, the latter won't turn black, so you know your attempt is a failure.

Finally, soothe your psyche on this fact: When a drag-and-drop is in progress, the document's icon always snaps back to its original window location. Even if you drag an icon out of its window in order to drop it on a distant program icon, you haven't really disturbed the document's position.

Macintosh Drag-and-Drop

These days, however, when people talk about drag-and-drop on the Macintosh, they most often refer to Macintosh drag-and-drop — the official, Apple-capitalized version. This glorious feature, which debuted in System 7.5, lets you *drag* selected data — usually graphics or text — from one place to another instead of copying and pasting.

Mac Basics

You can drag stuff from one spot to another within the same document. You can drag it from one *window* to another within the same program. You can even drag material from one program's window into another *program*. All of this happens seamlessly, quickly, and intuitively. And it all feels like a perfectly natural extension of the Mac interface.

There's only one drawback to Macintosh drag-and-drop: Not every program on earth offers it. Fortunately, the number of programs that do is rapidly expanding: for example, nearly every word processor (including AppleWorks/ClarisWorks and Word 98), e-mail reader (including Claris Emailer), and Internet program (including America Online) supports drag-and-drop.

Many Apple-supplied programs offer this kind of drag-and-drop, too. The Scrapbook, Stickies, SimpleText, the Note Pad, the Finder, Desktop Pictures, Appearances, and the Jigsaw Puzzle (incoming only) are all D&D-savvy. Here are some handy examples:

■ Slide something — a picture from Mac OS 8's Desktop Pictures or Mac OS 8.5's Appearance control panel, text from the Note Pad, or a sound from the Scrapbook — onto the Desktop. It becomes an icon called *text clipping*, *sound clipping*, or *picture clipping* (see Figure 1-36). Clippings (picture, sound, or text) are double-clickable on the Desktop; they open to show (or play) their contents.
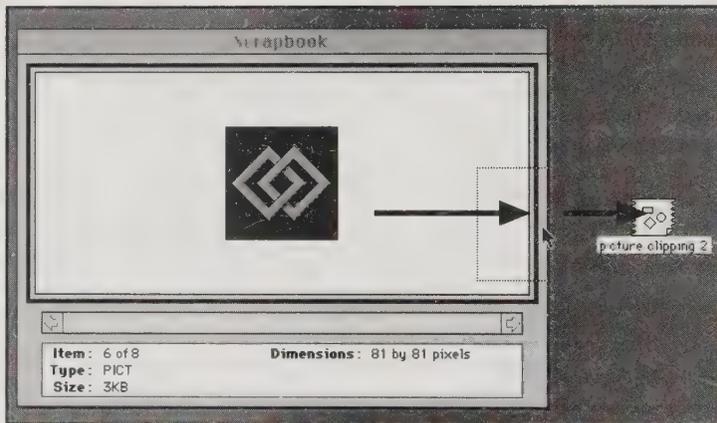
Figure 1-36: System 7.5 takes dragging and dropping to a new level — you can slide text or graphics right out of the Scrapbook and onto the Desktop, or vice versa.

■ Drag a block of text from an America Online e-mail into a FileMaker database or Word 98 document.

■ Drag a picture out of the Scrapbook and into Desktop Pictures/Appearance to create a new Desktop backdrop.

■ Drag some text out of any drag-and-drop-savvy program to the desktop. If that blob of text is an Internet address (such as http://www.davidpogue.com or frank@universe.com), it instantly turns into a Mac OS 8.5 *Internet Location Document* (see Chapter 25). When double-clicked, this document launches the appropriate program (Web browser, e-mail program, newsgroup reader), dials the Internet, and connects to that address.

■ Drag text around within AppleWorks/ClarisWorks — or between two of its document windows — as a quick, simple way to reorder a list (or the paragraphs of a memo).

By the way, what Microsoft Word 6 does — letting you drag text between windows within Word — is *not* Macintosh drag-and-drop. Neither is the interaction between Now Up-to-Date and Now Contact, where you can drag a name from one Now program to the other. If you can't drag stuff from a program into *any other* drag-and-drop-savvy program, it isn't real D&D. Quick test: If you drag text onto the Desktop, does it turn into a clipping file? If not, it doesn't count.

Macintosh Drag-and-Drop Secrets

Quick e-mail reader

Get into the habit of saving your important e-mails as text files. (For example, when you save an America Online e-mail, you're offered a choice of two formats — text and Read Mail.) Then, whenever you want to review one, don't bother launching America Online or a word processor. Just whip up to your menu, open the Note Pad, and drag the e-mail's icon into the window. It appears there in full, ready for reading.

Quick graphics viewer

Speed Tip

Much as in the previous secret, you can use Apple's seemingly trivial Jigsaw Puzzle to accomplish some very handy tasks. Specifically, you can drag any PICT file right off the Desktop and into its window to get a quick glimpse of its contents — without waiting 35 minutes for Photoshop to load. (You may have to give the program more memory first. Highlight the Jigsaw Puzzle's icon in the Apple Menu Items folder [in your System Folder], choose File ⇨ Get Info, and add about 100 to the lower text box in the Info window.)

Actually, the Scrapbook probably makes a better graphics viewer, because its window is resizable. We just love showing people, however, how the homely little Jigsaw Puzzle can actually be useful.

Making the non-savvy program D&D-savvy

As we've noted, not every program has been rewritten to support Drag-and-Drop, much to the disappointment of its fans.

CD

We can help. We've included the ingenious DragClick extension that magically makes *every* program drag-and-drop-aware on this book's CD-ROM. Suddenly Word 5, America Online 2.7, QuickDex, and any other text-based program behaves correctly when you drag text into another Drag-and-Drop program or to the Desktop. See the appendix for instructions.

Duplicating text with the Option key

In any real D&D-savvy program, such as the Note Pad or SimpleText, you can duplicate a piece of highlighted text exactly as you would a graphic object in, say, Photoshop or an icon in the Finder: Press the Option key while dragging it. The duplicate appears wherever you release the mouse.

Your advance notice of D&D success

One of Apple's most thoughtful interface touches is the highlighting that appears when you drag and drop something: The material you're moving displays an outline, and the destination window displays a purple "you mean *here?*" border. Use this fact to your advantage — it should help you recognize immediately that you're dealing with genuine D&D-savvy programs.

The collected works of clipping files

If you make assorted text clippings as you go about your daily routine, at some point you'll probably want to turn your folderful of individual clippings into a single document. To do so, select all the clipping files in the Finder and drag them en masse into a Drag-and-Drop-aware word-processing document.

In fact, you can even determine the *order* in which the clippings will appear in the new document. Here's the secret: Select the individual clipping files one by one (by Shift-clicking), in the exact order you want them to appear. When you drag the files to the document, they'll be imported in the same order in which you clicked them.

The navigational keystrokes — PowerBooks, too

Suppose you're as much of a text-clipping nut as we are. Your desktop is strewn with useful clippings containing Web articles, e-mail messages, top-10 lists, jokes, troubleshooting techniques, and so on.

In that case, you'll welcome free book winner Leigh Blankenship's discovery that the Page Up and Page Down keys scroll you a screen at a time through longer clippings. And if you're using a PowerBook that doesn't have those keys? Or if you're a touch-typer and don't want your hands to leave their home-row positions? Easy — substitute Control-K and Control-L, respectively.

She notes, by the way, that the same secret keystrokes have the same secret functions in America Online (e-mail messages and other text) and the Note Pad, too. (Logic? Who said anything about logic?)

Clippings with style

Text clippings can contain two different kinds of text: plain or styled. When you drag text that's been formatted with specific font, size, or style attributes — from ClarisWorks, Word 98, America Online, and so on — to the Finder to create a new clipping, the attributes are preserved within the clipping. (Try it — most people aren't accustomed to seeing fonts and styles show up in a Text Clipping window.) Unstyled text, on the other hand, such as text from the Note Pad or Claris Emailer, always appears in a default clipping font.

It may appear that you can't change this font; after all, there's no Font menu in a clipping file. But you can change the default font used to display text clipping; it turns out that the default clipping font is the same font you're using for all text in Finder views! To change it in System 7.5 through 7.6, use the Views control panel; in Mac OS 8, choose Edit ⇨ Preferences.

OS 8.5 In Mac OS 8.5, the text-clipping font is also the Views Font. (Choose ⇨ Control Panels ⇨ Appearance ⇨ Fonts; there you'll see the Views Font pop-up menu.)

TRUE FACT

Macs of the Rich and Famous

Don't ever let any PC bigot tell you that the Macintosh is going away. When you survey the following list of famous Mac users, you'll realize that virtually *everybody* in Hollywood, pop music, literature, and theatre uses Macs. If Apple were ever in real trouble, we feel confident that the groups below would band together and cut a hit music video to benefit the cause — "We are the Mac World," perhaps.

Madonna, Prince, Steven Spielberg, Dustin Hoffman, Sandra Bullock, Harry Connick Jr., Kevin Costner, Tom Cruise, Geena Davis, Danny DeVito, Clint Eastwood, Sally Field, Whoopi Goldberg, Harrison Ford, Jodie Foster, Mel Gibson, Tom Hanks, Jerry Seinfeld, Douglas Adams, Tom Clancy, William Gibson, Mario Puzo, William Goldman, Michael Crichton, Herbie Hancock, Eddie Van Halen, Aerosmith, Beastie Boys, U2, Ice T, Rolling Stones, Seal, Tori Amos, B.B. King, Hans Zimmer, Roger Clinton (Bill's brother), Thomas Dolby, Peter Gabriel, Jan Hammer, Ben Heppner, Michael Jackson, Quincy Jones, Cyndi Lauper, Courtney Love, John Tesh, Mannheim Steamroller, Lou Rawls, Dabney Coleman, Todd Rundgren, Enya, Danny Elfman, Gloria Estefan, George Michael, Sting, Carly Simon, Tommy Lee, Metallica, Kenny G, Gay Talese, Valerie Bertinelli, Tim Allen, Drew Carey, Rush Limbaugh, Conan O'Brien, Maury Povich, Norm Abram, Roger Ebert, Don Novello (Father Guido Sarducci), Dan Aykroyd, Mariel Hemingway, Natasha Richardson, Vanessa Redgrave, Lauren Bacall, Phoebe Cates, Kevin Kline, Christian Slater, Lawrence Fishburne, Emilio Estevez, Dolly Parton, Henry Winkler, Timothy Burton, Samuel L. Jackson, Nicole Kidman, Wesley Snipes, Sylvester Stallone, Sharon Stone, James Woods, Robin Williams, Paul Reubens (Pee Wee Herman), Gary Oldman, Senator Bob Kerry, and Mia Farrow.

Chapter 2

Finder Command Secrets

In This Chapter

- Highlights of the File, Edit, View, Label, Special, Help, and Application menus
- Three hidden Finder commands
- Buried menu treasures
- Getting more mileage out of the Find command
- Four ways to clean up icons

The Finder has over 40 commands. Scary, when you consider that *this* is supposed to be the most user-friendly computer on earth.

We're going to assume that you can manage without a book to tell you about commands like New Folder, Open, Close Window, Get Info, and Duplicate. And we'll get deep into the About This Computer command in Chapter 9.

However, you'll find some goodies locked away behind some of the other commands.

The Apple Menu

The menu, strictly speaking, isn't just a Finder menu. But you create and manage the menu's contents in the Finder. The menu is used for launching files and programs, just as the Finder — and its first command, About This Computer (or About this Macintosh, as it said on earlier Macs) — provides a wealth of fundamental information that seems right at home in the Finder.

In the ancient days of System 6, the menu was good for exactly one thing: listing desk accessories (see Chapter 3). But ever since System 7, the menu has become a powerhouse. It can list disks, files, folders, the Trash, the System Folder, control panels, remote file servers, Web browser bookmarks — anything with an icon in the Finder.

See Chapter 3 for a blow-by-blow account of what's *in* the menu (that you didn't put there yourself). For now, here are our secrets of the menu in its role as a *menu*.

Apple Menu Secrets

Quick access to the menu (conventional methods)

Mac Basics

As you probably know, anything you place in the Apple Menu Items folder (in the System Folder) is instantly listed in your menu, whether it's a file, a folder, a program, or the alias of a disk. Trouble is, the Apple Menu Items folder itself isn't very convenient, nested as it is inside the System Folder. (That's why Apple created the Favorites folder that debuted with Mac OS 8.5, as described in an upcoming secret.)

OS 8

If you're using System 7.5 through Mac OS 8.1, Apple has provided a quick and easy way to install items in the menu — the ⇨ Automated Tasks ⇨ Add Alias to Apple Menu command.

Actually, Add Alias to Apple Menu isn't a command; it's a *script* — a set of instructions — written in AppleScript, a programming language that can be used to automate tasks in most Mac programs — including the Finder (see Chapter 22 for more on AppleScript). This script is really a tiny self-contained mini-program that has just one purpose in life — to put things in the menu for you.

Just select a file or folder, then launch this AppleScript. It makes an alias of the selected item, lops off the word "alias" (see "All About Aliases" in Chapter 1), and then drops it into the menu for you.

Even this method isn't terribly automatic, though. And there's no AppleScript for *removing* an item from the Apple Menu, which you must still do manually.

That's why we're still fans of this time-tested low-tech approach to menu management: Just make an alias of the Apple Menu Items *folder* and leave it out on the desktop.

To add something to your menu, just drop it on top of this folder alias. To remove something, double-click the folder alias and drag the item out of the window.

Quick access to the menu (discreet method)

The Apple Menu Items folder alias trick described in the previous secret works wonderfully, but it also leaves a big clunky folder out on your Desktop. Here's a less obtrusive technique.

Follow the steps in the previous trick. But instead of leaving the image of the folder alias out on your Desktop, make the icon itself invisible (see the "Electronic Post-it Notes" Secret in Chapter 1). You can also replace the name of the folder alias with a few blank spaces.

The result is an iconless folder with no name — all you see on the Desktop is a white rectangular slot. Click the rectangle and drag it just under your menu (see Figure 2-1).
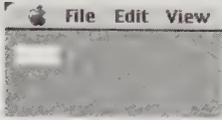
Figure 2-1: Nuke the icon of the Apple Menu Items folder alias and change its name to blanks. Now you've got a drop-slot for your menu.

Then, whenever you want to add an item to the menu, just drag it over and pop it in the slot (the white rectangle). Anything you slip into it instantly disappears from the Desktop and reappears as an item in the menu.

When you want to remove or rename something in the menu, double-click the little slot itself. The Apple Menu Items folder opens.

Master your favorites

You can read about the Favorites folder — one of the items listed in the menu beginning with Mac OS 8.5 — in Chapter 3.

For now, it's worth noting that you can add items to it (actually aliases, but we won't tell) by highlighting an icon and choosing File ⇨ Add to Favorites. It's perfectly OK to highlight *folders* in this way, too; they'll show up in your menu's Favorites command as submenus, so that you can choose the names of any items *inside* those folders — even items within folders *within* folders.

To remove something from the Favorites folder, just choose the Favorites command itself from the menu. (That's one of the handy differences between the Mac and Windows, where you can't choose a command that has a submenu — you *must* choose a submenu item.)

The Favorites folder (which is in your System Folder) pops open. Just trash the icons whose names you no longer want in your Favorites command.

Rearranging the menu

The Mac normally alphabetizes the items listed in your menu. To force these items into a different order, you can install an Apple-menu managing program, such as BeHierarchic (included on the CD-ROM with this book).

But if you're a do-it-yourselfer, try this. Open your Apple Menu Items folder. Bearing in mind that a space comes alphabetically before any letter, rename the items in the folder. You can make Zither come before Armadillo, for example, if you type a space before the *Z*. Figure 2-2 shows an Apple Menu Items folder that's been realphabetized by using spaces. (For better cosmetic results, you can also use a pasted return character, as described in Chapter 1's "Icon-renaming Secrets.")
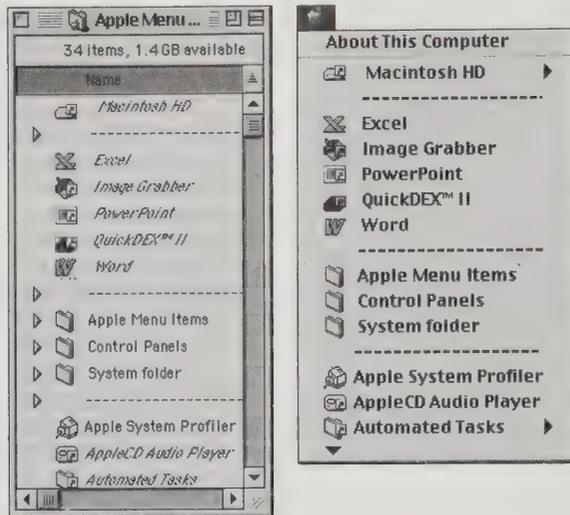
Figure 2-2: A judicious use of spaces and nameless folders in your Apple Menu Items folder (left) customizes the order and look of the menu (right).

As a final flourish, you can create separator lines to group your menu items (programs and documents, for example). To do so, make a new empty folder. Change its name to a bunch of underlines or dashes — preceded, of course, by the correct number of spaces (or pasted Returns) so that the folder will fall, alphabetically, in the right place among the other items. Finally, use the Electronic Post-it Notes tip in Chapter 1 to make the separator folder's icon invisible.

Kill the Recent Servers

If you're using System 7.5 or later, you may have noticed the addition of three weird commands in your menu: Recent Applications, Recent Documents, and Recent Servers. The control panel responsible for creating these items is Apple Menu Options (see Chapter 4 for details).

You can make *all* of these folders go away by turning off the "Remember recently used items" check box in that control panel. But you can also turn them off selectively — to get rid of only Recent Servers, for example. Simply open the Apple Menu Options control panel and type **0** (zero) into the text box that corresponds to the item you want to disappear (Recent Servers, or whatever).

Visit scenic Silicon Valley

The first item in the Finder's menu normally says About This Computer. When you choose this command, you see a useful miniwindow that reveals your Mac's memory capacity, current memory usage, and System version. (See Chapter 9 to find out how to interpret this information.)

(OS 8) But if you press Option as you choose the first command in the ✦ menu, the wording changes to say About the Finder, and you see a beautifully rendered landscape of a verdant green valley—presumably the "silicon" one in which Apple's headquarters sits. After a moment, a scrolling list of credits appears— the programmers who developed the Finder, grouped by version, all the way back to the Lisa computer (the Mac's predecessor).

(Incidentally: Reader Hugh McGuigan points out that the sixth name listed under Quality in the scrolling credits is somebody named—sure enough—*Lunatic E'Sex*. We know that some colorful characters work at Apple, but this is ridiculous.)

The same trick works if you're running System 7.x, although the landscape isn't quite as colorful. Instead, you see a flat, black-and-white rendering of the valley that harkens back to the days of MacPaint, the very first Mac graphics program. If you believe the old-timers, this same valley scene is what choosing About the Finder *always* displayed on the very first versions of the Finder.

If you're a System 7 holdout, you can try this one: Press ⌘ *and* Option as you choose About the Finder—you get both a scenic moonlit scene *and* a cursor with an attitude.

The undocumented program switcher

Contest Winner Free book winner Ronald Leroux discovered something astounding about Mac OS 8.x's About This Computer command. You know the memory graphs? (See Figure 2-3 if you need a reminder.)
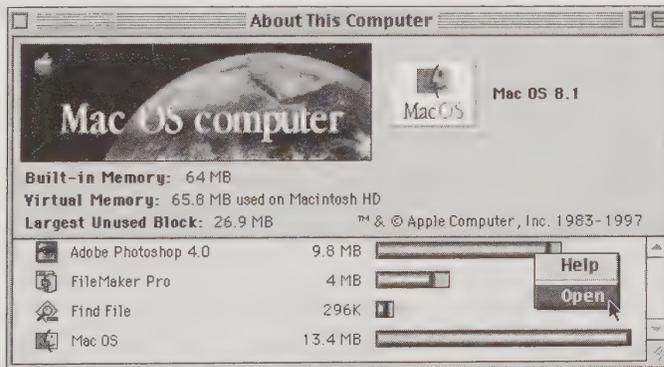
Figure 2-3: Control-click any bar of the About This Computer window, and then choose Open to bring that program forward.

You may suppose that they merely indicate which programs are running and how much memory they're using. But there's more—much more. Control-click one of these bars to produce a contextual menu, as described later in this chapter. One of them, impressively enough, is Open—you can switch to open programs directly from within this dialog box!

That can be handy when, having studied your memory-usage chart, you realize that the reason you can't launch BeeKeeper Pro is because Microsoft Guilt 7.3 is using up 23MB of RAM — and you'd like to switch to it so that you can quit it and free up its memory.

The File Menu

Did you ever wonder about the parts of speech used in menus? Originally, they were all supposed to be verbs. *File* is a verb here. So is Edit, Label, View, and (in Mac OS 8) Help. (The theory breaks down when you get to Special, of course.)

Print

Mac Basics

The Finder actually has two Print commands. The one at the top of the File menu is available only if you select one or more document icons. It prints those documents by launching whichever program created them, printing, and then quitting that program. (You can even select document icons created by different programs. The Finder launches each, as necessary, to do its printing.)

The other Print command, at the bottom of the menu, is Print Window. It prints a picture of whichever window is open. If no window is open, or if you select the Desktop by clicking it, the command changes to say Print Desktop, which prints the Finder icons on the Desktop, using as many pieces of paper as are required to print the entire screen.

Speed Tip

The Print Window command is especially handy when you're testing or troubleshooting a printer; it lets you print *something* without having to launch an application.

It also comes in handy, weirdly enough, when you're trying to check the Mac's *sound* (the volume, an external speaker, and so on). Why? Because Print Window makes a dialog box appear — and clicking outside any dialog box makes the Mac beep!

Move to Trash

OS 8

For years, there was only one way to put items in the Trash — drag them there yourself. Intuitive? Yes — but not always convenient, especially on large monitors or when you're doing a lot of cleaning up. Finally, in Mac OS 8, the Move to Trash command was born, giving us a way to zap files without a mouse journey across the screen.

The real beauty of the Move to Trash command is its keyboard shortcut, ⌘-Delete. Select a file (or multiple files), press ⌘-Delete, and watch them

zip into the Trash. (Plus — isn't this smart? — ⌘-Delete works only if the highlighted icons are in the *active window,* thus ensuring that you'll never accidentally delete files without knowing it.) We love this command.

CD

If you're not running Mac OS 8, you won't find a Move to Trash command in the File menu, but there's no reason to feel left out. Just install Hidden Finder Features, which is on this book's CD-ROM. Among other system enhancements, it adds a Move to Trash keystroke to System 7.

Get Info

You click an icon; you choose File ⇨ Get Info; you read all about it. See Chapter 8 for details on the File Sizes reported here, and Chapter 9 for details on the Memory boxes (that appear when you Get Info on a program).

For now, note that the *Where:* line in the Get Info box gives you some insight into how the Mac tracks your files — by listing a string of smaller and smaller locations. It may say Hard Drive:System Folder:Control Panels:, for example. (If it shows only the name of your hard drive, nothing more, then the icon in question is on the Desktop.) At last you know why the colon (:) is the only character you're not allowed to use when you name a file. Can you imagine how confused the Mac would become?

The Get Info box, too, is the home of the Comments field. After a decade of avoiding this handy note-recording spot (because rebuilding the desktop *erased* all such comments), Mac fans slowly began making some use of this box when the erasing problem went away in System 7.5.3. These days, the most widespread use of this box is by Netscape Navigator, which — when you save a file or page from the World Wide Web onto your hard drive — thoughtfully records the original URL (Web address) in this box.

OS 8

If you choose Get Info after selecting a disk under Mac OS 8.1 or later, by the way, a line called *Format* appears in the Get Info window. This tells you if the selected disk was formatted using Apple's old Hierarchical File System (Mac OS Standard format) or the newer, more space-efficient HFS+ (Mac OS Extended Format). See Chapter 8 for an explanation of these disk formats and how they affect you.

OS 8.5

A reworked Get Info window debuted with Mac OS 8.5. For the first time, a pop-up menu now appears that lets you select one, two, or three different panels of information (see Figure 2-4).

■ The **General Information** screen is the Get Info window we've always known and loved — except now it lets you change the icon's name and label color, right in this dialog box. This panel is the *only* panel available for document icons (as opposed to application or folder/disk icons).
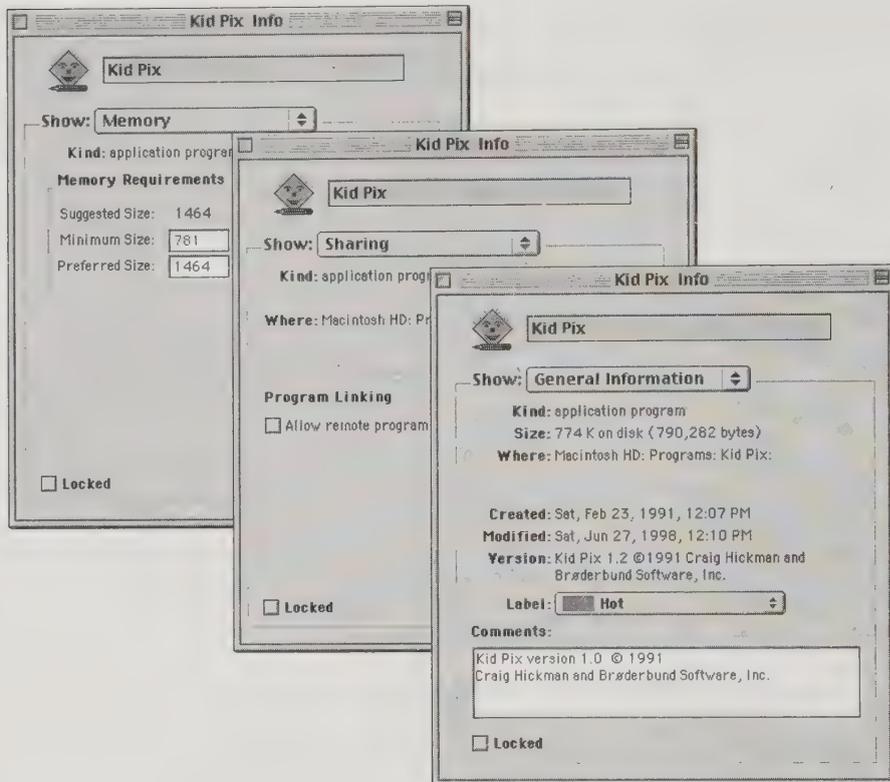
Figure 2-4: The Get Info window, as it appears in Mac OS 8.5. The pop-up menu at the top lets you switch among three different views: General, Sharing, and (for applications) Memory.

- The **Sharing** panel is the equivalent of the dialog box that came up, in previous system software versions, when you highlighted a disk or folder icon and chose File ⇨ Sharing. This choice appears only when you're getting info for folders, disks, and applications. See Chapter 35 for more on setting up file-sharing preferences for each folder. That chapter, too, explains the utter uselessness of Program Linking (see Figure 2-4) — the sole choice here if you've used the Get Info command on an *application*.

- The **Memory** panel is available only for applications. It contains nothing but the three memory-size boxes described in Chapter 9, where you can adjust how much RAM this program uses when it launches.

Strange But True It's interesting to note, by the way, that most of the File menu's commands are still available when the Get Info box is open. That is, with the Get Info box on the screen, you can still move the icon in question to the Trash, give it a new label, duplicate it, add it to your Favorites folder, and so on.

Label

(OS 8) The Finder's Label menu keeps being demoted. In System 7.6 and earlier, Label was its own menu, sitting proudly on the Finder's menu bar between the View and Special menus. But under Mac OS 8, Label is a just a humble submenu down in the File menu. And the software used to change the colors and names of your labels, which used to merit its own control panel (called Labels, of course), became first a mere Edit ⇨ Preferences setting (in Mac OS 8) and then just a *tab* of that box (in Mac OS 8.5).

But Labels' functions haven't changed. You still use labels to classify your folders, files, and disks by color-coding their icons and tagging them with text labels of up to 31 characters each. (Text labels show up only in list views.)

Seven label categories already are set for you when you install your system software — the classic Essential, Hot, In Progress, and so on. You redefine these categories by choosing Edit ⇨ Preferences (Mac OS 8) or via the Labels control panel (System 7.x), as shown in Figure 2-5.
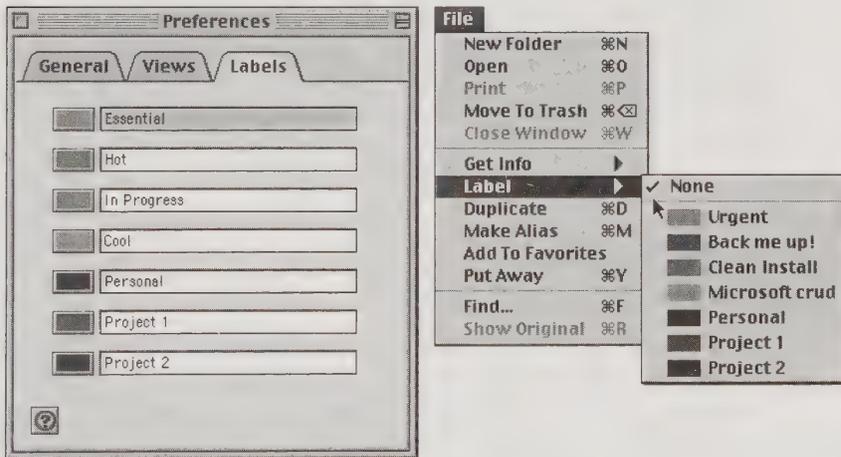
Figure 2-5: Choose Edit ⇨ Preferences (or, on earlier systems, open the Labels control panel) to define your seven labels, which will then appear in the Label submenu.

To apply a label, select its icon (or a whole group of them), and then choose one of the labels from the Labels menu (System 7.x) or the File ⇨ Label command (Mac OS 8.x).

Finding and sorting by label

After you've applied labels to your icons, you can use the labels to sort file lists and search for items:

- *To sort a list of files by label:* If you're in any list view, just click the *word* Label at the top of the window; the files rearrange themselves by label. The Mac "alphabetizes" the files according to the order in which their labels appear in the Label menu. And if you don't *see* the word Label at the top of the window, choose View ➪ View Options (or open your System 7.x Views control panel) and turn the Labels column back on.

- *To search for a file by label:* Choose File ➪ Find. Choose "label" from the first pop-up menu. (If you have a system older than 7.5, click the More Choices button.) When you search by label, the field to the far right becomes a pop-up menu that lets you choose from among the seven label categories (see Figure 2-6).
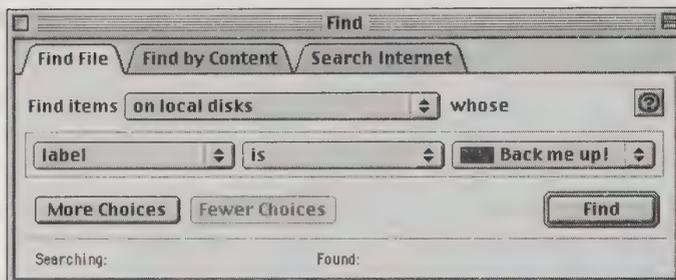
Figure 2-6: You can search for files by labels using the Find command.

More on labels

A few more Label points:

- Even though you can't see text labels when you're viewing a window's contents by icon, you can still apply them to the files and folders.

- If you still have a black-and-white monitor (the three of you know who you are), and you're in Icon view, you may think that there's no way to know what label you've given a certain icon (because you can see neither color nor its text label). Actually, it's easy. Select the icon and pull down the Label menu — a check mark appears next to the icon's label.

- Ever wonder what the Label menu would show if you highlighted two icons that have different labels? Would there be *two* check marks in the Label menu? Would there be no check marks?

  Turns out that if the selected icons have different labels, you get little hyphens in the Label menu (next to all the appropriate items).

- When you make an alias of a labeled item, the alias inherits the original's label. However, you can remove or change the label of one without affecting the other.

Are labels useless?

If the Label menu seems like a useless appendage hanging over your Desktop, we have a few suggestions:

- Use Labels as an aid to backing up your work. Make a label called *Backup*. As you go through your workweek, apply this label to each new document you create or each file you modify. At the end of the week, use your Find File command to round up all the files with the label, and back them en masse.

- Use the Label menu in conjunction with the world's best troubleshooting trick, the *clean reinstall* (described in Chapter 36). Immediately after installing a fresh System folder, assign a certain label to everything in your System folder.

  For the keystroke nut, here's the sequence: ⌘-A (to highlight all items in the System folder window), ⌘-Option-right-arrow key (to expand all the "flippy folder triangles"), ⌘-A (to highlight all of the newly revealed *contents* of the expanded flippy-triangle folders). Then apply the label you want. Finally, press ⌘-Option-right-arrow to collapse all the expanded folders.

  Thereafter, a quick glance into those folders immediately tells you which junk originally came with the system, and which has been deposited there by, for example, little shareware doodads you downloaded from the Net. (The latter, of course, will have no label at all.)

  This procedure has two benefits. First, it makes cleaning up easy — at a glance, you can see all the leftover detritus that should be removed from your System folder. Second, when you do another clean reinstall later, you can spot at a glance all the stuff you've added (control panels, extensions, and so on) that you do want to retain.

  If you adopt this secret, consider this final spin: open your Labels control panel and change the label you're giving your freshly installed components. Make the new name "Clean install 3/99," or something equally informative, so you'll know when those components were added.

  For added purity, change the color of this label to white, so you don't tint Apple's beautifully designed icons in the process.

- Dennis Cohen, our technical editor, reports that one of his former coworkers uses Labels as part of a clever backup and workflow strategy. This fellow drags folders of documents in progress onto an AppleScript applet's icon (see Chapter 22) that changes the label of anything modified that day to red (after backing it up). Another applet later transmits all the "red" documents to the next person in the company who needs to deal with them.

CD Best idea of all! Install Label Secrets Pro, the handy control panel written exclusively for this book. Drop it into your System Folder. Every day, when you turn on the Mac, the Label menu shows you a new Macintosh Secret. It's like a word-a-day calendar — but much more useful! (See Figure 2-7, and see Appendix A for instructions on how to use Label Secrets Pro.)

File

New Folder	⌘N
Open	⌘O
Print	⌘P
Move To Trash	⌘⌫
Close Window	⌘W
Get Info	▶
Label	▶
Duplicate	⌘D
Make Alias	⌘M
Add To Favorites	
Put Away	⌘Y
Find...	⌘F
Show Original	⌘R
Page Setup...	
Print Desktop...	

✓ None

WELCOME TO LABEL SECRETS!
Every time you turn on your
Mac, your Label menu will show
you a new Macintosh tip or
technique...every day for a year!
(TO RESTORE YOUR LABELS: open
Label Secrets & turn it off.)

Figure 2-7: Label Secrets Pro is a year's worth of handy tricks and tips for the Mac. And it's yours free!

Sharing

We've got an entire chapter devoted to this little gem — Chapter 35.

Make Alias

We have quite a bit to say on this topic, too, but it's in Chapter 1.

Add to Favorites

OS 8.5

Here it is: the Mac OS 8.5-and-later command that quickly and efficiently creates aliases of any highlighted icons; stashes the aliases in a System Folder folder called Favorites; and therefore makes those icons' names appear in the menu's Favorites command, described earlier in this chapter. You can also access your favorites from within the new Open File and Save File dialog boxes (see Chapter 15), and in the Network Browser (see Chapter 3).

At first, this mechanism seems a tad redundant — we've already got the menu and the Launcher; how many more ways do we need to choose favorite icons? And yet the Favorites scheme is much quicker than the menu method (quicker to add icons, quicker to remove them), and much less obtrusive than the Launcher (which some Mac users feel is too kid-oriented).

Frankly, we're also rather nuts about the elegance of the setup. The Favorites folder itself is loose in your System Folder, not buried within some other folder. So how can it show up in your menu? Easy — there's an alias of the Favorites folder in your Apple Menu Items folder (in the System Folder)!

Put Away

We *love* this command. We use it on everything! Disks, files, trash — the Put Away command works housekeeping magic.

Mac Basics

Put Away neatly refiles any icon that's sitting out on your Desktop into the original folder from whence it came, no matter how deeply buried. Put Away is, therefore, a great trick to use after you've put a bunch of icons on the Desktop that live on *different* disks (for copying or trashing all at once, for example). Put Away makes them leap back into their original disk and folder locations.

Put Away is also great to use on icons that you tried to copy by dragging to another disk icon — and just missed, leaving the icon sitting there on the Desktop right next to the disk icon (or the Trash icon). It's also great if you *succeeded* in dragging an icon to the Trash, something you'd now like to recover. Open the Trash window, select the icons you put there, and choose Put Away. They hurl themselves back into their original folders.

If you're running System 7.x, the best part of Put Away is that its keyboard shortcut, ⌘-Y, is the only way to eject a floppy disk without touching the mouse. (And don't talk to us about the Special ⇨ Eject Disk command — sure, it pops the disk out, but the disk's *ghost* icon remains on the screen. Eject Disk simply ejects the disk; Put Away actually *unmounts* it, to use the technical terminology.)

In fact, the only downside to Put Away is that it doesn't know what to do with icons it thinks were *created* on the Desktop. (These icons could be files that you saved onto the Desktop from within a program, for example.) The Put Away command gives you a message saying that they were "created on the Desktop."

Find

Despite its name, the Finder hasn't always been very good at finding things. In System 6, you got a mere desk accessory in the menu that could only *tell* you (not show you) the location of your missing file. In System 7, there was a Find command in the File menu. And in System 7.5 and later, the Find command launches a Find *program*.

CD

If you have System 7.5 or later (especially Mac OS 8.5 or later), see the "Find File" section in Chapter 3 for an amazing array of searching secrets. If you have some flavor of System 7 or 7.1, though, see our "System 7.0–7.1 Find Command Secrets." They're in Chapter 2 of the electronic *Macworld Mac Secrets, 4th Edition* (on the CD-ROM that came with this book).

The Edit Menu

What is there to edit in the Finder, you ask? Plenty, as it turns out.

Undo

Interestingly, Undo almost never does anything useful in the Finder. It doesn't work after you move an icon, empty the Trash, rename an icon, change a setting, apply a label, or enlarge a window. And it *certainly* doesn't work after you eject a disk.

Strange But True

What's especially strange is that Undo rarely works even when you cut, copy, clear, or paste things (to or from the Scrapbook, for example), even though (a) the command isn't dimmed, as it's supposed to be when unavailable, and (b) it *should* work to undo Edit menu commands. Well, no one ever accused Apple of being consistent.

Anyway, the Undo command in the Finder exists today for just one reason: to help you when you're editing a file's name. The Undo command can take back your last text editing.

Cut, Copy, Paste, Clear

It may not occur to you to use the Cut, Copy, Paste, and Clear commands in the Finder, where there's no text or graphics, really, with which to work. But these commands do work in a surprising number of different Finder contexts.

■ Click an icon. The Copy command grabs the icon's name and puts it on the Clipboard. If you press Return so that the icon's renaming rectangle appears, the other Edit commands work, too.

■ Select a group of icons. The Copy command, believe it or not, grabs *all* the icons' names (limited to 255 characters before Mac OS 8). Here's a handy trick: Open a word processor and paste. You've just made yourself a list of a folder's contents.

■ In the Get Info box for an icon, click the icon. The Cut, Copy, Paste, and Clear commands now apply to the icon graphic.

■ Open the Scrapbook. The Edit commands work to transfer pictures, sounds, QuickTime movie clips, or text in or out.

■ Open the Puzzle or Jigsaw Puzzle desk accessory. The Edit commands copy and paste graphics into the puzzle itself (see Chapter 3). The same thing works with the Map control panel.

■ Open a *text clipping* or *picture clipping*, as described in Chapter 1. The Copy command works on the entire graphic or text blob; switch to another program to paste it.

Show Clipboard

Show Clipboard opens a window that displays whatever text, sound, or graphics you most recently copied from any program. For example, if you Show Clipboard after copying a sound from the Scrapbook, you see a solitary button that says Play Sound, which does what you'd think.

The Clipboard isn't terribly bright about QuickTime movie clips, however. It shows only the first image of the movie (and identifies that Scrapbook item as a "picture"). Still, if there *is* a movie on the Clipboard, it's still genuinely a movie, and you can paste it anywhere fine movies are pasted—into a Word document, Scrapbook, Movie Player (see Chapter 23), or whatever.

Preferences

(OS 8) No Preferences command appeared in the Finder until Mac OS 8—but to us, it makes a lot of sense. This is the command center for adjusting a few global Finder settings (see Figure 2-8):

- **Font for views:** It's the feature on a quest for home! In System 7.x, the Views control panel lets you specify a font for all your icon names and list-view information. (See "Views" in Chapter 4.) In Mac OS 8, it's here. In Mac OS 8.5, it's in the Appearance control panel.

  Whatever. We think you could probably count on one hand the people who use anything other than Geneva.

- **Simple Finder:** This option offers simplicity for the novice or the very young. It eliminates many of the commands and features in the Finder you'd need a book like this one to explain: aliases, labels, Move to Trash, printing commands, clean-up and arranging commands, view options, sleep and restart, and erase disk (thank goodness!). It also eliminates all keyboard shortcuts—that's right, even ⌘-W to close a window. Set your windows to button view, switch to Simple Finder, and you've practically got yourself Apple's At Ease program without actually having to buy or install it.

  Your cheerful authors would go quietly mad trying to work in this view. But many's the time we ached for exactly such a setup on behalf of one of our clients, parents, or offspring.

- **Spring-loaded folders:** See "Spring-loaded folders" in Chapter 1 for details—and for our advice on adjusting this responsiveness slider.

- **Grid spacing:** In the next section, and elsewhere in this book, you'll read a lot about the imaginary grid that lurks invisibly behind the icons in any Finder window. Use this command to adjust its spacing. (Hint: You want it set to Tight. Really you do.)

- **Labels:** See "The File menu" in Chapter 1.

(OS 8.5) The Preferences command was such a hit that it grew. In Mac OS 8.5, in fact, the Preferences dialog box has multiple tabs that open multiple panes. The General and Labels panes contain the options we've just described. The new central tab, Views (see Figure 2-8), lets you set up default options for each kind of window view: icon, button, and list—a response to the Mac fans who cried foul when Apple made these options window-specific instead of global. From now on, whenever you create a new folder, it will automatically take on the view characteristics you specify in this Preferences dialog box.
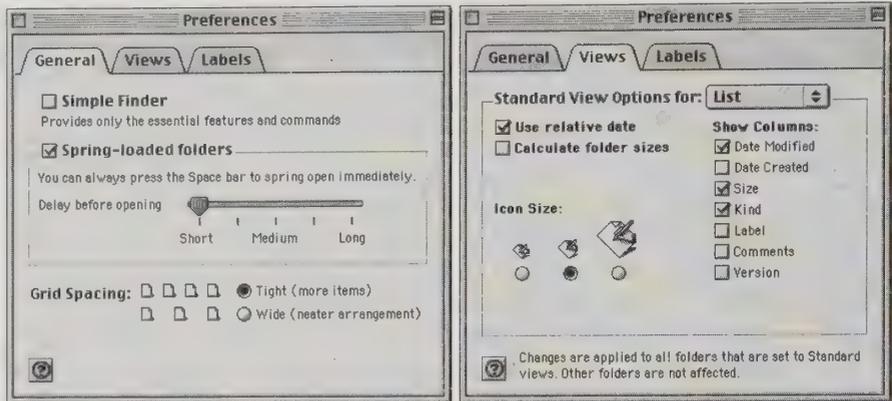
Figure 2-8: In Mac OS 8.5, the Preferences dialog box has three panes. Use the middle one (right) to specify global list-, button-, or icon-view settings for all new windows to come.

The View Menu

The commands in the View menu control how your files and folders are listed — as icons, in a list, as buttons, how they're sorted, and so on. The only truly befuddling characteristic of these options is the way they changed between System 7.x and Mac OS 8.

Before Mac OS 8, there were two different categories of View menu options — window-specific ones and global ones. For example, even in System 7, you can decide whether you want your icons listed as normal icons, small icons, or in a tidy list. But certain other options, such as the status of the "Calculate folder sizes" setting, which info columns you want in list views, and the size of the icons you want to see in list views, are global in System 7.x.

Mac OS 8 changed the whole ballgame. Now *all* of those characteristics can be set on individual, window-by-window basis. Some people appreciate the flexibility of being able to set these aspects of every window independently — especially those of us who couldn't stand the way System 7.x's "Calculate folder sizes" slows down the entire Macintosh, even when we only wanted to see how big the folders were in one window.

Other people, however, were frustrated by Mac OS 8, assuming that the only way to change make all windows display the same way was to set them up one at a time, window by window. (Obviously, they hadn't read our secrets in Chapter 1 about setting the options for groups of windows simultaneously — or upgraded to Mac OS 8.5, which lets you set up your preferred characteristics for each of the three primary window views: icons, lists, and buttons.)

Secrets of the Mac OS 8 Color Picker

As we mentioned in Chapter 1, in a quest for operating-system stability, Apple decreed that there were to be no more unauthorized Easter eggs; only fully tested and debugged ones.

This new policy explains why so many of the Easter eggs described in previous editions of *Mac Secrets* no longer work in Mac OS 8. Still, this newer operating system has a few officially approved tricks of its own. Most of them, for some reason, revolve around the Color Picker — the dialog box that appears when you choose Edit ⇨ Preferences ⇨ Label, and click a label color. (But first a warning: These Easter eggs disappeared in Mac OS 8.1 and later, lost to that great Easter egg carton in the sky.)

The icons at the left side of the Color Picker let you choose from among several different color-selection schemes. If you click the Crayon Picker, you see a picture of a box of Crayolas. You can click each crayon to see its color name: "Chalk," "Tangerine," "Warm Marble," and so on. (Some interior decorator in Cupertino had a *field* day naming these crayons.) In fact, you can even *Option*-click things, inside or outside of the dialog box, to choose the color you want. Each time, you'll be told Apple's name for the color you just

clicked, even when it gets ridiculous: "Melon-ish" and "Cactus-ish" made us giggle, for example.

And now — on to the Easter egg, a discovery of free book winner Dave Gammage. Click a different icon on the left side of the window, and now Shift-click the Crayon Picker icon again.

You get the box of crayons, all right. But *this* time, if you click the various crayon tips, you'll see the programmers' names, one per crayon. Some of the crayons just say "Color Picker 2.1" (or whatever the version number is); but others offer more intriguing anagrammatic labels, such as "Yes, I Surf Ohio" and "Night Thigh Desire."

But there's more. Look closely at the black crayon. Look at the tips of the other crayons. Incredible as it may seem, beginning January 2, 1998, a funny thing started happening to the crayons in the Crayon Picker: *their tips started wearing down!*

The scary thing is that as time goes by, more and more crayons wear down. If you zoom the clock ahead, to, say, 2004, nearly every other crayon is worn down. Zoom ahead 10 more years, and hey, it's time for a fresh box of crayons.

Or a new computer, anyway.

as Icons, as Buttons, as List

These three commands have always been window-specific (although the button view made its debut in Mac OS 8; see "The Point of Views: Lists, Icons, and Buttons" in Chapter 1). Keep in mind that in Mac OS 8.x, you don't necessarily have to use the View menu to switch from one of these views to another — just Control-click anywhere inside a window, and use the resulting contextual menu to specify a different view.

as Window, as Pop-up Window

(OS 8) The View menu grew longer by two commands when Mac OS 8 debuted. Apple needed to create a way for us to switch between the traditional window view — in which the window is a rectangle, floating detached in the middle of the screen — and the new pop-up window format, in which the window is a tab hugging the bottom edge of the screen (see "Mac OS 8 window stunts" in Chapter 1). These two commands are the result. Once again, though, you don't necessarily need the View menu to change a window between these options — a Control-click inside the window itself brings up a pop-up menu containing these same commands.

Clean Up, Arrange (Mac OS 8.x)

(OS 8) Frankly, we were delighted to see the Clean Up command move to the View menu in Mac OS 8, where it should have been all along. After all, it clearly pertains to the arrangement of icons within a window, just like the rest of the View menu. Whenever possessed Apple to put it in the Special menu originally, we can't say. (See "The Special Menu" later in this chapter for tricks involving that older Clean Up command.)

Anyway, Clean Up affects only the highlighted icons in an icon-view window. It nudges each into alignment with the invisible icon grid that underlies every icon-view window. Unfortunately, it does little more than move every icon to the closest available grid position; if there are enormous gaps between icons, the enormous gaps remain (see Figure 2-9).
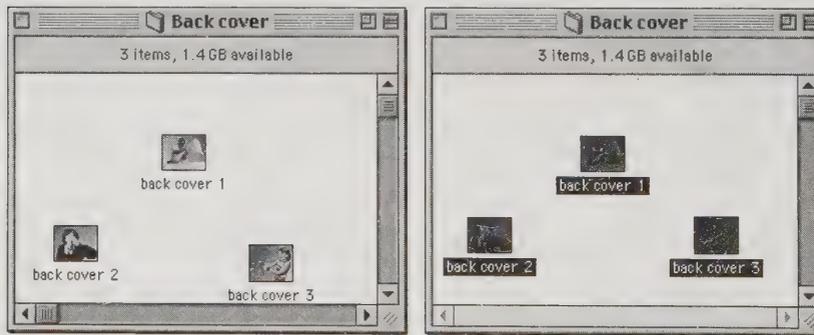
Figure 2-9: Some messy icons before (left) and after (right) the Clean Up command. Ooh, big improvement, right?

If genuine cleanup is your goal, eschew the Clean Up command altogether. Instead, use the Arrange command. Its various subcommands (by name, by date, and so on) not only make your icons snap to the invisible grid, but also sort them *and* close up gaps between them (see Figure 2-10).
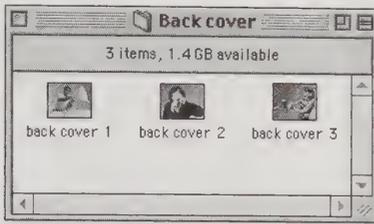
Figure 2-10: The same window (from Figure 2-9), but this time arranged with the Arrange command.

Reset Column Positions

One delightful new feature in Mac OS 8.5 is the ability to rearrange the columns in list views (see "Columns: Skinnier, wider, or rearranged" in Chapter 1). You can also adjust the columns' widths — independently in every window — just by dragging the column dividers. In general, you can only improve your Mac's use of space and clarity of display by making these adjustments to suit your taste.

In the event you screw up your columns beyond recognition, however, just choose View ➪ Reset Column Positions. Your list view snaps back to its original, Apple factory-fresh condition.

View Options

This command, new to Mac OS 8, brings up a dialog box that lets you establish settings for whatever window is open at the moment. And if no window is open, the View Options affects the desktop itself.

The key to understanding the View Options dialog box is that it comes in three different flavors, depending on the view (icon, list, or button) you've selected for this window, folder, or desktop. Figure 2-11 shows the dialog boxes that may appear.

The options are as follows:

- **Icon arrangement:** Three choices await you here. "None" is what you're used to: icons lie where they lie, and you can drag them anywhere you like. "Always snap to grid" means that every icon, when dragged, jumps into the closest available underlying grid position (unless you press the ⌘ key as you drag). And if you're a real neat freak, you can specify "Keep arranged" — the Mac will align your icons in a grid, sort them, and keep them that way even if you add or remove icons to the window (or resize the window). Think of this option as a "clean up continuously" command.
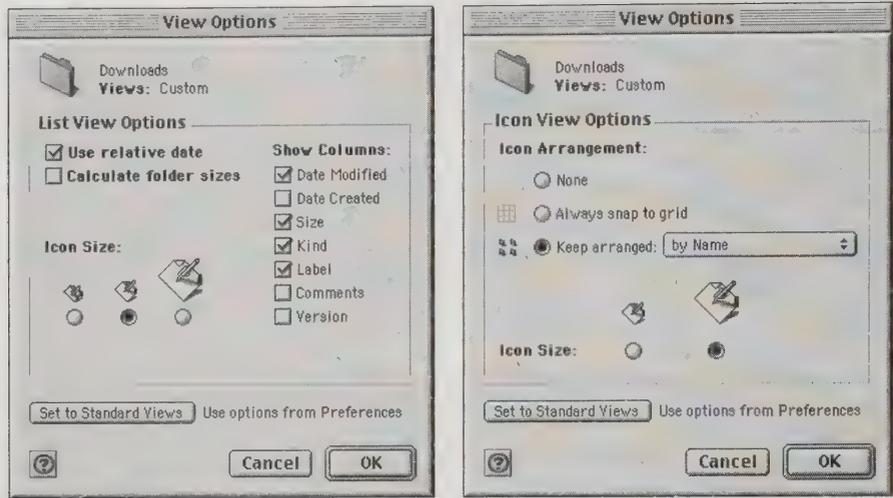
Figure 2-11: The Button and Icon view options are identical (right); the List view options are very different.

- **Use relative date:** No, this doesn't mean you're going out with one of your parents. It means that in list views, if a file's modification date was today, yesterday, or even tomorrow (see "List, Icon, and Button View Secrets" in Chapter 1), you won't see a date listed—you'll see instead the *word* Today, Yesterday, or Tomorrow. Like all of these options, this one applies only to the window that was open at the moment you chose View ➪ View Options.

- **Calculate folder sizes:** See "Views" in Chapter 4, but ignore our warning that this option slows down the Macintosh. In Mac OS 8 and later, this option affects only the specific window you had open—not the entire Macintosh.

- **Show columns:** Turn on the checkboxes of the information columns you'd like to see in this window's list view. Again, see "Views" in Chapter 4.

- **Set Standard Views:** The Edit ➪ Preferences command lets you set up default view options for each of the three view types—icon, button, and list. If the Set Standard Views button here is dimmed, your current window's options match that default. (You can confirm this by looking at the top of the window, where it says either "Views: Standard" or "Views: Custom.")

  But if the button is available, then you've *changed* this window's settings. Click Set Standard Views to make it match the preferences you've set up with the Edit ➪ Preferences command.

The Special Menu

Here it is: the only non-verb Finder menu title. Special, in this case, means *miscellaneous.*

Eject Disk

OS 8

It took 14 years for Apple to get this command right. As of Mac OS 8, this command (or its equivalent, ⌘-E) ejects a highlighted disk or CD icon, no questions asked.

In systems before Mac OS 8, though, this command ejects your disk but *leaves* its image on the screen. Therefore, the Mac believes the disk is still around. At the least provocation — clicking the ghosted icon, for example — the computer asks you to give the disk back. This, need we add, is a royal pain if you've already put the disk back in its box on a shelf somewhere. The solution is to use instead the File menu's Put Away command (⌘-Y) to eject disks.

Why on earth did Eject Disk work that way for so many years? It was designed in the era of Macs that had no hard drives. The Eject Disk command was the only way to copy files from one floppy to another — you'd drag the contents of one floppy onto the *ghost* of another, and then you'd swap the disks in and out as the Mac requested them.

Speed Tip

Even today, there's one occasion when it's useful to use the ghost-eject method (which, by the way, is still available in Mac OS 8 and later — hold down the Option key as you choose Special ⇨ Eject and Leave Behind). If you insert a floppy disk that you discover was *locked*, and you need to copy stuff onto it, use the ghost-eject command. When the disk pops out, unlock it and stick it right back in. This routine is faster than using the Put Away command (or the Mac OS 8 Eject Disk command) and reinserting the disk.

Erase Disk

We have a couple of little-known morsels concerning this command; see Chapter 8.

Clean Up (System 7.x)

As we noted earlier in the chapter, the Clean Up command, as of Mac OS 8, has moved to new digs (in the View menu). If yours is in the Special menu, you've got System 7 — and you've got about a thousand variants from which to choose. Here's the complete list.

Clean Up Secrets (System 7.x) ——————————————■

Clean up only selected icons

When you view icons in a window, the command says Clean Up Window. It adjusts the position of *all* icons so that they're aligned to the nearest spot on an invisible grid.

If you press Shift, however, the command says Clean Up Selection. It makes only the *highlighted* icons snap to the invisible grid (see Figure 2-12).
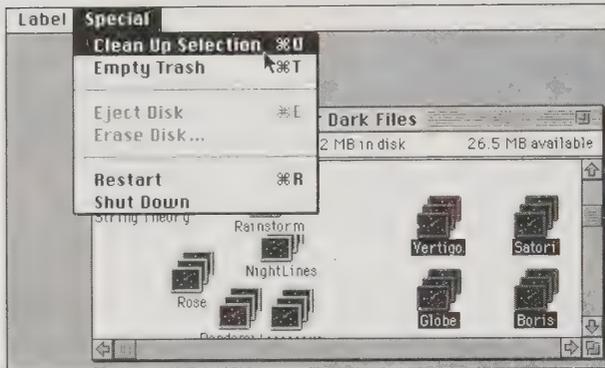
Figure 2-12: The Clean Up command is a many-splendored thing. Press Shift to make it affect only the highlighted icons.

Sort and neaten simultaneously

This is a *really* useful secret. If you press Option, the command says Clean Up by Name (or Size, or Date, and so on). Get this: The sorting method is determined by the sort method you used the last time the window was displayed in a *list view*.

The command makes icons snap to a grid, just as the normal Clean Up command does. However, instead of moving each icon to the *nearest* grid position (and leaving gaps), this command places them neatly, one after another, in sequential rows at the upper-left corner of the window. If you're viewing by Small Icon view, your files fall neatly into *columns.*

Here's an example. Suppose that you want the icons in a window arranged in size order, largest files first. Choose "by Size" from the View menu, and then choose "by Icon" from the same menu. Hold down Option and choose Special ⇨ Clean Up by Size — the deed is done.

Hint: Because this special version of Clean Up puts icons side by side in rows (or small icons in columns) so that they precisely fill up the window they're in, be sure to adjust the window *before* using this command so that it's the shape you want.

Clean up icons on the Desktop

Oft-neglected factoid: You can also clean up your *Desktop* icons. First, select the Desktop, either by clicking there or by pressing ⌘-Shift-up arrow. Then, while pressing Option, choose Special ⇨ Clean Up All. The Finder instantly arranges all those loose Desktop icons along the right side of your screen.

The Help Menu

The Help menu (sometimes known as the Guide menu), of course, is the little question-mark icon near the top right of the screen. (In System 7.5, people said: "It's a question mark!" "It's a light bulb!" "It's a question mark *and* a light bulb!" In Mac OS 8, Apple ended the confusion by replacing the light bulb/question-mark icon with the unmistakable word Help.)

This menu either has zero or three functions, depending on which program and system software you're using: Balloon Help, Macintosh Guide, Mac OS Help, and generic Help for that program.

Balloon Help

You probably already know how Balloon Help works; if not, Figure 2-13 should explain all.
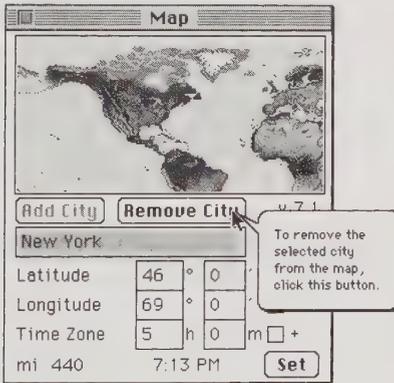
Figure 2-13: Choose Show Balloons from the Help menu. Balloons appear wherever you point. You can find some pretty hilarious secret messages if you poke around your System folder long enough with Balloon Help on. For the complete list of Balloon-Help Easter eggs, see David Pogue's *The Great Macintosh Easter Egg Hunt* (Berkley Books, 1997). For now, however, try pointing to the QuickTime extension; CloseView control panel; the QuarkXPress icon; MacsBug; and the Speech Setup control panel's version number.

We've heard conflicting reactions to Balloon Help. Some people think it's the dumbest thing alive. Others think it's genuinely helpful. Your cheerful authors kind of like it, having been seriously helped out by using it in a couple of user-hostile programs.

In any case, whether or not balloons appear when *you* try Balloon Help depends entirely on what program you're using — and whether or not its software company bothered to write all the little pop-up messages. You *always* get balloons that identify standard Macintosh elements (such as

scroll bars, zoom boxes, icons, and so on). Apple did that much for you. (Likewise, Apple created balloons for most of the system software: the desk accessories, control panels, SimpleText, the Finder, and so on.)

Anyway, you can certainly live a rich and rewarding life even if you leave Balloon Help off all the time.

Apple Guide

If programmers thought writing Balloon Help was tedious, they couldn't have imagined what Apple had in store next: Apple Guide (also called Macintosh Guide), which made its debut in System 7.5.

Imagine choosing from an index of tasks that you may want to accomplish: changing the Desktop pattern, let's say. Now imagine that the computer *shows* you how to do what you've requested, step by step, using a ghostly red magic-marker pen to circle where you should click next. (The animated magic marker creates what Apple calls *coach marks,* named after the annotations football coaches make on the locker-room blackboard.)

That's Apple Guide. It requires enormous support files to lie in your System Folder. But for the beginner who's lucky enough to find the desired task in the list — and who's smart enough to *think* of choosing Apple Guide from the menu when stumped — it's made in heaven (see Figure 2-14).

CASE HISTORY

How many balloons?

One of your cheerful authors was once contracted to write Balloon Help for a program. He'd like to share with you one of the reasons some programmers opt not to write Balloon Help for their programs. Take a look at the following figure:

This is BalloonWriter: a very, very buggy program, at one time distributed by Apple for programmers to write Balloon Help.

As you can see, you can't just write one balloon for each menu command or dialog box item. As shown in the figure, you actually have to write up to *four* balloons for each item! The text is supposed to change, depending on whether a menu command (for example) is checked, dimmed, or both. As you can imagine, this means that some poor slob has to compose up to *four* balloons for every knob, slider, and button in a program. It's *work.*
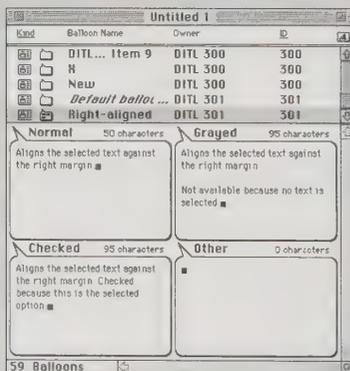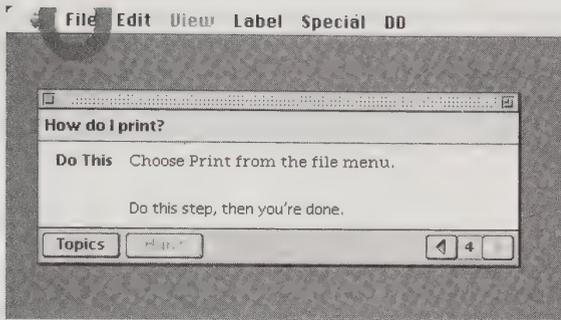
Figure 2-14: Apple Guide is like an intelligent manual. First, you choose Macintosh Guide from the new, enhanced Guide menu. You choose from a list of "How do I . . .?" questions. Next, you read the step-by-step instructions in the Help window that appears. The bright red, fat magic-markerish, ghost-drawn pen (called the Coach) draws your eye to the interface element being described.

Once again, though, the trouble with Apple Guide is its limited acceptance by the world of software companies. Few bothered to *write* the screens and draw the graphics that would drive Apple Guide for their programs. (Quicken, WordPerfect, and BBEdit are some exceptions.) Even most Apple and Claris programs don't have Guide files, although sometimes you'll see a program's regularly scheduled Help feature listed in the Guide menu.

Mac OS 8.5 Help

After the Apple Guide debacle — a case of Apple being unable to persuade software companies to write help files in the special (and Macintosh-only) Apple Guide format — Apple revisited the help mechanism yet again with Mac OS 8.5 (see Figure 2-15).

This time, we feel confident that more software companies will take the bait — because the new OS's file format is *Web-page* format, or HTML (see Chapter 28). In other words, it's a piece of cake for the companies that write Mac software to adapt their existing paper manual or even Windows help files into Mac OS 8.5 format — they essentially create a bunch of Web pages using any of the dozens of Web-page-making programs on the market.

Using the HTML format is a helpful help-file format for several other reasons, too. It can incorporate illustrations, links to other topics, movies, and sounds. It's easy to update. And if you, the Mac fan, know where the HTML files are stashed (hint: inside the System Folder in a folder called Help), you can open them with *any* Web browser, instead of using the Help Viewer that comes with the OS. (Why would you want to do that? In case you wanted to copy some of the help text, for example, which you can't do with the Apple Help Viewer.)

MACINTOSH SECRET

Nobody really has to search for Bill

Apple Guide has plenty of topics for which to search. But sometimes the cross-references are the *darnedest* things.

For example, open Macintosh Guide. Click the Look For icon, as shown at right. And then search for — get this — *Bill Gates*.

Apple Guide does the best it can at showing you the list of Bill Gates–related topics it knows about: DOS, Windows disks, and so on.

We're guessing that searching for *Steve Jobs* on a Windows machine doesn't yield anything nearly as fruitful.
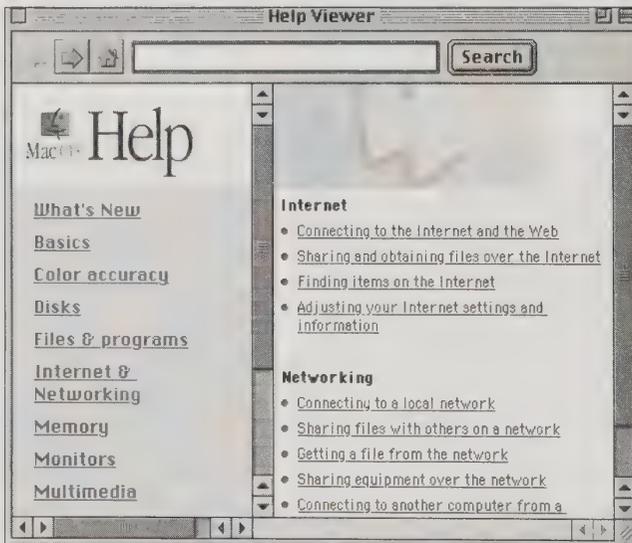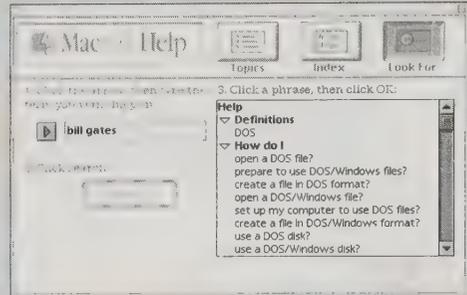
Figure 2-15: Starting in Mac OS 8.5, you read your software's help in a miniature Web browser.

Time will tell, but we'd be willing to bet plenty of software companies will embrace this new help mechanism. And that, in turn, will be a big help.

The Keyboard/International Menu

We doubt that you've been wondering about this menu, because you probably have never even seen it. When it does appear, it's at the right side of your menu bar, just to the left of the Application menu (see Figure 2-16).

Figure 2-16: The menu no one knows.

The idea is that this menu lists several different keyboard *script systems* or *keyboard layouts*. A script system is a set of files, purchased as a WorldScript kit, that describes how a particular language should work on the Mac: Does the typing appear right-to-left? What do the letters look like? And so on. A keyboard layout specifies what character appears on the screen when you press a certain key — a relationship that varies by language.

By choosing a command from this menu, you switch your entire keyboard to a different language system or keyboard layout.

TRUE FACT

The homeless Help menu

If you're a Mac OS 8 fan, you may have wondered why Apple (a) changed the Guide logo (the question-mark) to the word Help, and (b) moved it from the rightmost end of the menu bar to the right end of the *other menus*.

The answer: In conducting focus-group studies, Apple noticed that nobody ever bothered using the online help — because nobody knew it was there. "What about this thing here?" the coordinator would say. "What about it?" the testers would shrug. "Isn't that part of the clock?"

With horror, Apple's designers realized that since the Guide logo was immediately to the left of the menu-bar clock, Mac novices thought it was some kind of graphic icon associated with the time display!

In the beta version of Mac OS 8, then, Apple got smart. They changed the menu from an icon to a word — the word Help. Back they went to the focus groups.

Unfortunately, the testers still didn't use it. Now they thought that command would get them help *with the clock.*

That's when Apple decided to move the Help menu all the way to the left.

So how do you make this elusive menu appear? Easy: Open the Keyboard control panel (see "Keyboard" in Chapter 4). Turn on the checkboxes of *more than one* keyboard layout, and voila — your keyboard menu has appeared. (The menu also appears if you install a WorldScript kit.)

CD

As you'll learn in Chapter 21, by using ResEdit, it's simple to design your *own* keyboard layouts. That's of great consequence if you decide to try the famous Dvorak keyboard layout (included on the CD-ROM with this book) — an arrangement of keys that's far more logically and efficiently designed (for fast, efficient, error-free typing) than the standard "QWERTY" layout. Drop the Dvorak layout onto your System Folder to install it; and use the Keyboard menu to switch between the old and new layouts whenever you wish.

Contextual Menus

OS 8

Mac OS 8 introduced a great feature and found a use for the previously irrelevant Control key, all in one fell swoop. The feature: pop-up, contextual, Control-key menus.

To trigger one, hold down the Control key. While it's down, point to something — an icon, folder, disk, Trash — or nothing (the desktop, the inside of a window) and hold down the mouse button. At the tip of your cursor, a pop-up menu appears, listing commands that pertain only to the object you're clicking. (That's what *contextual* means.) Figure 2-17 shows a few of the possibilities.
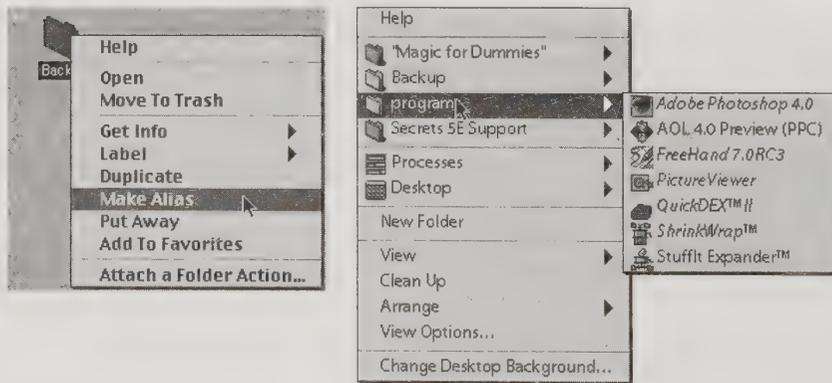
Figure 2-17: The commands in the pop-up menu vary depending on what you're clicking (left). If you're inspired, you can even get free programs like FinderPop that add even more useful commands (right).

Apple didn't invent this handy time-saver, but it did implement it beautifully – and popularize it. Nowadays, you can Control-click to get cursor-tip menus in dozens of programs, such as Netscape Navigator, Internet Explorer, Photoshop, Emailer, America Online 4, and — especially — Word 98.

And because Apple designed this feature to be expandable, the Mac OS 8.x System folder contains a Contextual Menu Items *folder,* into which you can put add-on modules designed by, for example, shareware programmers. Figure 2-17 shows some of the usual commands added by FinderPop, for example, which is included with this book's CD-ROM. Among other things, FinderPop lets you:

- see what's inside a folder by Control-clicking it

- change the font used for contextual menus everywhere

- switch to another program without having to use the Application menu

- hide or show all programs with a single click

- see a list of all open Finder windows, letting you switch directly

- create a list of frequently used programs, documents, or disks — and open them from anywhere

Despite the fact that we adore FinderPop (especially because it's free), there are many other useful add-ons for contextual menus. Visit www.control-click.com for a breathtaking array.

There's not much to know about contextual menus except remembering to try them! You may be surprised at some of the options you're offered, some of which may not be available in the real menus of the program you're using.

In Mac OS 8.5, for example, the Attach Folder Action command lets you specify an AppleScript that gets triggered every time an item is moved into the folder you're Control-clicking. You could make your Trash auto-empty this way, for example, or make new arrivals in your Downloads folder self-unstuff — or have documents in the Finished Chapters folder auto-email themselves to your editors! And this command is available exclusively via contextual menu.

The Application Menu

The Application menu (Figure 2-18) is one of the most frequently used menus on the Macintosh. And yet, if you mention it to the average Mac user, you'll probably get little more than a blank stare. Although we use the Application menu every day, most people aren't even aware that it has a name. As of Mac OS 8, in fact, the Application menu and the menu are the only standard Macintosh menus that aren't represented on the screen by their *names.*

Whether or not you know what it's called, the Application menu is the tiny icon at the very upper-right corner of your screen. Here's how you use the Application menu:

- As a menu to switch from one program to another. Click the Application menu icon, in other words, to see a list of all currently running programs; choose the one you want. If you hold down the Option key as you choose a new program's name, all windows of the program you *were* using get hidden.
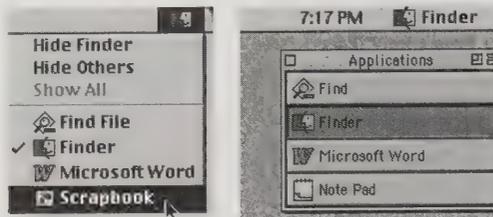
Figure 2-18: The original Application menu (left) lets you switch programs. The Mac OS 8.5 variety (right) can be torn off into a program-switching palette. Click the tiny square in its upper-right corner to hide the program names, leaving only their icons.

■ As an indicator of what program you're currently in (even if no windows are open). Of course, you may not always recognize the microscopic icon in the upper-right corner of your screen, especially if it isn't a program you use every day.

In Mac OS 8.5, praise be, the name of the program you're using accompanies its icon as part of the menu title itself, as shown in Figure 2-18; in previous versions of the system software, the little icon is all you have to go on.

■ As a program-switching bay (in Mac OS 8.5 and later). If you drag your cursor straight down off the bottom of the Application menu, the entire menu rips off and turns into a floating palette. Click a program to switch to it; option-click a program to switch to it and hide the one you *were* using; click the tiny collapse box to make the application palette fold up so that only the *icons* are showing. If there's a sweeter, less obtrusive application-switcher, we've yet to see it.

■ As an application hider. If you Option-click an icon in the Mac OS 8.5-style application palette (shown at right in Figure 2-18), the windows of the program you *were* in are hidden.

Mac OS 8.5 Application Palette Secrets ─────■

Change the look, size, orientation, and position

Before you pass judgment on the Mac OS 8.5 application palette (the one that appears when you tear off the Application menu), however, consider Figure 2-19. It shows some of the many variations of this palette that are available to you.

Here's how you create these delicious alternative palettes:

■ To create the icon-only palette (no application names, as shown at top left in Figure 2-19), click the zoom box in the tiny title strip at the top of the palette. (The zoom box is second from right.)
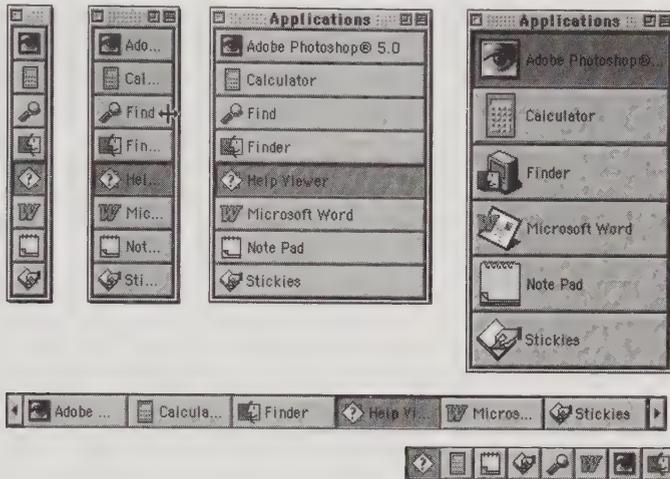
Figure 2-19: The Mac OS 8.5 application palette is a celebration of variety.

- To adjust the *width* of the tiles (in *any* of the variations described here), position your cursor just inside the right edge of any application tile. Find the spot where it changes to the cursor shown in Figure 2-19, second from left. Now drag horizontally to make all of the tiles wider or narrower.

- To get full-sized icons (as shown at top right in Figure 2-19), Option-click the tiny zoom box. Option-click again to restore the small-icon view.

- Option-Shift-click the zoom box to make the palette horizontal instead of vertical. (Do it again to restore the palette to its vertical orientation.)

- Several other incarnations of the application palette await if you know how to write AppleScripts (see Chapter 22) — or use the Mac OS 8.5 help.

  For example, if you choose Help ⇨ Mac OS Help, search for *application switcher,* click the topic called "Switching between open programs," and scroll down, you'll see several blue underlined text phrases that can completely reconfigure the application palette. One of them makes the application palette hug the bottom-left edge of your screen (second from bottom in Figure 2-19), complete with scroll arrows; another gives you an icons-only switcher against the lower-*right* corner of your screen (shown at bottom in Figure 2-19); and a third restores the application palette to its original configuration.

Moving the palette

Normally, you reposition the application palette by dragging its tiny "title bar" (the textured gray handle at the top or left edge). But what if this bar is hidden?

Simple: whether the drag bar is hidden or not, you can move the palette by ⌘-dragging anywhere on it.

MACINTOSH SECRET

The Application menu for nostalgia lovers

We're nuts about the Mac OS 8.5-style Application menu. But we're fairly confident that somebody, somewhere, will object to the appearance of the current application's *name* appearing instead of just the icon, as was the case in all previous system software versions.

But, as almost always, Apple has engineered its redesign carefully, offering a way back to the old way of doing things. If you examine Figure 2-18, you'll see a tiny textured handle just to the left of the Application menu. Click there to hide the program name altogether. Or drag to the right if you'd like to allot less horizontal space to the name, but still see part of it. (If you're using a program with a lot of menus, in fact, the Mac OS 8.5-style Application menu *automatically* shrinks as necessary, until only the icon is visible.)

To restore the Application menu to its default look, click that divider bar again (or drag it to the left).

Switching programs from the keyboard

The application palette is brought to you by an extension called Application Switcher. (It's in the Mac OS 8.5 Extensions folder.) Because it's an extension, this handy bit of code can actually do more than just show a program's palette; it also offers a way to switch programs from the keyboard, for the first time in Mac history (without having to install third-party add-ons, that is).

Speed Tip

Just press ⌘-Tab. You jump to the next running program, in alphabetical order, just as the icons appear on the application palette. Shift-⌘-Tab takes you *backward* alphabetically through your open programs.

Application palette drag-and-drop

The application palette tiles aren't just for clicking. They're also for *dragging onto*.

In other words, when you want to drag-and-drop a document icon onto a program icon (as described near the end of Chapter 1), treat these tile icons exactly as though they're the original program icons. You can drag-and-drop right on top of them.

Hidden System Commands

Your Mac has more than menu commands. A good number of other useful ones don't appear in any menu; they're activated purely by keystrokes. Technically speaking, these aren't really Finder commands at all; they'll work no matter what program you're using.

Hidden System Software ───────────────────────■
Command Secrets

Take a picture of the screen

Ever wonder how we poor-slob computer-book authors illustrate our work?

We take *screenshots* or *screen captures.* That is, we use special software to capture the screen image, turning it into a TIFF or PICT file we can send to our publisher.

For years, the Mac has offered *built-in* screen-capture software. Just press ⌘-Shift-3; you'll hear a satisfying camera-click sound. The Mac creates a graphic file, a PICT file on your hard disk, called Picture 1. If you take additional screen shots, they'll be named Picture 2, Picture 3, and so on.

That feature is fine, but it's got its limitations. For starters, it captures the entire screen, leaving it up to you to edit or crop the results down to just the area you really wanted. And the fact that it creates PICT files could be improved, too — wouldn't it be nicer if the image went straight to your Clipboard, ready for pasting into Photoshop or your Web page software?

That's where our *Mac Secrets* exclusives come in. Who knew, in System 7.6 and later, these additional screen-grabbing keystrokes awaited?

- ⌘-Shift-4 — Turns the cursor into a tiny crosshair. Now you can drag across any rectangular area of the screen, capturing only that much into your PICT file.

- Caps Lock-⌘-Shift-4 — Our favorite by far. Turns the cursor into the little-seen *bullseye* cursor. Now you can click any window, dialog box, or error message — and capture a neat picture of it, pre-cropped.

But wait — it gets better. If you add the Control key to *any* of those keystrokes, you put the resulting screen image directly onto your Clipboard instead of making a PICT file!

All of that is certainly worth e-mailing home about. But even Apple's built-in keystrokes leave out one feature: the ability to capture open menus! That's why you, as a *Mac Secrets* owner, possess Flash-It! (on the CD-ROM with this book). It can capture menus, pop-up menus . . . just about anything.

CD

How to eject a disk by using only the keyboard

⌘-Shift-1 ejects a disk from the Mac's built-in disk drive.

⌘-Shift-2 ejects a disk from the external disk drive (or the second drive if you have a Mac with two built-in floppies).

⌘-Shift-0 ejects a disk from a *third* disk drive if there is one. (Some Macs have two built-in drives plus an external.)

Keep in mind that all these commands eject the disk *without* removing its image from the screen, so you run the risk of getting the "Please insert the disk:" message over and over again. (You can try pressing ⌘-period several times. As we'll discuss in Chapter 8, this strategy *sometimes* makes the message go away.)

These are extremely useful keystrokes to know when you can't eject a disk in the usual way — for example, when you're installing a program and it's asking for Disk 2 but hasn't ejected Disk 1!

MACINTOSH SECRET

The Unknown Mac OS 8.5 Keystroke

You already know, of course, that pressing ⌘-Tab in Mac OS 8.5 and later cycles through the various open programs.

Astute reader Jeff Blanchard, however, discovered something even more amazing, which we're proud to reveal for the first time anywhere: pressing ⌘-Tab also cycles among open menus!

Try it yourself: click a menu title to make the menu drop down (in any program). Each time you press ⌘-Tab, the next menu pops open. Press Shift-⌘-Tab, in fact, to open each menu to the left of the open one.

No, you can't actually select commands from the keyboard in this way. But this trick is great for looking up that forgotten keystroke or getting to know the basic functions of a new piece of software.

Chapter 3

Desk-Accessory World

You thought that the System 7's standard 4MB System Folder was bad? Get a load of Mac OS 8.5 — a full installation scarfs down a cool *330 megabytes* of your hard drive.

Obviously, that huge swath of your primary drive is creaking with files and features that most people never use. In this chapter and the next, you'll find out about every single piece of System Folder junk. In the process, you'll find out which stuff is safe to trash, saving yourself memory and disk space. You'll also learn a few surprising features of the desk accessories and control panels that you've always taken for granted.

Welcome to the Desk Accessories

Look good and hard at Figure 3-1. You're seeing the last of a dying breed — true desk accessories, the ones that came with every Mac for ten years. (If you're a youngish whippersnapper, you may not even know what we're talking about when we use the term *desk accessories.)*

These days, the ⬛ contains mostly aliases or bigger, more powerful programs — yes, actual applications — that *mimic* desk accessories by showing up in your ⬛ menu. The original desk accessories are gradually disappearing; lost forever are the Alarm Clock, Battery, and Puzzle, for example. (You can still read about them in Chapter 3 of the electronic *Macworld Mac Secrets, 4th Edition*, which is on this book's CD-ROM.)

CD

Figure 3-1: The original Apple desk accessories.

Apple System Profiler

This handy little program became a standard part of the OS with System 7.6. It analyzes your Mac's System folder and hardware, producing a neat little printable report. Perhaps more important, it lets the novice Mac user answer specific important troubleshooting questions when they call Apple's tech-support hotline. (One of your cheerful authors once spent a day at Apple's 800-SOS-APPL tech center, listening in on Mac users' calls to Apple's agents. Trust us on this: in the war against novice flounderings, Apple's staff needs every tool it can get.)

The Mac OS 8 through 8.1 version offers the following info screens:

- A general hardware overview screen that reveals the exact Mac model you have, how much disk space and RAM it has, and its processor speed. (Keyboard shortcut: ⌘-1)

- A network/communication screen that identifies what kind of network your Mac is on (see Chapter 35) and which printer is selected. (Keyboard shortcut: ⌘-2)

- A Volume Information panel that shows every disk (and every *partition* — see Chapter 8) attached to your Mac: hard drive, CD-ROM, and so on, along with its SCSI address (see Chapter 33), size, and other specs. (Keyboard shortcut: ⌘-3)

- A Device screen, very similar to the Volume Information display. Once again, this information concerns disks attached to your Mac, but with a heavier emphasis on the *devices* (Zip, Jaz, and so on) than on the actual *volumes* (such as partitions). (Keyboard shortcut: ⌘-4)

- A Control Panels list. Click one in the list to see exactly where it's located. Buttons let you change the list so that it shows all control panels, only Apple's, or only ones that *aren't* from Apple. In times of troubleshooting, that last item is handy, because the culprit is most often something that *didn't* come with your Mac (see Chapter 36). (Keyboard shortcut: ⌘-5)

- An Extensions list. Same as the Control Panels list, but it shows extensions only (see Chapter 4). (Keyboard shortcut: ⌘-6)

- The System folder list is pretty sparse. It's used exclusively to detect duplicate System folders (see Chapter 5). (Keyboard shortcut: ⌘-7)

- The applications screen, believe it or not, shows you a list of every double-clickable program on your system, sorted alphabetically, with version information in parentheses. It wouldn't be a bad idea for you to run this one *right now,* if only to spot some of the duplicates that are probably cluttering your hard drive at this very moment. (Keyboard shortcut: ⌘-8)

OS 8.5 In Mac OS 8.5, Apple enhanced the Profiler further still (see Figure 3-2). Thanks to a tabbed interface, the various screens are all available simultaneously. And the displays of information are terrific; we especially like the map of your Mac's various SCSI chains (if, like the tower-style Macs, it has more than one). Despite showing more information, this version of the program offers fewer different panels (combining the volumes and disks onto a single pane, for example).
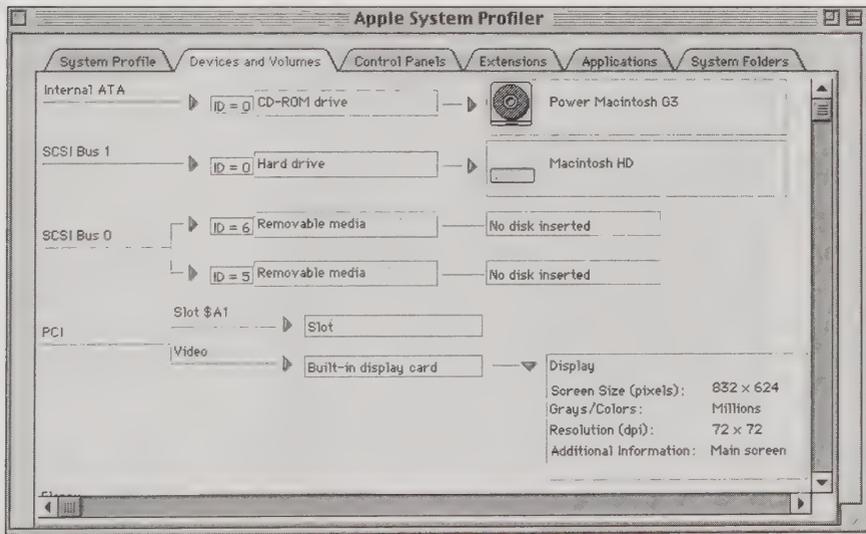
Figure 3-2: The key to understanding the Mac OS 8.5 version of Apple System Profiler is the flippy triangles. Click one, for example, to see more information about that device, as shown here by the monitor listing.

AppleCD Audio Player

One of the nice aspects of having a CD-ROM drive is that it can double as a *music* CD player. You can crunch numbers to the strains of Carly Simon, for example. AppleCD Audio Player is the "front panel" of your virtual CD player. (It won't even open if you don't, in fact, have a CD-ROM drive.)

Now, if you have QuickTime 2.5 or later, you don't technically need this program to play audio CDs; if your QuickTime Settings control panel is so configured, music CDs begin playing automatically when you insert them. You can even control the playback of music CDs using your Control Strip, as described in the next chapter.

But the controls for the AppleCD Audio Player are a lot like those on a standard audio CD player: basic programming and repeat functions, the ability to scan through the tracks of a disc, and even *shuffle play,* which means that the player plays songs in its own random order. When you expand the window, you can see a listing of each track on the disc, along with its playing time. A pop-up menu allows you to jump directly to any track by selecting its number (where it says Audio CD at the upper-right quadrant of Figure 3-3).

Figure 3-3: AppleCD Audio Player desk accessory, which you use to play your favorite audio CDs on your CD-ROM player, shown here in Program mode. Drag from the left list into the right to build a playlist. This guy *really* likes that Winkie song.

You should recognize most of the buttons from standard CD or tape players. The only buttons you might wonder about are:

- Normal: Plays the CD from beginning to end.
- Shuffle: Plays the tracks on the CD in a random order.
- Prog: Plays the tracks on the CD in an order that you've specified (see the following Audio Player secrets).

Next to the Prog button, by the way, is the Repeat button (marked by an arrow). When you see the long arrow, the CD plays once and stops; if you click the button, you get a looped arrow, which means that the disc will play continuously until you either (a) click Stop or (b) go quietly mad.

AppleCD Audio Player Secrets

Use your keyboard, pal

This program is filled with keyboard shortcuts. You can start and stop the music by pressing the spacebar or the Enter key. (Press Delete or Esc to stop the music.)

Speed Tip

Press the up-arrow and down-arrow keys to control the volume slider; press the right- and left-arrow keys to "click" the Previous and Next Track buttons. You can "click" the Eject Disc button by pressing ⌘-E.

Instant Desktop access to your songs

The AppleCD Audio Player isn't your only interface to your music discs. You can also double-click songs as icons — that is, when you insert an audio CD, its contents show up in the Finder as individual icons. (If not, reinstall your Foreign File Access and Audio CD Access extensions.) Double-click a track's icon to open it in AppleCD Audio Player, ready to play.

Name those tunes

Worth Learning
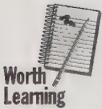
You're not condemned to listen to your CD's songs in the same old unimaginative sequence every time. Audio Player actually allows you to rearrange the tracks, repeat songs, or leave the irritating songs out of your listening order.

To do so, click the tiny triangle to expand the panel into the full-height window shown in Figure 3-3. If the songs aren't already named, click the first track name and begin typing the song titles. Press Return (or Tab) after each title to move down to the next blank, or Shift-Return (or Shift-Tab) to move upward. While you're at it, click the words *Audio CD* (just above the track list) and type the name of the disc, too.

After you do all this, the Player automatically remembers the album and song titles the next time you insert the disc. Now *that* is cool. (They're saved into a secret file called CD Remote Programs in your Preferences folder.)

Finally, click the Prog button. Now you can drag any title on the left side to any slot on the right side, as shown in Figure 3-3. (Drag it back to the left if you change your mind.) You also can drag titles up or down on the right side.

Feel free to drag the same song twice — or leave songs out of the playlist on the right side completely.

Tweak to your satisfaction

When the Audio Player is open, don't disregard the Options menu. This menu lets you change the color scheme of the Player panel. (We've come up with some *very* cool combinations.)

Please note, too, the resize box in the lower-right corner. There's no reason not to drag this box and make room to display your CD's entire track list.

Of time and music

Note that when you're creating a playlist, as described in the previous secret, the TIME display automatically adds up the lengths of the songs you've selected. Use it as your guide to figuring out how many songs will fit onto one side of a cassette tape, for example.

Speaking of that little time readout: Click it to toggle the display between showing the elapsed time or the time remaining (on each track or on the entire CD).

Automated Tasks

As with the Control Panels item described later in this chapter, Automated Tasks isn't a program at all. It's merely an alias, dropped by Apple into your menu for convenience (in System 7.5 and later). Inside this folder are several handy *AppleScripts* — miniprograms, each of which performs one simple time-saving step when opened. (When you've hung around the Mac long enough, you may be tempted to write your own AppleScripts; see Chapter 22.)

Here, for example, are the basic AppleScripts that come with Mac OS 8:

- **Add Alias to Apple Menu** puts an alias of the selected icon into the Apple Menu Items folder, and, therefore, into your menu. *Savings*: fussing with your Apple Menu Items folder and taking the word *alias* off the alias.

- **Share a Folder** creates a folder named Drop Folder at the top level of the startup disk (if there isn't one already). It then turns on File Sharing and gives Guests permission to access the Drop Folder over the network (see Chapter 35). *Savings*: futzing around with several control panels.

- **Start File Sharing** turns file sharing on; **Stop File Sharing** turns it off. *Savings*: a trip to the File Sharing control panel.

TRUE FACT

The Calculator's very new math

We've all heard about the Pentium chip's famous 1995 math bug, in which the most heavily advertised computer chip in history turned out not to be so great at simple math.

Well, we don't want to cause any hysteria here —but the Mac's own Calculator isn't always so hot at math, either. (Neither is the Graphic Calculator, for that matter.) Free book winner

Jason Darvick grew alarmed when the Calculator couldn't even correctly perform this simple subtraction problem:

$$1 - .9 - .1 =$$

The answer is never zero, as you might expect.

We take some comfort in the fact that *no* computer-based calculator gets this problem right, Mac, Windows, or whatever.

- **Turn Sound On** sets your Mac's volume level to 5 (out of 7). **Turn Sound Off** sets the volume to 0 (the menu bar will blink instead). *Savings*: a trip to the Monitors & Sound control panel.

If you examine your Apple Extras folder, you'll discover (in the AppleScripts folder) another set of AppleScripts called More Automated Tasks. They perform the following more advanced functions:

- **Alert When Folder Changes** tells you when somebody has dropped a new file into a particular folder (via File Sharing over a network). To make this script work, first drag a folder onto this AppleScript's *icon* (in the More Automated Tasks folder). The script runs in the background while you work on your Mac. If anybody drops anything into your special folder, a message will let you know. Weird, huh?

- **Hide/Show Folder Sizes** turns on or off the "Calculate folders sizes" checkbox in the Views control panel (System 7.x). As you'll learn in Chapter 4, this option can be useful when trying to figure out what's taking up so much space on your hard drive — but it slows down the Mac like crazy. This shortcut makes the on/off business much less painful.

- **Synchronize Folders** compares the contents of two folders and makes their contents match. For example, if a file called Document 1 is in folder A, and Document 2 is in folder B, the script copies each document into the other folder so that both folders contain both files. If two files have the same name, the more recently updated one winds up in both folders. (Are you paying attention, PowerBook road warriors?)

Calculator

With the four-function Calculator (Figure 3-4), you can add, subtract, multiply, and divide numbers of up to 13 digits. You can enter numbers by typing them on the keyboard — notice that your numeric keypad precisely matches the on-screen arrangement of number buttons — or by clicking the Calculator buttons.

Figure 3-4: The arrow indicates one of the hidden pixel handles.

Calculator Secrets

The all-at-once calculation trick

The Cut, Copy, and Paste commands all work with the Calculator. You can paste numbers from a word processor or spreadsheet. After you calculate the answer, you can copy and paste it back into the document. You also can paste an entire equation (such as 123-44*16/2=) into the Calculator. (In computerese, * means *times*, and / means *divided by*.) The on-screen keys flash madly, as though they're being punched by a ghost, and the Calculator instantly computes the answer.

By the way, notice the difference between the Calculator's math and your spreadsheet's math. The Calculator solves what you paste in *written* order: in other words, 123-44*16/2 gives you 632. A spreadsheet, on the other hand, does multiplication and division *first* (as sub-equations); in that case, the answer to 123-44*16/2 would be –229. That's worth noting before you calculate the next Space Shuttle's trajectory on this thing.

How to correct errors in long calculations

The Calculator's worst feature is that, unlike most real calculators, it has no CE button to clear only the last entry. If you inadvertently enter a wrong number, you have no choice but to click the Clear button, which erases the entire equation, and then begin the entire calculation anew.

For this reason, whenever you have a lengthy string of numbers to crunch, we recommend *always* typing your equation in the Note Pad desk accessory first and then pasting the equation into the Calculator.

Secret scientific-notation keystroke

Press the E key when using the Calculator, and your calculations appear in scientific notation! Now the Calculator can work with bigger numbers.

Actually, it gets stranger. How'd you like to see your old trusty calculator start displaying *words* instead of numbers? It will. Type E, then 9999, and then press the equal sign. The answer, of course, is "infinity."

And you know what E9999/E9999 is, don't you? Right. "Not a number."

The Calculator's secret grip strips

The Calculator has a pair of secret handles. Because they're at the bottom of the Calculator, they're ideal for dragging the Calculator back into the window if it's accidentally moved off the top of the monitor.

These dual grip strips are the black portions of the lower corners (see Figure 3-4). These black pixels are the only spots on the Calculator that are draggable (other than the title bar). Amaze your friends by showing them that you've dragged the Calculator clear up off the screen!

Technically, of course, *any* Macintosh window of this type — black title bar, rounded edges — offers these secret handles. But how many examples of this ancient window type do you see these days?

(If you enjoy being on the cutting edge, by the way, don't miss our awesome keyless-calculator trick, featured in Chapter 21.)

Chooser

The Chooser is the most significant desk accessory. It's a necessity if you plan to print anything, fax anything, or connect your Mac to a network of any kind.

Mac Basics

The Chooser is the Mac's Ellis Island; it acknowledges, administers, and translates for the arrival of any Mac attachment whose cable goes into the Mac's modem or printer ports. (Printers, networks, and fax/modems are the primary examples.) For the Mac to communicate with any such external device, the Chooser must be able to locate a piece of software in your Extensions folder called a *driver* (a translator between the Mac and this outside device). You use the Chooser to tell the Mac which driver to use for a given task.

If your network has more than one printer and your usual one is tied up, you can use the Chooser to select an alternate. You also can use the Chooser to turn AppleTalk on and off (although using the Control Strip, featured in Chapter 4, is far more convenient). You don't have to close the Chooser or restart the computer to make its changes take effect. When you first attach a new printer, open the Chooser and click the appropriate driver. The instant you plug the cable into your new printer, the printer's name appears in the list on the right side of the Chooser (see Figure 3-5). For more information on this fascinating window of opportunity, see Chapter 24.

CASE HISTORY

Revenge of the *Secrets* authors

As we discovered after writing the first couple editions of this book, "best-sellerdom" has its drawbacks. Imagine our sense of anguish, for example, each time we see one of our exclusive secrets pop up in another publication — without acknowledging this book as the source. We've seen many a trick from this book published in, say, *MacUser* or even *Macworld*, as a $25 reader-submission winner.

Of course, there's always that nagging doubt: Maybe, just maybe, someone else stumbled onto the same secret independently. We needed a way to earmark one of our secrets before releasing it into the world, much the way a scientist might tag a bird's leg to track its migration.

So we did. We tagged our "Calculator's secret grip strips" trick: for a couple of editions, we deliberately published it incorrectly. Well, not incorrectly, but incompletely. In fact, it isn't a *one-pixel* handle (as we wrote then) at all; you can grab *anywhere* along either of the bottom two corners to move the Calculator — anywhere on the rounded black area. And anyone who genuinely discovered this trick would know that.

Sure enough, our delightful undocumented "one-pixel" Calculator trick has proven popular in just about every Mac magazine, book, and newsletter. It has been reprinted, exactly as it was in previous *Secrets* editions, always without acknowledgment, and always without the complete story.

Fie on them, we say. Go dig up your own tricks!
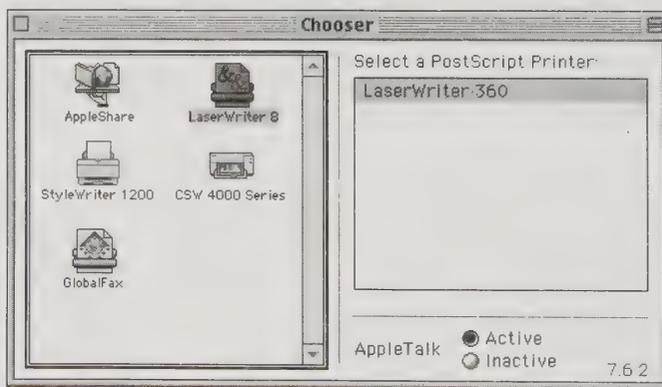
Figure 3-5: The Chooser is the control center for any equipment plugged into the serial ports (modem and printer jacks).

Chooser Secrets ———————————————————————•

Type-select, and go home sooner

You can operate the Chooser entirely mouselessly, if you so desire. The Tab key highlights the different areas in turn — the zone list (if you have one, at lower left); the list of attached printers or networked Macs (right side); and the panel full of icons (upper left).

Speed Tip

Furthermore, you can type to highlight names *within* each of these areas, too; type the letter *L* to highlight the LaserWriter among the printer icons, for example. If your Mac is a network, and you're bringing someone else's Mac onto your Desktop, you can hit ⌘-G or ⌘-R, respectively, to "click" the Guest or Registered User buttons.

Why the Chooser never remembers your settings

Many a novice — and not-so-novice — grumbles about the inconvenience of having to open the Chooser and make a printer selection before *each* print job. When asked why they bother, they demonstrate: When they open up the Chooser, their printer of choice — LaserWriter or StyleWriter, for example — is no longer highlighted.

Mac Basics

True enough: The Chooser *never* opens up with an icon already highlighted, no matter how hard you clicked one of its icons the last time. That's because the Chooser administers more than just printers — networks and fax/modems, too, for example — and, thus, it always opens as a blank slate, requiring you to click the kind of icon with which you intend to work. That doesn't mean, however, that it has *forgotten* the selections you made during your last trip to the Chooser. Indeed, unless your Mac's battery is dying or its PRAM needs clearing (see Chapter 32), the Chooser always will remember whatever you clicked last.

End of the Chooser's networking reign

OS 8.5

It took 14 years, but Apple finally hit upon a better way to represent Macintosh networks than the Chooser. In Mac OS 8.5, Apple introduced the Network Browser, described later in this chapter.

■——■

Control Panels

Why isn't this item called Control *Panel*, as it was in System 6? Because it's merely an alias of the Control Panels *folder* in the System Folder. Apple puts it in your menu purely as a convenience. See Chapter 4 for details.

Connect To . . .

OS 8 In Mac OS 8 and 8.1, this tiny applet was Apple's first attempt at integrating the Internet with the Mac OS. Choose this command to bring up a simple dialog box in which you can type an Internet or Web address. When you click Connect, your Mac dials and connects to that address, launching your preferred e-mail program or Web browser in the process. (See Chapter 25 for more on Internet connections.)

And what, you may ask, if you don't want Apple's Web site to be the default address every time you open this little dialog box? Then change it! Here's the cheat-sheet version:

1. Open your System folder, then the Apple Menu Items folder, then (in Mac OS 8.5 only) the Internet folder. There you'll see the Connect To applet.

2. Change its invisible *type code* to APPL, using FileTyper (included on the CD-ROM with this book), as described in Chapter 15.

CD

3. Now open the Connect To program with Script Editor, the AppleScript-editing program described in Chapter 22. Scan the lines of AppleScript code until you spot this line: *set default URL to "http://www.apple.com."* Just change the address between the quotes to a home page you prefer; save changes; change the Connect To applet's file type *back* to APPD; and you're done. (You lose Apple's custom icon in the process, but hey — that's what the icon-pasting trick in Chapter 1 is all about.)

OS 8.5 By the way, this little applet is still around in Mac OS 8.5 — it's just been moved to the Internet folder, also in the menu.

Favorites

OS 8.5 The modern Mac OS 8.5-or-later menu offers yet a third variation on the theme pioneered by the menu itself, the Launcher, and other schemes to keep frequently used files, folders, and disks easily accessible.

In some ways, though, the Favorites mechanism is the most successful yet, requiring neither the hassle of the menu nor the screen real estate of the Launcher.

Here's how it works: as described in Chapter 2, highlight any icon (or icons). Choose File ⇨ Add to Favorites. (That command places aliases of the highlighted items into a folder called Favorites, which is in your System Folder.)

Now check out your menu's Favorites command — the icons you favoritized are instantly available, as shown in Figure 3-6. (They're available from within the newer-style Open and Save dialog boxes, too, as described in Chapter 15, as well as in the Network Browser, described later in this chapter.)

ANSWER MAN

The hard drive in the menu — and the Desktop folder

Q: Hey, I put an alias of my hard drive into my Apple Menu Items folder. That way, I can access anything on my hard drive from within any program, just by choosing it from the menu.

A: What a great idea! We do that, too. You can access any file up to five folders deep that way.

Q: But I also want to put an alias of my Desktop folder there, so I can access things sitting on my Desktop.

A: Why bother? The hard drive trick you already mentioned *gives* you access to the stuff on your Desktop. It's all listed in the Desktop sub-folder.

Q: Just humor me, OK? It's hard enough being a nonexistent reader feeding you guys the questions you want to answer.

A: All right. If you really want to add the invisible Desktop folder directly into your menu, you'll have to do a little work. (You can't make the Desktop folder visible, as you can with other invisible items — see Chapter 2.)

Your options are: (a) Bring your Mac's hard drive onto the screen of *another* Mac, via a network (see Chapter 35). Now the Desktop folder shows up as a real folder, and you can make an alias of it to stick into your menu. (In the Get Info window, lock that alias, though, or it'll go invisible on you.)

(b) Use a program like DiskTop (www. prairiesoft.com). It can make an alias of the Desktop folder without requiring the network thing.

(c) Use the shareware program BeHierarchic, included on the CD-ROM with this book.
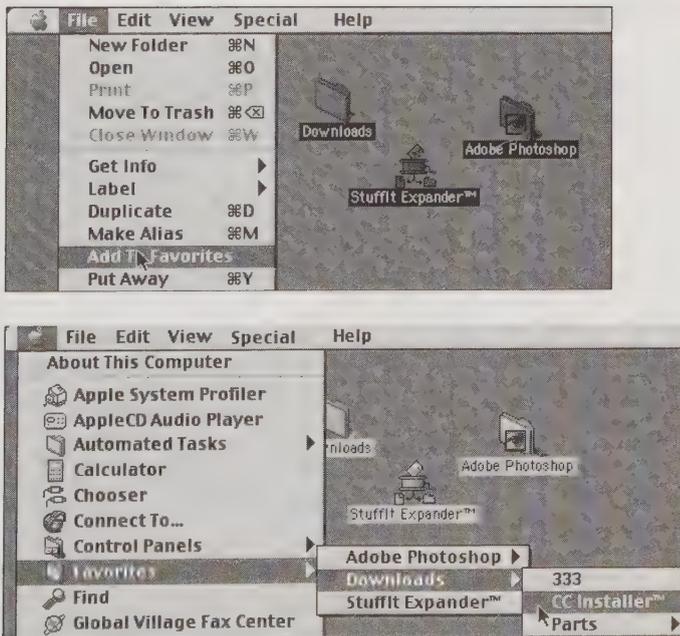
Figure 3-6: To place something into the Favorites command in your menu as shown at bottom, use the Finder's Add to Favorites command (top).

To remove something from your Favorites menu, simply choose the Favorites command from your menu. (You don't even have to burrow into your System Folder, as you would to change what's on your Launcher or in your menu.) The Favorites folder opens instantly; drag the corresponding aliases to the Trash.

Find (Find File)

As you're about to find out, this amazing program has more secrets per square inch than anything else on your Mac. And the Mac OS 8.5 version represents one of that system's most important improvements. We came this close to renaming this book *Macworld Find File Secrets*.

When you choose the Find, Sherlock, or Find File command (from either the menu or the File menu of System 7.5 and later), you launch a full-fledged program. After it searches your Mac, it lists the files, folders, or disks you're looking for in a new window, called Items Found. If you click a file's name in the *top* half of that window, you can see (in the bottom half) where it's filed (see Figure 3-7).

This program is useful for finding a program or file you've lost; for rounding up all files you've created today, for backup purposes; and, in Mac OS 8.5 and later, for searching the Internet and even analyzing your documents for relevance to a particular topic.

Find basics

This Items Found window shows a list view of "live" icons. From here, the fun begins! Refer to Figure 3-7 and look at all you can do at this point:

A. Click an item to reveal *where it is* (as shown by the folder hierarchy in the bottom part of the window.) Double-click an item in this top list to launch it. ⌘-Option-drag it out of the window to create an alias. Option-drag an item out of the window to create a duplicate of it.

Another handy tip: Once you've highlighted an item in this list, you can choose Open Enclosing Folder (⌘-E) from the File menu (or double-click the item's folder in the bottom window) to open the selected icon's *window*, wherever it may be, and highlight the icon.

In System 7.5 through 7.6, and in Mac OS 8.5 and later, you can also select *multiple* items — and drag them all at once. Shift-click to select more than one. (In Mac OS 8.5, Shift-click to select several items listed consecutively in the list; ⌘-click to select — or deselect — items that *aren't* listed consecutively.)

B. Click this flippy triangle (Mac OS 8.5 and later) to collapse (hide) the bottom half of the window entirely. After all, in many cases, you really don't care *where* something is; you just want to *open* it and get on with your life.

A   E F   G

B   C   D
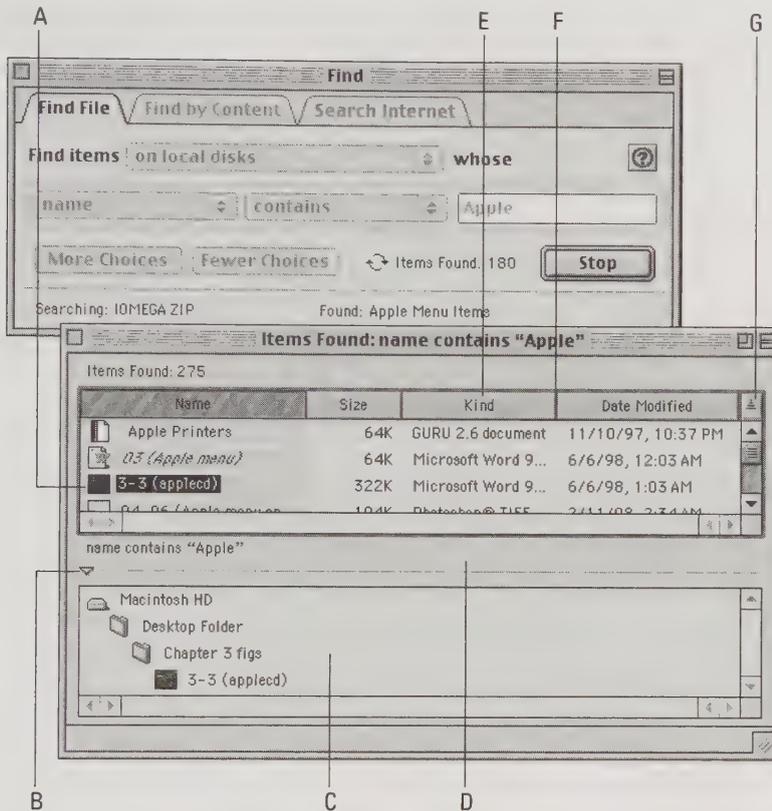
Figure 3-7: At top: The Find File dialog box (Mac OS 8.5 version), showing the three tabs that let you search for a file's name, search for text inside a file, or consult the major Web search engines. At bottom: The Items Found window, showing all the files that match your search request.

C. This half of the window shows where the selected item is. The disk is always listed at the top; then you see a list of folders, each indented, showing how deep you have to burrow to find the clicked file. (If you see Desktop, as in this illustration, that means your file isn't in any window — it's sitting out on the Desktop.) You can double-click any folder shown here to open that folder into its usual Finder window.

Speed Tip   If you're a keyboard freak, forget about the double-clicking business. Just press Tab to "shift the focus" to the lower window. Now you can select any folder by typing the first couple of letters of its name — or by pressing the up- or down-arrow keys. Once the desired folder or disk is selected, press ⌘-O to open it.

D. Drag in this horizontal strip to adjust the relative sizes of the top and bottom parts of the window.

E. Click here to change the sorting order of the find results. For example, you can see them listed alphabetically, in size order, or (usually the most useful of all) by date.

(OS 8.5) **F.** Drag one of these column dividers (Mac OS 8.5 and later) to change the column widths of the display.

G. Click this little square to reverse the sorting order (oldest to newest instead of newest to oldest, for example).

Why did Apple list the Find command in both the and File menus? For convenience: If you're working in a program — ClarisWorks, say — and you need to find a lost document, it's too much trouble to switch back to the Finder just to invoke the Find command. With the words Find File or Sherlock always available in the menu, you can do quick searches no matter what program you're using.

Find by Content (Mac OS 8.5)

The good work done on Copland, Apple's abandoned 1996 super-OS project, didn't all go to waste when that mega-system was canceled. Find 2.0, which made its debut in Mac OS 8.5, is a classic case. It was known as *V-twin* technology in its Copland days; these days, we just call it *V good.*

(OS 8.5) The point is that until Mac OS 8.5, the Find File program was primarily limited to searching for the *names* of your files (with one exception, covered in our upcoming Find File secrets). But Sherlock can also search for the *words* inside your files — with incredible speed.

But before you can use this "find by content" feature (see Figure 3-8), the Sherlock program must be allowed to create its own private card-catalog of your disks. This process is called *indexing* your drives — spending a few minutes analyzing every single document on them, compiling a tightly compressed word-by-word index into an invisible, multimegabyte directory file. (That invisible file is called, clearly enough, TheFindByContentIndex!)

The indexing process is slow. To start it going, click the Find By Content tab, click Index Volumes, click the drive you want to index (hard drive, Zip, Jaz, or whatever), and click Create Index. (You can't index a CD, however. The Sherlock program stores its index file *on the disk you're indexing;* because you can't store anything on a CD-ROM, you can't index it, either. You *can* create an index for a hard drive on the network, but only *at that Mac,* not remotely while seated at your own Mac.)
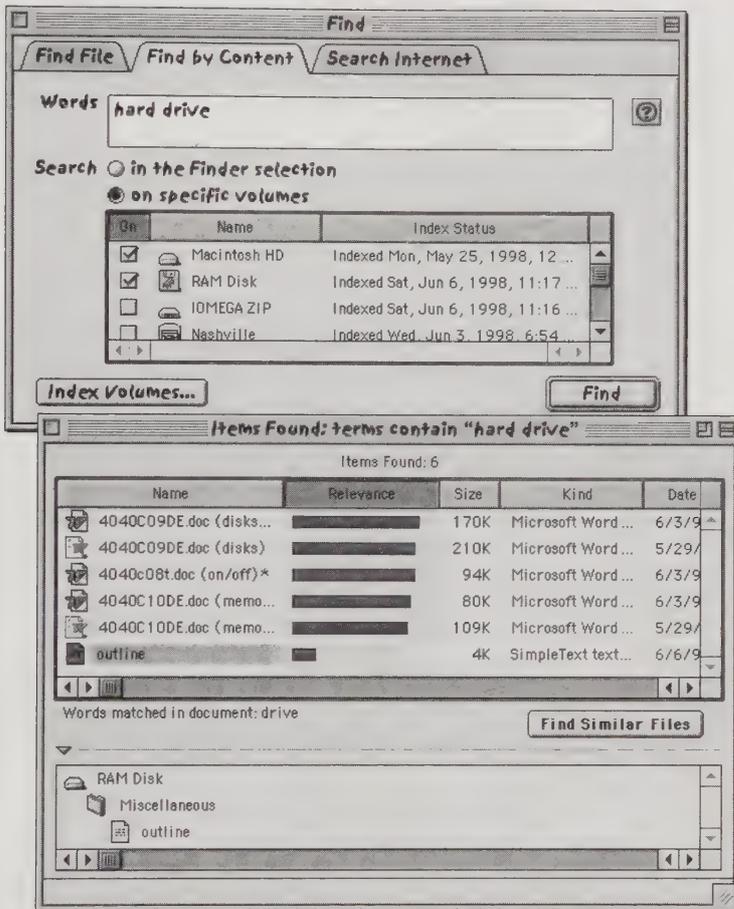
Figure 3-8: The Find by Content feature lets you locate text that's *inside* your files — regardless of the files' names. The results window (bottom) ranks the found files by relevance.

If sitting around watching progress bars isn't your idea of a fun way to spend the afternoon, by the way, you have two options:

- Click the Schedule button. As shown in Figure 3-9, you can tell the Mac to do its indexing in the middle of the night, while you're sweetly sleeping, ready for a full day of content-searching the next morning.

- Make the Sherlock program do its indexing in the background, while you work in other programs. Unfortunately, the indexing makes the Mac slow to a crawl — unless you choose Edit ⇨ Preferences and drag the slider to the "more responsive" position.

Schedule

Create or update the index for
specified volumes at:

3:00 AM

☐ Mondays
☑ Tuesdays
☑ Wednesdays
☑ Thursdays
☑ Fridays
☑ Saturdays

Index Volumes

A volume must be indexed before Find by Content can be used. Indexing prepares your volumes so content
searches are fast. An index contains significant words found in the names and contents of your files.

Name	Use Schedule	Index Status	Size	
Macintosh HD	☑	Indexed Sun, Jun 7, 1998, 12:05 PM	64K	
PC Zip	☐	Volume is not indexed	—	
Nashville	☐	Indexed Wed, Jun 3, 1998	21.1MB	

[Schedule...] No schedule is set.   [Delete Index...] [Create Index...]

Figure 3-9: The Find by Content feature works best if you've indexed your disks. To do so,
click a disk and then click Create Index. (If you've already indexed this disk, click Update
Index instead to teach the Mac about any files you've created or edited since your last
indexing.) Click the Schedule button to specify automatic indexing when you're not there to
be bored by it (top).

Speed Tip

Once the Mac has created this index, it can search an entire, multigigabyte
drive in seconds, showing you a complete list of documents that *contain* the
words you searched for. Try it: Open Sherlock, click the Find By Content tab,
and type the words you're looking for — that's right, the *words,* even if you
don't remember what the document was called. Specify which drive(s) to
search by clicking their checkboxes at the left edge of the window.

The technology is fuzzy and smart: the search phrase doesn't have to be
an exact match. For example, you can type "the rain forest problem in
Burma"; you'll be shown all documents containing *any* of those words. The
documents that contain *all* of those words, and many repetitions of them,
will show up at the top of the Items Found list. (That's what Sherlock means
by *relevance*.)

Search the Internet (Mac OS 8.5)

OS 8.5

As though the Find By Content feature of Sherlock weren't enough, the same program can now be your window to the entire Internet. As long as you have an Internet account (see Chapter 25), you can search the entire Net — including encyclopedias, Apple's tech-support database, and all the major Web-search engines — with a single mouse click. This, dear reader, is a *great* feature.

To make it work, just click Sherlock's Search Internet tab. As shown in Figure 3-10, you get a most intriguing screen — and the opportunity to click exactly the search mechanisms you want. Some of the starter search sites are Apple's Tech Info Library (crawling with answers to Mac hardware and OS questions), Encyclopedia.com (a Web-based free encyclopedia), AltaVista, HotBot, Infoseek, Lycos (Web-page search engines, as described in Chapter 25), and so on.

If you're not online when you click the Search button, your modem dials (if your Internet software is set up correctly, as described in Chapter 25). After a minute or so, the Items Found window appears. But instead of listing files on your hard drive, as in pre-Mac OS 8.5 systems, you're now shown a list of *Web* sites that contain the text for which you were searching! (See Figure 3-10.)
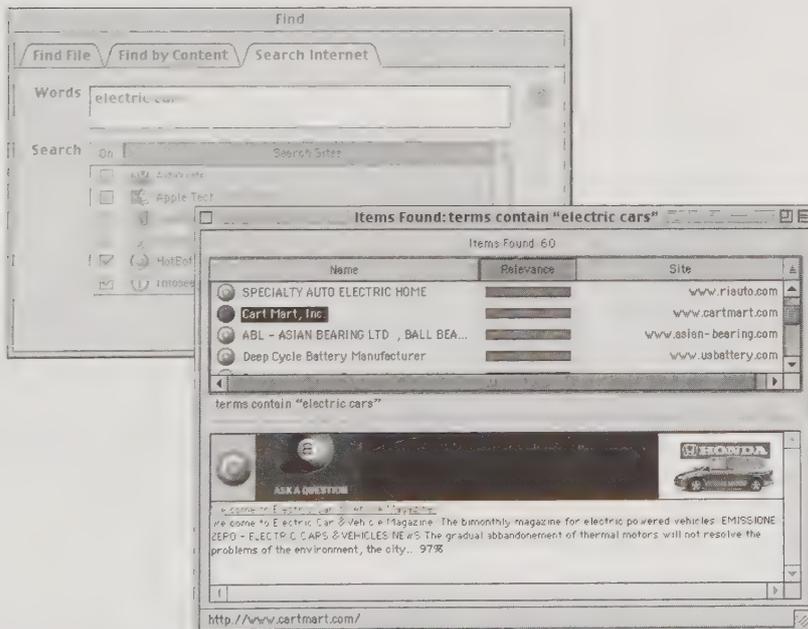
Figure 3-10: The Find command introduced in Mac OS 8.5 lets you search the Internet itself.

MACHINOSH SECRET

Insta-Summary

We've mentioned that Sherlock, part of Mac OS 8.5 and later, uses some smart, fuzzy logic when it goes hunting for the text inside your files. Want to see just *how* smart?

Do a Find by Content, as described in this section. Then, if you've got the DataViz translators installed (they're included with the book), Control-click one of the documents turned up by the Find command.

There, in the contextual menu that appears, is the enticing Summarize File to Clipboard command. After using that command, switch to your favorite word processor and paste — for a concise, computer-edited capsule summary of the file you clicked.

Sometimes the results are better than others — but when we're at the receiving end of wordy writing, we'll use any help we can get.

So what can you do at this point? Let us count the ways:

- Click one of the site names in upper part of the window. You're instantly shown (in the lower part of the window) the first paragraph of text that appears on that Web page — without having to actually go to that Web page. (Unfortunately, you're also shown a tacky Web-page ad. But there's no free lunch, we guess.)

- Double-click any Web page (in either pane of the window) to launch your preferred Web browser (see Chapter 25) and view the full page in all its glory, wherever it came from on the Internet.

- *Drag* the name of a Web site into the open window of your browser window.

- Drag a Web page's name out of the Items Found window to your desktop. There it becomes a bizarre new kind of alias called a *web page location* — an icon you can double-click at any time to launch your browser, dial the Net, and visit the site it represents. (You can organize these web-page location files in any convenient way. Organizing them in a folder in your Apple Menu Items folder comes to mind, for example, so you'll be able to jump to your favorite Web pages by choosing their names from your menu. More in Internet Location Documents in Chapter 25.)

In any case, as we said, the Find File program is absolutely crawling with juicy hidden secrets and features. Here they are.

Find File (and Sherlock) Secrets

The four secret searches — even inside files

If you're using System 7.5 through 8.1, you may be looking longingly at the enhanced Find of Mac OS 8.5. You may wish that you, too, could search for

text *inside* your word processor files, for those days when you remember *nothing* about a file except what it was *about.*

Strange But True

You can. Open the Find File window. Press Option as you pull down the left-hand pop-up menu to reveal a set of four secret search options! Chief among these, of course, is "contents" — this option does indeed mean that the Mac will *read your files,* seeking the particular bit of text or numbers that you remember having typed.

The "contents" search is incredibly slow — but, when you're desperate, incredibly useful. Three facts make the search more tolerable: First, your search can crank away in the background as you work in another program. Second, you can speed up the search considerably if you *Option*-click the Find button; this makes the program search only for actual English words and skip any computer-code gibberish it encounters.

Finally, fortunately, when you search by content, Find File doesn't examine *every* file on your hard drive. It ignores 20 types of files, including applications and system software, so that strings of programming code and text from dialog boxes, menus, and help files don't show up in the results of your searches.

Worth Learning

The other three secret search attributes are less useful, but still good to know (and still in Mac OS 8.5). *Name/icon lock* refers to files whose names and icons, obviously, have been locked by the system software. Less obviously, this refers to system icons: the Trash, the special System Folder icons (Control Panels, Extensions, and so on), At Ease and its support files, and so on. *Custom icon* lets you find icons on which you've used our "Replace an icon" secret in Chapter 1. And *visibility* lets you search for invisible icons. Try this one right now; you'll be shocked at how many secret files lurk, unseen, on your hard drive!

Mac OS 8.5: Multiple search windows

OS 8.5

In Find programs before Mac OS 8.5, the Items Found window was wiped empty each time you performed another search.

But no longer. In Mac OS 8.5, each time you press ⌘-F to initiate a new search (without quitting the Find program), the previous Items Found window remains open. As you perform successive searches, these windows remain open. For the first time, you can compare the results of multiple searches, or round up documents using several different approaches, with all the windows still hanging around.

Mac OS 8.5: Index only a folder or two

Is Mac OS 8.5's indexing process getting you down? Desperately want to search only *one folder* on a Zip disk by content, without having to index the entire disk?

Speed Tip

Then don't miss Sherlock's easily-overlooked Edit ⇨ Preferences command. It lets you tag certain folders or files with a *label* (see Chapter 2) — which then get ignored by the indexing process. Apply that label to *everything* on a disk except your Documents folder, for example, and you'll find that the indexing process is fast and painless.

Mac OS 8.5: Save and reload your searches

OS 8.5

Once you've used the Find command and set up its search criteria, check out the File ⇨ Save Search Criteria command. It generates a tiny *search document* on your hard drive.

Now comes the fun part. When you double-click that search document later, the Mac instantly reopens the Sherlock program, fills in the blanks, and performs the same kind of search — automatically, no matter how complicated your original criteria were.

At first, you might wonder who'd bother with all this. But when you consider the other Sherlock options, such as searching for text inside files or searching the Internet, distinct possibilities come to mind.

For example, you could save a search that rounds up all documents with the label Back Me Up. You could save a Web search for a particular topic — complete with the search engines you prefer — and run it each day, checking for news on a certain topic. (When you double-click a saved Internet search document, you not only launch the Sherlock program — you also dial the Internet.) And if you're on a network, you could create a standard search document that patrols certain folders for the arrival of new documents being turned in by your coworkers.

More, more, and more choices

Find File introduces a unique twist to Apple's standard interface behavior: the More Choices button. You can click this button over and over again, expanding the dialog box more and more, until you see *twelve* search criteria, if your screen is big enough (see Figure 3-11). You can also press ⌘-M to expand the window, and ⌘-L (in Mac OS 8.5) or ⌘-R (in System 7.5 through 8.0) to collapse it. (In Mac OS 8.5, add Option to the ⌘-L keystroke — or to a click of the Fewer Choices button — to collapse *all* rows at once.)

With this knowledge, it doesn't take a rocket scientist to figure out how you'd search for all Excel files you created between August and September of last year, even if you can't remember the name of the specific file for which you're looking.

Which brings us to another important Find File attribute: those criterion pop-up menus allow you to type four-letter Type and Creator codes, as described in Chapter 15. For the techno-savvy, that's a handy way to search for specific kinds of files (say, Word-generated text files).
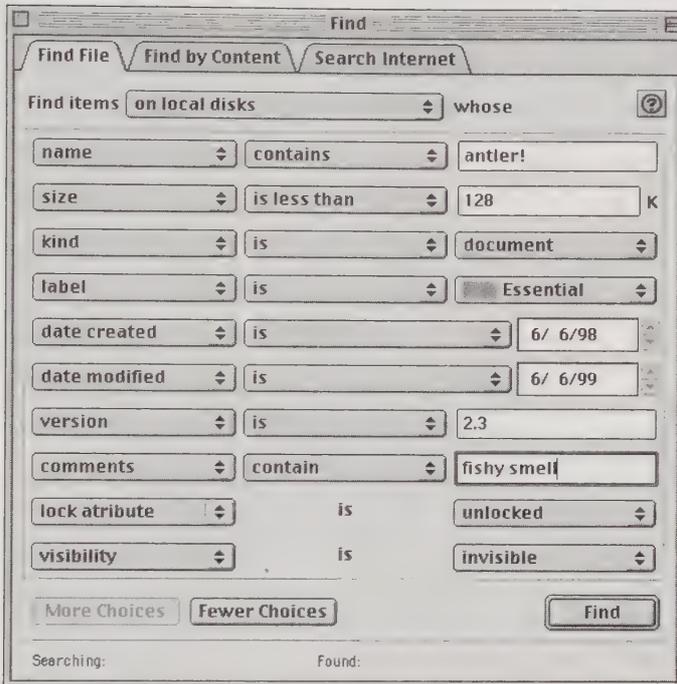
Figure 3-11: If you can't describe the file you're looking for with twelve descriptive phrases, you probably don't know what you're looking for.

The multiple-item, drag-and-drop conundrum

Once the Items Found window appears, you can do several useful things with the icons it displays. As shown in Figure 3-7, you can drag, ⌘-Option-drag, Option-drag, click, or double-click them with varying results.

As fans of Mac OS 8 and 8.1 discovered to their alarm, however, there's one thing you *can't* do: drag *multiple* items out of the Items Found window. You could do it in System 7.5 and 7.6, and you can do it in Mac OS 8.5 and later. But in Mac OS 8 and 8.1, it's one item at a time, pal. Too bad if you want to drag a bunch of found items to the Trash or into a different window!

As free book winner George Cowie discovered, however, you *can* drag multiple files out of the Found window onto an *alias*. Weird, we know, but useful. Now you know why the desktops of the Mac OS 8-savvy sport an *alias* of the Trash right next to the actual Trash!

The best Drag and Drop ever

From Chapter 1, you know about the slick replacement for Copy and Paste known as Drag and Drop. Check out this undocumented variation on the theme, though: You can actually drag icons from the Desktop into the Find File window's blanks — or even onto its pop-up menus — to specify what, or where, you're seeking. See Figure 3-12 for a great example.

Figure 3-12: To search only inside of two particular folders, highlight them, then drag the whole bunch onto the "Find items" pop-up menu. It changes instantly to say "in the folder selection," meaning the folders you highlighted.

Get into the habit, therefore, of using Find File not for finding a file — but instead for finding information about a file. To find out when a document was modified, for example, change the criterion pop-up menu to say "modified," and drag your file onto the blank. Instantly, you're shown that file's modification date.

For added fun, keep clicking the More Choices button until you're seeing all kinds of criteria. Now drag an icon from your Desktop onto any one of the blanks. Instantly, they all fill themselves in with info about the icon you dragged and dropped — its size, date, type, and so on.

Yes, we realize that the Get Info command also gives you the date. However, dragging a file onto a Find File blank has two advantages: (1) it provides more information (such as type and creator codes) than Get Info, and (2) it's certainly more fun.

Another way to say where

If you have several disks on your Desktop — for example, your hard drive plus a Zip disk — press ⌘1, 2, 3, and so on; they make each disk's name, in turn, appear in the "find where" pop-up menu.

On the other hand, if there's a removable disk you don't want searched, such as a CD-ROM disc, Shift-click the Find button. The program will search only hard drives.

Searching multiple CD-ROMs or Zip disks

Speed Tip

Here's an easy way to search multiple removable disks, such as CDs, Zip or Jaz disks, SyQuest cartridges, or even floppies (in systems before Mac OS 8.5). After Find File has finished searching the first disk, Option-click the disk's name (in the "Find items on" pop-up menu at the top of the window) — and rip it clear out of the window and into the Trash!

The Mac ejects the disk. When you insert the next disk, its name will appear in the "Find items" pop-up menu, ready for your next search.

Three instant database reports

Once your Find File has found files, it can produce any of three different typed-up lists of its findings. All three produce a complete listing, unlike the time-honored highlight-files-in-a-Finder-window-and-Copy method, which (until recent OS versions) can paste only the first 256 characters you copy.

For a straight-ahead list, use ⌘-A to select all the found files that appear in the Items Found window; then copy and paste the selection into a word processor document or even a Stickies note.

For a more detailed list, select the icons in the Items Found window and *drag* them into a Stickies note, or into any Drag-and-Drop word processor (ClarisWorks, SimpleText, WordPerfect, and so on). You'll get a tab-delimited report listing each file's name, size, kind and modification date and time (except in Mac OS 8.5, where this trick, and the next, inexplicably stopped working).

Finally, if you *Option*-drag, you get an even more detailed list — one that reveals *everything* about the file you dragged, including its secret Type and Creator codes, its label name, creation and modification dates, and so on.

Worth Learning

Take note: this is the one and only way to produce a complete list of the files in a particular folder! Confine your search to that folder (see the "The best Drag and Drop ever" secret, earlier in this chapter), and set the criterion to something all-inclusive (such as "date created is before 1999"); then hit ⌘-A to select all found items before dragging them into your word processor.

Where is that file — exactly?

OS 8.5

Here's a sneaky trick (for Mac OS 8.5 and later) along the same lines as the files'-names copying technique provided in the previous secret. Suppose you've used the Find program, and you'd like to write down, print out, or e-mail to somebody the exact *path name* of a found file — you want to help them understand the exact location of that file.

To do so, click the item in the top half of the Items Found list. Press the Tab key to highlight the bottom half of the window, which now shows a graphic display of your file's location. Choose Edit ➪ Copy. When you paste into a word processor, you'll find that the entire location of the file is provided in standard Mac programmerese, like this: *Macintosh HD: System Folder:Apple Menu Items:Calculator.*

A more revealing search

Generally, Find File just blasts away while searching, completely ignoring you until it's finished. If you ⌘-click the Find button to initiate the search (in pre-Mac OS 8.5 systems), however, a new information strip magically appears at the bottom of the window. This secret status bar identifies the disk that the program is currently searching, and even flashes the names of files it's finding as they whip by.

This latter piece of info is especially useful — it gives you a hint as to how on-track your search setup was. Suppose, for example, you're searching for a file containing the word *cache* in its name. If you ⌘-click Find, you might suddenly discover that the search is wasting its time riffling through 500,000 Netscape Navigator cache files, and you could abort the search in order to set up the criteria more carefully.

As noted above, the secret ⌘-click shortcut was removed from Mac OS 8.5. So what's a data-hunter to do? Easy — choose Edit ⇨ Preferences. In the resulting dialog box, you'll see the checkbox called Show Current Search Status for Find File. It's the same feature — it's just not hidden any more.

Reverse sorting

You can sort files in the Items Found window by name, size, kind, or date by clicking the category header, just as in Finder windows. But *Option*-clicking any of these headers sorts the items in reverse order — before Mac OS 8.5. (In Mac OS 8.5, of course, you can click the little upper-right doodad marked G in Figure 3-7.)

Too many files?

If your searching efforts turn up hundreds of files, you'll probably get a message midway through a search saying that Find File doesn't have enough memory to find any more items. In that case, try increasing the program's memory allocation by 500K or more. (To do this, select the Find or Find File icon in the Apple Menu Items folder, choose Get Info from the File menu, and type the new memory allocation into the Preferred size field.) Now the program will be able to find, sort, and display hundreds of more items in each search.

Option-key secrets (pre-Mac OS 8.5)

Turns out the creators of Find File are just as much in love with the Option key as the creators of the Mac itself. Consider these clever uses (which no longer work in Mac OS 8.5) of that adorable little key:

Speed Tip

■ Generally, after finding something with Find File, the first thing you want to do is launch it. Therefore, wouldn't it be nice if Find File would quit itself, freeing memory and cleaning up your screen, whenever you launch something from its Items Found window? It does exactly that if you press *Option* as you double-click. (Find File also quits itself if you press Option while choosing Get Info, Open Enclosing Item, or Sharing from its File menu.)

■ The Option key also determines where the Find File window itself appears on your monitor, oddly enough. If you're pressing Option when you invoke the program, the Find File window will appear dead center on your screen. Likewise, if you're pressing Option at the moment you click the Find button, the *Items Found* window will open right in the middle of your screen.

■ Exactly as with regular Finder windows, the Option key is the key to closing windows. That is, Option-click any window's close box to make the entire Find File program quit itself.

Graphing Calculator

If there's any "desk accessory" that's used less than the Jigsaw Puzzle, it's the awesome but misunderstood Graphing Calculator. This program was an early piece of showoff-ware, designed to highlight the speed of the early Power Macs.

The concept of the Graphic Calculator is simple: type an equation that begins with $y =$ or $z =$. (Graphable ones, such as those involving a relationship between X and Y, work best. Try $y = 3x$, for example, or $y^2 = x$.) When you press Return or click Graph, the Graphing Calculator shows you the graph of the equation you entered (see Figure 3-13).
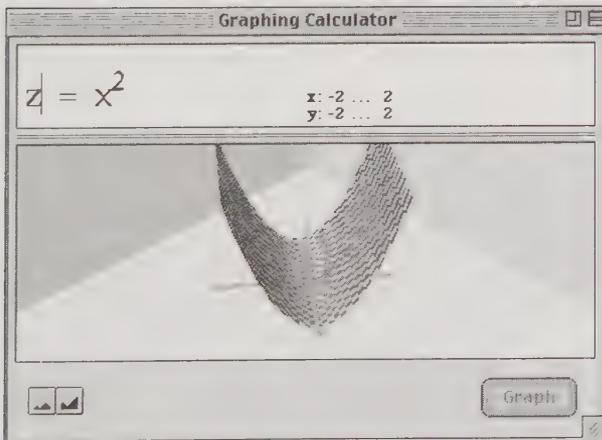
Figure 3-13: The Graphing Calculator: made in heaven for algebra students everywhere. Feel like playing with time and space? Then enter this equation and Option-drag back and forth in the graph area.

Once you've got a nice graph, you can drag around in the display area to shift the graph; ⌘-click anywhere on the graph to view the exact coordinates of your click; or click the tiny, lower-left "mountain" buttons to zoom in or zoom out.

We puny literary types fail miserably at attempting to scale the heights of the Graphing Calc's greatness — $y = x+3$ is about the fanciest equation we could imagine. But for a glimpse at some of the possibilities, try the different commands in the Demos menu. Some of these graphs are not only 3-D, but *animated!*

Graphing Calculator Secrets

Ballooning surprises

Turn on Balloon Help and you'll discover some surprises. For example, point to the csc and hyperbolic cosine buttons on the large keypad, the program icon itself, and all the credits pages. (Hint: Ernest Rutherford was one of the great pioneers in nuclear physics, having discovered radioactivity.)

Drag-and-drop ho!

The Graphing Calculator is profoundly drag-and-drop-savvy; for example, you can drag graphs right onto the desktop, where they become PICT files. What's really neat is that they carry their equations with them behind the scenes; dragging a graph *back* into the calculator restores its equation!

Secret benchmark mode

Strange But True

Comparing Macs? Try the secret benchmark mode in the Graphing Calculator. Enter a graphable equation with an n in it, such as $r < n$. Control-click the Play button (which looks like a triangle pointing to the right); the calculator times a cycle of the slider and reports the number of seconds required to graph the cycle! (The time appears just below the equation.)

The "standard" test for timing a Power Mac using the Calculator is to use the last equation in the Inequalities demo. (Choose Demo ⇨ Inequalities, and then press the Tab key repeatedly to advance through various graphs — and click the Stop button when an inequality containing an n appears.) For the standard benchmark to test a machine's speed, delete the Calculator preferences file, run the calculator on a Mac with a 640-by-480 screen, display or type in that final inequality, and Control-click the slider Play button.

Real-time graphing mode

The Graphing Calculator's "on-screen graphing mode" lets you watch it draw the graphs step by step. To activate it, press the Space bar to erase any displayed graph, and then Control-click the Graph button. (Programmer Greg Robbins notes that 3-D surfaces are especially fun to watch being drawn.) Better yet, when this on-screen drawing mode is activated, *copying* a graph copies it as a drawing — not as a bitmap — so it can be printed at full resolution.

The interactive, cross-software grapher

The Calculator can be used as an equation editor with standard word processors. Just paste an equation picture into one of many word processors (ClarisWorks, WordPerfect, MacWrite Pro, and so on), either double-click or double-click the equation, and the calculator will be launched and the equation entered for editing. When the calculator window is closed, the edited equation is automatically returned to the word processor!

Internet Access

OS 8.5   This folder of handy Net-related applications was added to the menu in Mac OS 8.5. Its submenu lists these useful commands:

■ **Browse the Internet** — This command launches your preferred Web browser, as selected in the Internet control panel (see Chapter 4). And it opens to your preferred home page, also determined in that control panel.

■ **Connect To** — See "Connect To," earlier in this chapter.

■ **Disconnect** — Yet another method to close your PPP connection and hang up your modem's phone line (see "Remote Access Disconnect," later in this chapter).

■ **Internet Setup Assistant** — Walk through this series of screens while your Internet access company's tech-help agent is on the phone with you, and you'll save yourself a lot of grief in establishing an Internet account for the first time. See Chapter 25 for details.

■ **Mail** — This command launches your preferred e-mail program. (You specify your favorite e-mail program using the Internet control panel, as described in Chapter 4.)

Jigsaw Puzzle

CD

This desk accessory, which debuted in System 7.5, replaced the aging and silly Puzzle that preceded it. At first glance, it's equally silly — until you learn about its secrets.

Once you open the program, begin by choosing Start New Puzzle from the Options menu. You're offered a choice of puzzle-piece sizes.

After making your choice, drag the jigsaw pieces with the mouse; as you place hunks in the proper positions, they latch onto the adjacent pieces. (They latch even when they're not in the right place, but adjacent to the right *pieces.*) You can move these increasingly larger hunks around by dragging until you complete the entire picture. The sound you hear as a reward is a little xylophone riff — but you can, of course, substitute any sound you wish, using our ResEdit secrets in Chapter 21.

Jigsaw Puzzle Secrets ─────────────────────────

A FREE!! graphics viewer

Pasting isn't the only way to get new graphics into the Jigsaw Puzzle; you can also choose Open from the File menu to import any PICT graphics file on your disk. Therefore, you can use the Jigsaw Puzzle as an especially handy, 🍎 menu–based graphics viewer (when you need a quick glance at a screen shot you took, for example).

Keep in mind, too, that the Jigsaw Puzzle works with Drag and Drop (see Chapter 1). In other words, you can *drag* any graphic (from the Scrapbook, the Desktop, or any other Drag-and-Drop–savvy program) directly into the Puzzle "frame" to en-puzzle it without even copying and pasting. When you want to check out some graphics file someone sent you — a QuickCam portrait, say, or a downloaded scan — the lowly Jigsaw Puzzle makes a much quicker, easier viewer than a lumbering behemoth such as, for example, Photoshop.

Make your own puzzle

Of course, you're not condemned to piecing together the world map (or whatever image appears in your Jigsaw Puzzle) forever. Any image you paste — or Drag-and-Drop — into the picture window becomes the new puzzle to solve.

If you paste a very large image, you may have to allot more memory to the Jigsaw Puzzle program first, as described in Chapter 8.

Key Caps

The Key Caps window looks like a minikeyboard. By holding down various modifier keys (such as ⌘, Option, Shift, or Control) while Key Caps is open, you see which keys produce which characters. This feature is useful for figuring out which keys to press to produce special symbols or non-English characters, such as © or ¢ in certain fonts. You can type a sample sentence to see what you're getting, too (see Figure 3-14).
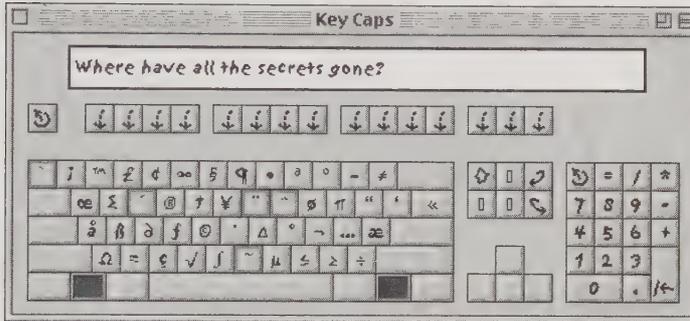
Figure 3-14: The Key Caps window reveals which keys produce which characters in every font available. In this example, the Option key is being held down, and the resulting display shows where the fancy symbols live.

Incidentally, you're not limited to viewing the Charcoal font. Whenever Key Caps is open, you see a new menu on-screen: the Key Caps menu, which lists all the fonts in your System. Choose options from this menu to change fonts. (You *are* limited to viewing characters in 12-point size, however.)

Key Caps Secrets

Copy & paste: the keyless keyboard

The fact that you can type a sample sentence in the Key Caps window can be a life-saver when something goes wrong with your keyboard. If the E key breaks when you're within a few pages of finishing your doctoral dissertation, for example, you *can* type an E in a crippled sort of way. Open Key Caps, *click* the E key on-screen, and then *copy* the E you typed from the Key Caps text display to your word processing document wherever you need an E.

In fact, Key Caps works in a crisis when you have *no* keyboard attached to a Mac (take it from consultants like us: it happens). You can actually rename a file or a folder using nothing but the mouse, Key Caps, and the Copy and Paste commands. (Unfortunately, you'll be limited to typing letters and using the menus — you can't use any ⌘-key combinations without an actual keyboard, as you'll quickly discover.)

Dead keys, diacritical markings

When you press Option while the Key Caps window is open, you see little dark outlines around certain keys, as shown in Figure 3-14. These rectangles identify the *dead keys* — keys that, when pressed once, type *nothing* on-screen. However, when you type *another* key — a normal letter, for example — it appears with the dead key's displayed marking *over* it. So, to produce the ñ in *niño,* you press Option-N and *then* type an N.

Avoid painfully slow typing

Speed Tip

Key Caps does its duty (displaying any symbol you type) even if it's not the front window. If you ever discover that typing in your word processor has become as slow as rubber cement, check to make sure that Key Caps isn't open somewhere, intercepting every keypress and bogging down the works.

Network Browser

For over a decade, the Chooser has been Grand Central Station for networking. As you can read in Chapter 35, the Chooser is where you click the AppleShare icon, which summons the icons of the other machines on your network to the screen. From there, you can click your way to the shared files on any other hard drive.

OS 8.5

But the Chooser's role as networker is fading, thanks to the dawn of Mac OS 8.5's Network Browser (see Figure 3-15). For the first time, navigating even complex networks — those with multiple machines in multiple zones — is as easy as using the "flippy triangle" folder buttons in a Finder list-view window.
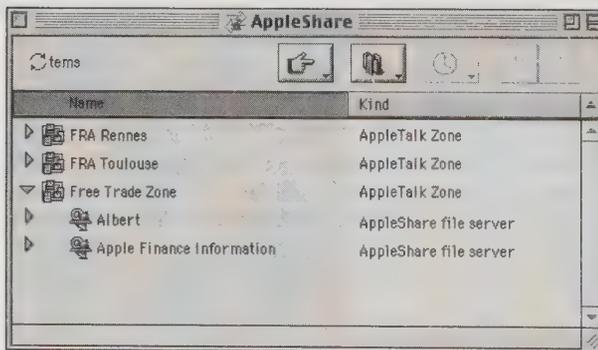
Figure 3-15: The Network Browser looks uncannily like the new Open and Save dialog boxes, discussed at length in Chapter 15.

To bring a distant networked Mac's hard drive onto the screen, double-click its icon in this list. To make an alias of that hard drive, drag its icon to the desktop (or use File ⇨ Make Alias). To revisit the last server you had open, use the Back and Forward arrow buttons at the upper-right corner of the screen.

The Network Browser offers plenty of other activities for your organizational pleasure — but they're virtually identical to the shortcuts in the Mac OS 8.5 Open and Save dialog boxes, described in Chapter 15 (see "Save and Open File 2000: Navigation Services" in that chapter). For example, the three picture buttons at the top are pop-up menus listing disks, favorite items, and recently used items, respectively; all of these work as well here, referring to networked hard drives, as they do when working with your own files and folders.

(See Chapter 35 for much more detail on setting up and using networks.)

Network Software Selector

Strange But True For 6100, 7100, and 8100-series Macs only. This little pre-Mac OS 8 program is the on/off switch for Open Transport, the networking software described in Chapter 35. Strange but true: when you switch to Classic AppleTalk, this program makes the MacTCP control panel invisible — and revisifies it (but hides the TCP/IP control panel) when you turn Open Transport on!

Note Pad

You type short notes and memos into the Note Pad (see Figure 3-16). No graphics, no formatting — just 32K of typed text per scrollable, resizable, searchable (choose Edit ⇨ Find) page. Use Edit ⇨ Preferences to choose whatever font and size you want. Our favorite aspects of the Note Pad: the little page-turning sound and the fact that it's drag-and-drop savvy (see Chapter 1).
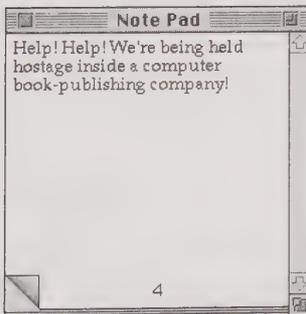
Figure 3-16: The new Note Pad: An eight-page repository for brief notes and memos.

CD

Don't be fooled by the new Note Pad's eight-page default allotment. Use the New Note command in the File menu to create as many additional pages as you want. (By the way: If you're still using the *old* Note Pad, the pre-System 7.5 one, be sure to see Chapter 3 of the electronic *Macworld Mac Secrets, 4th Edition*, on the CD-ROM that came with this book, for an assortment of additional secrets.)

Note Pad Secrets

Multiple Note Pads

Today's Note Pad is actually an application, not a desk accessory. That little quirk gives the new Note Pad a particularly slick feature: multiple files. Each can have its own type style, name, and contents, and each can reside anywhere you want on your hard drive.

Just open your System Folder and duplicate the Note Pad file as many times as you want. Rename them as you see fit. (One possibility: Keep them all in a Note-Pad Files folder in your Apple Menu Items folder, for quick access, as shown in Figure 3-17.)

Figure 3-17: The multiple-Note Pad trick in action.

From now on, when you double-click any Note Pad file (or choose one from your menu) the Note Pad program launches and opens the file on your screen.

What's especially impressive is that, if one Note Pad file is open, double-clicking the next one doesn't give you an error message. Instead, the new file opens in place of the first one — you can "hot swap" Note Pads.

Quick jumping to a page

Click the page number at the bottom of a new Note Pad (System 7.5 or later) page. You get a handy dialog box that (a) tells you the total number of pages, and (b) lets you jump directly to a specified page.

Contest
Winner

And while we're at it: Free book winner François Brahic stumbled onto the Note Pad's secret navigation keystrokes. ⌘-up and -down arrow makes your insertion point jump to the top or bottom of the window — and ⌘-left and -right arrow turns the pages!

TRUE FACT

Apple's double interface violation

In general, Apple Computer is a leading advocate of superior interface design. Classic example: When, in a dialog box, several buttons await your choosing, the button most likely to get your click is usually outlined with a thick black border — your clue that pressing Return or Enter suffices to "click" it. For example, whenever you risk deleting data, the Cancel button is generally outlined so that, in your haste, you don't slap the Enter key and inadvertently wipe out important work.

However, Singapore reader Martin Lim discovered a frightening lapse in Apple's usually careful design — and it's in the Note Pad. Choose Delete Note from the File menu, and a confirmation dialog box appears — with the

Delete button outlined! This dangerous setup is all the more surprising because, as the dialog box itself warns, there's no Undo for deleting a page of your Note Pad.

Well, OK. Maybe Apple figured that because you've gone to the trouble to choose the Delete Note command, you must know what you're doing — the programmers are just trying to save you time.

Which brings us to the *second* interface violation: pressing Return or Enter "clicks" the Cancel button — *not* the one with the thick black border!

Can you say "longstanding bug"?

Recent Applications, Documents, Servers

The presence of these three items in your menu — Recent Applications, Recent Documents, and Recent Servers — is a telltale sign that you're using the Apple Menu Options control panel. These items, introduced with System 7.5, marked the debut of *submenus* to official Apple System software. You can get rid of these commands, if you want; see "Apple Menu Options," in Chapter 4.

Remote Access Status

OS 8.5

This handy Mac OS 8.5 miniprogram (see Figure 3-18) isn't quite as compact as its Control Strip companion when it comes to getting online, monitoring your progress, and hanging up your PPP connection. (All of these activities are described in Chapter 25.) And the exact same information is available in the Remote Access control panel, described in the next chapter.

Still, Remote Access Status is yet another noble attempt on Apple's part to educate its customers about the one weirdness of going onto the Internet: that even when you quit the program you're using (Web browser or e-mail program, for example), your connection to the Net remains alive, tying up your phone line. Remote Access Status, the Remote Access Control Strip module, and the Remote Access control panel all offer Connect and Disconnect buttons to help you master your online destiny in this regard.
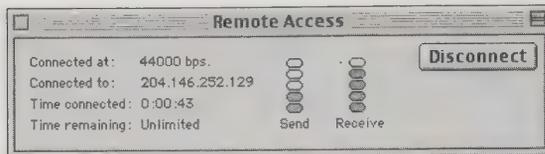
Figure 3-18: The Remote Access Status miniprogram shows you what kind of speeds you're getting while online.

Scrapbook

The Scrapbook is a holding tank for graphics, passages of text, sounds, movie clips, or QuickDraw 3-D models that you'd like to keep on hand for future use. Items stored in the Scrapbook are retained in a special Scrapbook File in the System Folder.

You probably already know how to copy and paste (or drag-and-drop) items to and from the Scrapbook, but here are a few lesser-known Scrapbook tidbits.

Scrapbook Secrets ——————————————————————■

Sound storage

Consult Chapter 23 for details on creating, extracting, and manipulating sound files on the Mac. Our purpose here is to suggest a great place to store them: in the Scrapbook. Just drag-and-drop standard Mac sound files off the desktop and directly into the Scrapbook, where they show up with a special sound icon (see Figure 3-19).

Multiple Scrapbooks

As with the Note Pad, described earlier, today's Scrapbook is actually an application, not a desk accessory. The Scrapbook, too, therefore lets you easily work with multiple Scrapbook files — one each for your various projects, for example, each with its own name, contents, and folder location.

Just open your System Folder and duplicate the Scrapbook File file as many times as you want. Rename and relocate them as you wish. From now on, whichever one you double-click (or choose by name from your menu, if you put them there) will launch the Scrapbook program and appear on your screen.

As with the Note Pad, you don't even have to close one Scrapbook file before opening the next; the Mac "hot swaps" the files on the fly.
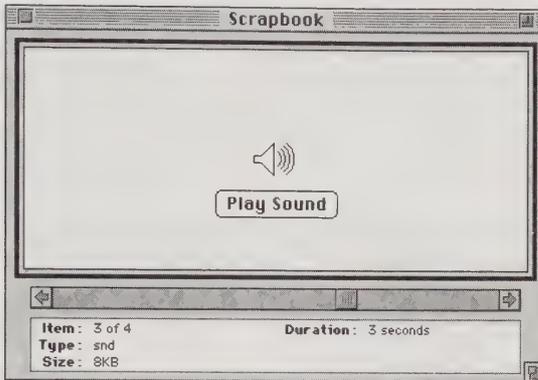
Figure 3-19: When you paste a recorded sound into the Scrapbook, a Play Sound button appears.

Because Scrapbook files are, in fact, documents created by the Scrapbook program, you can freely distribute them to other Macs that use System 7.5 or later. They'll easily open with a double-click, serving as handy multimedia envelopes for transporting groups of graphics, sounds, or text chunks intact to other people.

The new, improved Scrapbook Pro

Miss having a table-of-contents view to your scrapbook? Then install ScrapIt Pro, included on the CD-ROM with this book. See the appendix for details.

CD

The impossible shrinking Scrapbook

Try to make the Scrapbook really small. Go ahead, try it. Shrink it right down to postage-stamp size. Can't do it, can you?

That's because you don't know Swedish reader Jagat Pati's sly trick: Press ⌘ as you drag the resize box. Now you can make the Scrapbook so small it nearly disappears — great for those occasions when you're trying to drag one graphic after another out of the Scrapbook and into a window that's filling up most of the screen.

Contest
Winner

SimpleSound

When Apple's designers first merged the Monitors control panel and the Sound control panel into a single entity called Monitors & Sound (described in the next chapter), they forgot about one little feature in the process: recording new sounds. There was no Record button or Add button in the Monitors & Sound control panel, as there had been in the Sound control panel.

It took a couple more system-software releases before the Add button showed up back in the control panel where it belongs. But in the interim, Apple threw this strange little desk accessory into the menu. When opened, it does nothing more but provide access to that temporarily lost feature: the Add button that lets you record another alert beep. (See Figure 3-20.) See "Monitors & Sound" in the next chapter for instructions.

Figure 3-20: SimpleSound restores the add and remove features to your collection of error beeps, yes (right). But it's so much more! You can use the File menu's commands to open sounds and QuickTime movies, like the one shown here (middle), and use the Play and Stop commands to listen to the sounds therein.

Using this miniprogram's Open command, you can open sound files and even QuickTime movies; the Play command lets you listen to them. Of course, because this is Simple*Sound,* you won't get to *watch* the QuickTime movie — just listen to its soundtrack. (If such things interest you, consider putting an alias of SimpleSound into your QuickTime movies folder. Whenever you want to hear a movie, find out its length, or learn what its recording-quality level was, just drag-and-drop it onto SimpleSound's alias.)

To be honest, we'd always dismissed SimpleSound; we were deceived by its simplicity and the fact that it was born as a temporary gap-filling system-software doodad. But free book winner Steve Godun pointed out some cool SimpleSound traits that we've since come to use fairly often:

- If you double-click a sound file in the Finder, you can't do anything until the sound is played out. But if you use SimpleSound to play the sound, you can throw SimpleSound into the background and continue to work in other programs while the sound plays!

- SimpleSound streams its sound data directly from the disk, instead of having to load it all into memory before beginning to play (as the Finder does). Even on a lowly Classic or SE with 4MB of RAM, you can play, say, a 10MB sound file.

- SimpleSound can play multiple sounds on top of each other! Just open several and then click their Play buttons one after another. (Ever want to hear yourself singing harmony?)

■ SimpleSound can *record* extremely long sounds — much longer than the pathetic 10-second snippets that Monitors & Sound can record. When you're fooling around with your PowerBook or your Mac microphone to record the baby's first words, or the great-uncle's last, *this* is the program you want to record into — not Monitors & Sound.

To make matters even more pleasant, SimpleSound offers its own quaint Easter egg: Choose ⇨ About SimpleSound, and then click the icon in the dialog box to view the author's name.

Stickies

This ingenious little program does just what you'd think: allows you to jot notes to yourself and stick them on your monitor, as Mac fans have done with *real* Post-it notes for years (see Figure 3-21).

Each little note has a miniature title bar (so you can move the note around), a zoom box in the upper-right corner (so you can make the note snap to its original size), and a resize box in the lower-right corner (so you can resize the note). To make a new note, just choose New Note from the File menu.

We want to call to your attention the supreme usefulness of the Preferences command. Among its options is "Launch at system startup." That simply means that your Stickies will be on-screen waiting for you when you turn on the computer each morning — a terrifically useful and convenient reminder system.
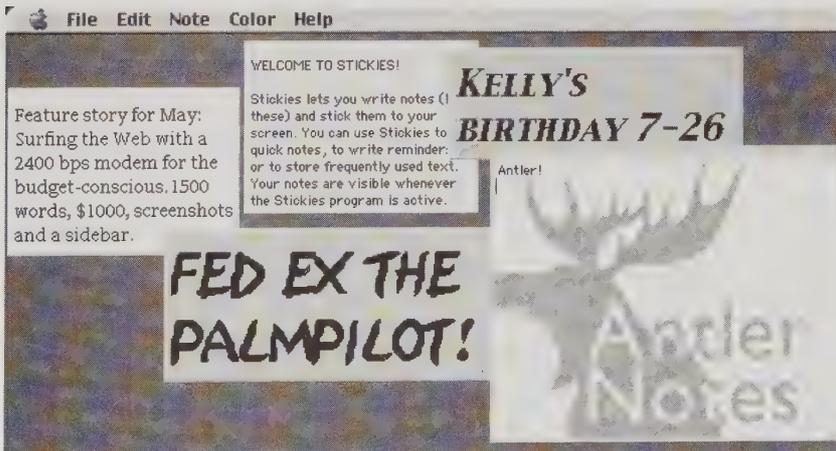
Figure 3-21: Each Sticky can have its own size, color, and type style (use the Note and Color menus). Play your cards right, read our secrets, and you may even get a graphic out of the deal.

Stickies Secrets ————————————————————

The cleverest hidden credits in the menu

Type *Antler!* into a new Sticky note and press Return. (Capitalization counts.)

Who said graphics can't appear in Stickies? (See Figure 3-21 if you don't know what we're talking about.)

(On a less frivolous note: This hidden credit reminds us that some of the Mac OS's pieces were not, in fact, written by Apple. Poke around Apple Menu Options, Date & Time, Jigsaw Puzzle, Desktop Patterns, Find File, and other included programs, and you'll discover that all this software has been licensed from independent programmers. And why not? It's good stuff!)

The miracle of Stickies Stationery

If you're like us, it didn't take you long to grow weary of having to select a color, size, and font style for each new Sticky you make. Here's the brilliant, time-saving solution.

Speed Tip

Create a blank Sticky. Use the Color and Note menus to format it the way you like. Drag the lower-right corner to change the note's size and shape. If you want a default title (such as *Today's To-do's*), type that, followed by a Return or two.

Now choose Close from the File menu. Stickies asks if you want to save this note before closing it. (If it doesn't ask, it's because you turned off "Confirm window-closing" in the Preferences dialog box. Choose Preferences from the Note menu and turn it back on.)

Click Save. In the next dialog box, type a name for this *kind* of Sticky (such as "Phone Message" or "To-Do's"), click the *Stationery* box, click the Desktop button, and click Save. When you quit Stickies, you'll see a new icon on your Desktop you've never seen before: It's Stickies Stationery!

From now on, whenever you double-click this icon, you'll launch Stickies (if it isn't already running) and open a new, blank note identical to the one you originally created.

This is only half the setup, however. Using this technique, create a *folderful* of preformatted Stickies. Drag the folder into your Apple Menu Items folder (in the System Folder). From now on, your menu provides quick access to your entire arsenal of different, preformatted Sticky types.

The saga of closing, saving, and not saving

Contest Winner

Free book winner Arlen Britton discovered something bizarre and amazing about Stickies: when you close a new Sticky note, you're generally asked whether or not you want to *save* that note so that it'll appear next time you launch the

program (*if* this option is checked in the Stickies Preferences menu). If you don't want to save that note, you can click Don't Save or press ⌘-D.

But if you *Control*-click the close box of a Sticky, your note is simply deleted. "No questions asked, and no way to get it back," says Arlen. "Use with caution!"

Ah, not so fast, Arlen! Even as you were e-mailing us with that secret, 13-year-old free book winner Lubomir Stroetmann from Germany was sending us *this* revelation: If you close a Sticky without saving it, a simple glance at the Edit menu will reveal your safety net. It says Undo Close! In other words, even after closing a Sticky, you can get it back again.

All the note that always fits

Under normal circumstances, a Sticky opens to a default size and shape. If your typing extends beyond the bottom of the Sticky, the note automatically grows vertically to accommodate all your typing. But if your typing fills up *less* than the predefined note size, you're stuck with all that wasteful empty space at the bottom of your typing.

MACINTOSH SECRET

Mark's revelation

This write-up from free book winner Mark Cannata says it all:

I use Stickies as a Web address manager. I'm constantly switching between browsers, and almost always want to visit a site that I have bookmarked in *another* browser. I am too cheap to buy a real URL manager, so I use Stickies.

I open the Bookmark or Favorites folders of my browsers and drag-and-drop the sites I visit most onto a Sticky. Most sites are recognizable by the URL (the Web address), but if not, I leave a few spaces and type a description after the URL (such as "*www.macintouch.com* news about the Mac").

When I want to use one of these addresses, I just highlight a URL (minus the description) and drag and drop it into the window of any browser. I've tried this with Cyberdog, Netscape Navigator, Microsoft Internet Explorer, and even AOL's browser. Better yet — if you've got the IceTe extension installed (part of Internet Config, described in Chapter 4), you can just ⌘-click a URL on your Sticky note to open that Web page in your browser.

While I'm surfing, I always have Stickies open so I can copy and paste the URL of interesting sites onto a Sticky. I even have one Sticky note just for "Sites to Visit," where I paste URLs that I come across while reading a newsgroup or e-mail.

Every once in a while, I have to take some time to reorganize my bookmarks. But if you have more time than money, it's a great system.

If this aesthetically unpleasant gulf bothers you as much as it does us, try this. Create a piece of Stickies stationery, as described in the previous secret — but save it in its *collapsed* state (by Option-clicking the tiny "collapse" triangle in the upper-right corner before saving the stationery). Whenever you open this Stickies stationery, a new note window appears in its collapsed condition. However, as you begin typing, it automatically opens and grows, always remaining at the perfect size to accommodate your text.

Change the colors!

You're not locked forever into the original Stickies color scheme of pale pastels. Using Stickies Color Editor (included on the CD-ROM with this book), you can quickly and easily change the default color choices to a more interesting rainbow.

CD

And while we're talking Sticky colors: See Chapter 21 for instructions on adding ⌘-key shortcuts to your Color menu.

Stickies: The tiniest word processor

Stickies? A word processor? OK, it's not Word 98, but Stickies does have a surprising number of hidden word processor-like features for quick-and-dirty text-editing. For example:

■ You can import any plain text file directly into a Sticky using the Import Text command — or drag a text document onto the Stickies icon. In either case, the text file opens in a new note window, in the font and style you've defined as your default note style. This is a handy way to read e-mail messages you've saved from America Online or the Internet.

■ You can drag and drop selected text within and between notes. Dragging text moves it, while Option-dragging *copies* the selected text to the new location. (Simple Text, by contrast, doesn't let you *move* text from window to window; it *always* copies it.)

■ You can press ⌘-L or ⌘-R to go to the beginning or end of a line of text in a note. (Left and Right, get it?)

■ Sticky notes have no scroll bars, but there are plenty of ways to navigate through lengthy notes. The arrow keys work, of course. The Home and End keys on extended keyboards scroll to the beginning and end of a note. More useful, though, is ⌘-down arrow, which both scrolls to the end of a note *and* plants your cursor there.

■ Option-clicking a note's zoom box collapses it to a single line. In Mac OS 8.5, Stickies even sweetly shows you the first line of text (in Geneva 9-point type) within the little collapsed strip, so you can tell the collapsed notes apart. And if you're using the Mac's WindowShade feature (see Chapter 4), you don't even have to mess with the zoom box; you can collapse a note by double-clicking anywhere on its top strip.

- When resizing a note, you can constrain the resizing to one direction by holding down the Shift key as you drag.

- When you close an unsaved note, the Mac asks if you want to save it. You can close the note without saving by pressing ⌘-D.

- A note can hold a maximum of 8,000 characters, which is about four pages of text.

Shut Down

This little System 7.5/7.6 command simply shuts down the Mac. Because it's in the menu, you don't have to return to the Finder to quit for the day. (Its name has the bullet [•] so that it appears at the very bottom of the menu, below all other letters of the alphabet.)

Why did • Shut Down disappear from Mac OS 8 and later? We guess it's because all Macs made today can be turned on and off from the keyboard — no menu command necessary. But if you like the sound of • Shut Down, visit Chapter 21, where we teach you how to make an even better version using AppleScript.

MACINTOSH SECRET

The cruelest practical joke of them all

Technically, • Shut Down is an actual program. Open your Apple Menu Items folder, inside the System Folder, and see for yourself. You can double-click it to shut down your Mac.

This quirk, of course, opens a realm of cruel April-Fools possibilities. One favorite: Place an alias of • Shut Down into your victim's *Startup Items folder* (inside the System folder)! The unlucky object of your attention will turn on the Mac, sit through the extension-loading process, wait for the Desktop to appear — and then watch in horror as the Mac instantly shuts itself off again.

Short of using another start-up disk, there's only one way to escape this evil cycle: press the Shift key through the startup process. (Shift prevents any Startup Items from running.) Then remove the accursed alias from the Startup Items folder.

About the only prank more sinister is the one we recently saw perpetrated on an unsuspecting coworker. On April Fool's Day, a merry prankster put a copy of the • Shut Down program on the victim's Desktop, renamed it *Macintosh HD* and adorned with a new, pasted-in icon — the icon of the *real* hard drive. (The actual hard drive's icon was renamed and moved into a crowded area of the Desktop where it couldn't be spotted.) Sure enough, each time the unlucky victim tried to open his "hard drive," his Mac responded by shutting down.

We would have loved to hear the gentlefolk at 800-SOS-APPL troubleshoot *that* one.

Chapter 4

Control Panels and Extensions

This chapter, perhaps more than any other, is an exercise in futility. Apple may churn out Macintosh models faster than anyone can track, but that's nothing compared to the control panels and extensions they write! All we can hope to accomplish is to review what's in the typical System Folder at the time of this writing.

Even that, however, is enlightening. The modern-day System Folder is a mishmash of added-on features, bug fixes, and system updates. Patches patch patches; new extensions swallow functions previously performed by others. Some icons in the Control Panels folder are actually extensions or full-blown applications; some icons in the Extensions folder aren't extensions at all. It's about time someone tried to make sense of it all.

Many extensions and control panels take up memory; make your Mac take longer to start up; and create the potential for conflicts and crashes. In fact, it's safe to say that the most stable Mac is an extension-free Mac. Of course, you probably wouldn't have much fun on a machine with *no* extensions, but this chapter should help you get rid of the components you'll never need. (And if you *are* having a strange crash, bomb, or freeze, see Chapter 36 immediately for instructions on turning off and testing your extensions.)

Incidentally, even though we *became* exhausted preparing this list, we have a sinking feeling that the *list* isn't exhaustive. We're sure there's probably some patch or extension floating around that we haven't snagged, tagged, and cataloged — a modern Power Mac's Extensions folder contains 125 icons! If so, we hope you'll let us know by e-mail; we'll continue to expand the chapter in subsequent printings of the book. We'll also post the new information on our Web page: http://www.idgbooks.com/idgbooksonline/macsecrets.

CD

We've also taken the liberty of retiring the write-ups of some older items that are useful only on particular Mac models. Their memory is preserved, however, in the electronic version of *Macworld Mac Secrets, 4th Edition* on the CD-ROM.

The Control Panels

You're probably too young to remember *the* Control Panel on the original Macintosh. It was a single window with several buttons, each controlling one Mac function. Today, however, over 35 control panels come nestled in the Control Panels folder, each panel a tiny double-clickable program unto itself. The overall look of the Finder and Desktop, the feel of the mouse, the time, date, and speaker volume settings — all these elements are managed by control panels.

Usually, you access these little self-contained programs by choosing Control Panels (actually an alias of the Control Panels folder) from the menu. The Control Panels window opens, or the submenu pops to the right, so that you can get at the specific control panel you need (see Figure 4-1).
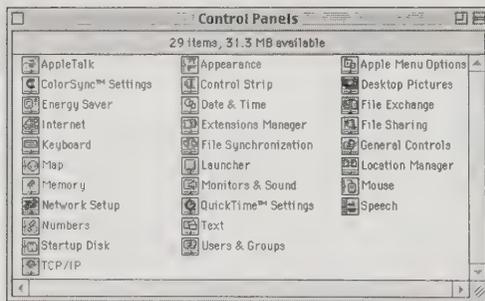
Figure 4-1: Meet the standard control panels — a few of them, anyway. Stand back!

What's a control panel, anyway?

These days, there's no easy answer to the question: "What exactly *is* a control panel?" Apple deposits full-blown application programs into our Control Panels folders — Appearance, Keyboard, Desktop Patterns, QuickTime Settings, Monitors & Sound, and Energy Saver, for example — that don't have the control panel *file format* at all.

Even among traditional control panels, the definition is a little blurry. It turns out there are two different *kinds* of control panels: those that need to be in your System Folder when the Mac starts up and those that don't.

Strange
But True

Those that do are said to contain *init code;* they're essentially *extensions* with a few settings that you can change. Apple Menu Options, AppleTalk (Network Setup), File Sharing, Macintosh Easy Open, PC Exchange, Sharing Setup, and fax software are some examples — like extensions, they're useless unless they were in your System Folder when the Mac started up.

Many other control panels, however, work properly even if they weren't installed in the System folder at startup. They behave like little miniprograms: You launch one when you want to *change* your preferences. The preferences are stored in your Mac's PRAM (a tiny piece of memory permanently sustained by your Mac's built-in lithium battery), not in the control panel itself. After you pick a Desktop pattern, choose a color for highlighted text, pick an alert sound, or whatever, you won't need those control panels again until you want to *change* that setting.

In theory, you could actually get some mileage out of that fact if disk space or security is at a premium for you. You could back up those control panels and then throw away the ones in your System Folder, so that unauthorized marauders couldn't change your settings. To change any of your preferences later, you could always insert the backup disk and open the appropriate control panel — there's no need to install it, copy it to your hard drive, or restart the machine.

Perhaps more practically, the existence of these non-init control panels means that even if they had been turned off using Conflict Catcher, Extensions Manager, or a similar program, you can still launch them whenever you want. That is, such control panels work regardless of whether they're in the actual Control Panels folder, the Control Panels (Disabled) folder, or whatever.

Here's a guide to all the little goodies in the Control Panels folder — and those that you can ditch to save space.

Appearance (Mac OS 8.0 and 8.1)

OS 8

This application, born in Mac OS 8.0, is designed to be the central interior-decoration center for the look of your Mac's interface. Use it to change the color scheme, system font, and other aspects of the desktop. (Appearance incorporates the functions of the old Color and WindowShade control panels.)

At the left side of the Appearance screen are rectangular buttons that let you specify what Macintosh element you want to change. For example, in Mac OS 8.0 and 8.1, you have two choices: Color and Options.

The Color screen lets you specify an *accent color,* which shows up in three places: the scroll bar "thumb" (the little box that marks your place in a scroll bar); the progress bar (when you're copying or deleting files); and the window-interior highlighting (which appears when you drag an icon into an open window). (You're to be forgiven if the sheer excitement of this feature doesn't make you upgrade to Mac OS 8.)

The Color screen also offers a pop-up menu listing of ten *highlight colors* — that is, the color of the shading that appears when you drag across text. If none of the standard highlighter-pen colors pleases you, choose Other from the menu to open the standard Macintosh Color Picker. Click a new color and then click OK (see Figure 4-2). You can set the highlight to almost any color, but dark, heavily saturated colors make it hard to see the highlighted characters.
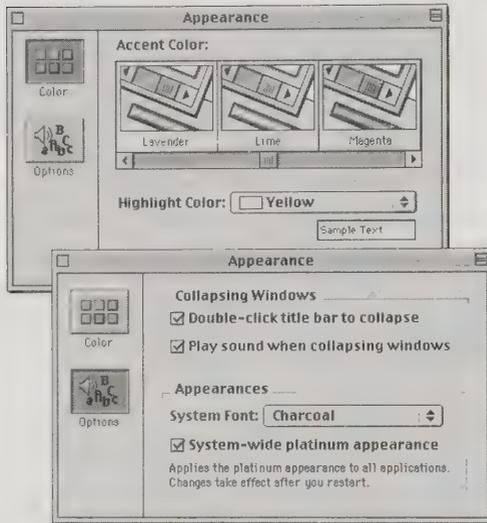
Figure 4-2: The Mac OS 8.0/8.1 Appearance control panel has two panels — one for color accents (top) and the other for fonts and sounds (bottom).

The second option, Options, offers a motley assortment of miscellaneous options. At the top, you're offered "Double-click title bar to collapse windows," which is familiar to Mac vets as the WindowShade feature: when you double-click the top stripes of a window, the window "rolls up" into that title bar, revealing whatever's underneath. A second double-click "pulls down" the window again. Of course, in Mac OS 8 and later, every window has a WindowShade *button* in the upper-right, as shown in Chapter 1 — but this option gives you a bigger target. (The "Play sound" checkbox adds a terrific *whishp!* sound to the windowshade animation.)

The Options panel also offers you a choice of *system font.* By that, Apple means the typeface used in your menus and in the title bars of windows. If you loathe Mac OS 8's new default font, Charcoal, you're welcome to switch back to the old 1984 standby, Chicago. You can even use one of several shareware replacement-Charcoal fonts, such as Virtue or any of the fonts that come with the Kaleidoscope shareware control panel (which is included on the CD-ROM with this book); see the appendix for installation instructions. Or just install Mac OS 8.5, which offers a much larger array of system fonts.

CD

Finally, the Options panel contains the bizarrely worded "System-wide platinum appearance." You wouldn't be alone in wondering what the heck that's supposed to mean.

Turns out the "platinum appearance" means "gray look," the overhauled Mac OS 8 design scheme that includes these elements:

- **Newly designed checkboxes.** Little checkmarks appear when one of these checkboxes is selected (instead of an X, as in systems before Mac OS 8).

- **Newly designed buttons, such as OK and Cancel.** In Mac OS 8 and later, they're light gray and slightly bulgy, as though they're 3D. Radio buttons (see Chapter 15), too, are more three-dimensional.

- **Richer-looking title bars and scroll bars.** In Mac OS 8, these elements have once again been 3-D-ized and modernized.

- **Gray menus.** Before Mac OS 8, menus and menu bars were black text against a white background; now the background is light gray.

So who on earth could object to these subtle visual enhancements? You might, if you find the old black-on-white easier to read than black-on-gray. Your software might, too, if it's old and not terrifically well written.

Strange But True

It's important to understand, by the way, that if you turn *off* the "System-wide platinum appearance" checkbox, you won't see the change until you restart, and you won't see the change in the Finder! This option only affects *other programs,* such as ClarisWorks or Word or Navigator — not the Finder. In other words, you'll be able to compare the new look with the old just by switching between the desktop and one of your programs.

Appearance Control Panel Secrets

Highlighting colors: How Bizarre

We've discovered some interesting quirks when it comes to choosing a text-highlighting color. If you choose pure white (the spot at the center of the color wheel), you'll end up with solid *black* highlighting! (Apple obviously hopes to protect you from yourself; if you truly chose white as the highlight color, you'd never be able to tell when something was highlighted.)

If you choose a color that is very close to white, but not white itself, the results are even stranger. You'll see black highlighting on *black* text, obliterating whatever you select. To view this effect in Mac OS 8 (shown in Figure 4-3), try clicking the CMYK Picker (within the Color Picker dialog box). Drag all sliders to 0 except Cyan, which you can drag to 4%.

Mr. Smith was about as angry as anybody I'd ever seen. He stared at the smoldering remains of his house, then at the still-burning match in my hand. And, as best as I can remember, his exact words were: "You ▮ ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮ !!!"

Figure 4-3: What happens when you get zany in choosing your highlight color for text.

Insta-font change

Under normal circumstances, you have to restart the Mac in order to see any system-font changes you've made in the Appearance control panel. That's quite a drag if, say, the Charcoal font bores you after an hour or two.

Speed Tip

But if you press Option as you choose a new font from the pop-up menu, your menus and dialog boxes change instantly to reflect the new system font.

Life's too short for unnecessary restarts, we always say.

Appearance (Mac OS 8.5)

OS 8.5

The Appearance control panel was more than updated in Mac OS 8.5 — it was positively reinvented. With this application (see Figure 4-4), you can do far more than meekly change the font used in your menu; now you can change the look and color of the scroll bar boxes and progress bars; choose any of *several* different system fonts; add sound to your computing experience; view smoother, more polished-looking text on the screen (in any program); and so on.

ANSWER MAN

Why not any font I want?

Q: How come the Appearance control panel doesn't let me choose any old font I want to use in my menus? How come it's either Chicago or Charcoal?

A: Thousands of existing programs are programmed to expect the Chicago font in your menus. Unless each letter of the alphabet (of your replacement font) is precisely the same width as in Chicago, an overlapping or widely-spaced mishmash in your menu bar will result. Therefore, the Appearance control panel only offers you a choice of fonts, such as Charcoal, that share the precise letter widths as the original Chicago font.
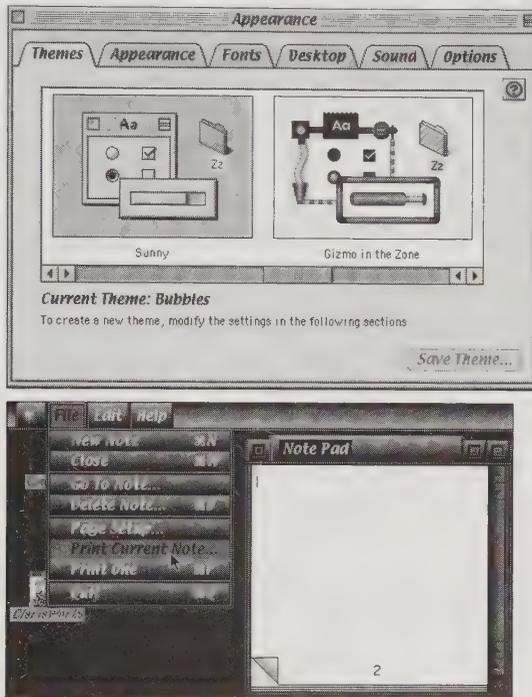
Figure 4-4: The Appearance control panel (top) in Mac OS 8.5 is your interior-design command center. It can accommodate shocking, interface-overhauling Theme files, such as Hi-Tech (bottom), although Apple doesn't provide any with the Mac OS 8.5 release.

Although Mac OS 8 introduced the concept of multiple panes in the Appearance control panel, its pane-switching mechanism was buttons down the *left* side of the program. In 8.5, tabs across the top offer numerous customization options:

■ **Themes** — A *Theme,* in Apple jargon, is a complete set of Appearance control panel settings: your preferred choice of fonts, sounds, desktop pattern, scroll-bar preferences, and all other settings you'll read about in the paragraphs to come. All of these settings, lumped together, constitute a Theme that you can name and jump to whenever you feel the need for a change of scene.

The Appearance control panel comes with several pre-defined Themes to show you the idea, but you can create as many of your own as you like. To do so, open the control panel. Click the Appearance, Fonts, Desktop, Sounds, and Options tabs one at a time, and make any changes you like. Then return to the Themes tab, where you'll see a new entry called Current Settings. Click the Save Themes button, give your new Theme a name, and call it a day.

- **Appearance** — This panel contains three pop-up menus. The first, we're fascinated to note, is the Appearance *pop-up menu* on the Appearance *tab* of the Appearance *control panel.* If you're mystified by the fact that this pop-up menu does not, in fact, offer any choices at all, see the sidebar "Death of the Appearance Feature." For now, you're stuck with the menu's sole option, Apple Platinum, the standard look for the Mac OS since Mac OS 8.

  The second pop-up menu on this panel is the latest resting place for the abandoned Color control panel (of System 7.x). It lets you specify a highlighting-pen color for text you select in, for example, a word processor. (See "Color," later in this chapter, for details.)

  The third pop-up menu, Variation, lets you choose an accent color for the Mac OS. This color shows up in subtle interface touches like the scroll-bar box, progress bars, the color of a menu name when you pull down the menu, the highlighting rectangle that lines a window when you drag an icon into it, and so on.

- **Fonts** — This delightful panel lets you choose any of several typefaces for use everywhere the Mac OS needs fonts (see Figure 4-5). The first pop-up menu lets you choose a font for your menu bar and menus. (Yes, you had a choice of system fonts in Mac OS 8's Appearance control panel, too — but now you have a longer list of fonts; Chicago and Charcoal are no longer your only choices.)

  The second font pop-up menu lets you choose a font for use by the explanatory text in dialog boxes (a new feature). (To see an example of this secondary system font in use, examine the Appearance program itself.) The final pop-up menu lets you choose a font for your icons in the Finder (which was once part of the Views control panel, then moved to Mac OS 8's Preferences command, and is now home at last).

  Most useful of all is the "Smooth all fonts on screen" checkbox. When you turn it on, the edges of your onscreen type gets softer and smoother (or *antialiased,* as the geeks would say), making your entire computer look as though it's an elegantly designed Web page. (This is exactly what ATM Deluxe can do for PostScript fonts — but now you save $100 and get smooth TrueType fonts, too.) Because antialiasing works best as the type size increases, you can use the Size control to set a minimum font size for this feature; unfortunately, Apple decided that 12-point is the smallest type size worthy of Font Smoothing.

The Staten Island Fairy   The Staten Island Fairy

A true story in nine chapters   A true story in nine chapters

Once upon a time there was a water sprite named   Once upon a time there was a water sprite named
Tia. She lived in New York, near the harbor where   Tia. She lived in New York, near the harbor where

Figure 4-5: Mac OS 8.5's Appearance control panel offers the font-smoothing feature, shown here before (left) and after (right).

CASE HISTORY

Death of the Appearance Feature

The Appearance *pop-up menu* on the Appearance *panel* of the Mac OS 8.5-and-later Appearance *program* may strike you as singularly redundant. It's a pop-up menu that offers no choices at all — it always says Apple Platinum!

As originally conceived, this pop-up menu was supposed to let you switch from one *Appearance file* to another — overall design schemes for your menus, icons, windows, checkboxes, and so on. Appearance files could change the look of title bars, scroll bars, window shapes, menu-bar colors, and more. We're talking *big* design overhauls, with squiggly scroll bars, jet-black menu bars, and chrome type. (See the bottom illustration in Figure 4-4 for an example.)

The beta versions of Mac OS 8.5 came with two Appearance files — called Hi-Tech and Gizmo, which included accompanying sound-set files — that you could install by dropping onto your System Folder. They showed up instantly as new options in the Appearance pop-up menu. (For those scoring at home: these files went into your System Folder in a folder called Appearance. There you'll find three folders: one that stores graphics files to be used as desktop pictures; one that houses sets of sound files to be used for the various sounds; and one that holds Appearance, also called Theme, files.) We were delighted with

the concept of Appearance files, confident that the world of shareware and commercial software authors would rise to the challenge of creating many more Theme and Sound Set files.

As the date for Mac OS 8.5's release approached, however, the designers at Apple got cold feet about making such radical changes to the trademark Mac look. They removed all Appearance files from the final version, announced that they had "no plans" to make them part of the OS, and refused even to publish the guidelines for *creating* Appearance files.

In other words, Mac OS 8.5 is Appearance-ready; works great with Hi-Tech and Gizmo; and will work automatically with any new Appearance files the hacker world comes up with. But for millions of Mac OS 8.5 users, the only sign that wacky, alien-looking Mac OS overhauls were ever possible is that bizarre, orphaned, redundant Appearance pop-up menu in the Appearance control panel.

We look forward to the moment when the clever members of the Mac programming community crack Apple's code and start releasing their own OS 8.5 Appearance and sound files. (Hint: When they do become available, just drop them onto the System Folder to install them.)

■ **Desktop** — This tab serves the same purpose as the Desktop Pictures control panel of Mac OS 8, described elsewhere in this chapter. In this case, however, you create new tiled *patterns* by dragging a graphics file onto the scrolling *list* of patterns; you create a new, non-repeating desktop *picture* by dragging a graphics file into the mini-desktop display window. (Of course, you can also create a repeating pattern by dragging a smallish picture file onto the mini-desktop screen and then choosing Tile on Screen from the pop-up menu.)

You can still drag an entire folder onto the miniature screen here — in case you want a randomized picture each time you turn on your Mac — but you can no longer Option-click the Place Picture button to achieve the same effect.

■ **Sounds** — If any single feature gives Mac OS 8.5 the feeling of being a new computing experience, this one's it: sound effects. Whenever you use scroll bars, menus, icons, the Trash, windows, disks, or almost anything else that requires mouse manipulation, a tiny, cheerful sound accompanies you. (A total of 89 different actions produce sounds.)

We're certain that sounds will become an instantly polarizing option, with those who find that it perks up using a Mac at loggerheads with those who find the sounds insufferable. We gently remind the latter, however, that the sounds can be easily switched off.

As originally conceived, Mac OS 8.5 was to offer a selection of different "sound tracks." (You can still see the orphaned, residual, pointless Sound Tracks pop-up menu in Figure 4-6.) Unfortunately, when Apple killed the entire idea of different Appearance files (see the sidebar "Death of the Appearance Feature,"), it also eliminated your choices of sound sets.
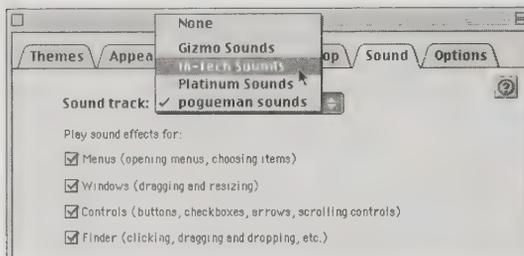
Figure 4-6: If you use our sneaky ResEdit secret, you can create your own "sound tracks."

As with other components of Mac OS 8.5's new makeover tools, sounds were to have come in prepackaged, audiophonically coordinated bundles called *Sound Set files.* Only one comes with Mac OS 8.5 — the Platinum sounds; you'll find it in your System Folder, in the Appearance folder, in the Sound Sets folder. Double-clicking a Sound Set file gains you nothing but an error message. But opening a Sound Set with ResEdit, as described in Chapter 21, gains you access to all of these sounds, suitable for copying and pasting into other programs.

We hasten to point out, too, that even though Apple chose not to distribute any sound sets except one, you can easily create your own. Duplicate and rename the Apple Platinum file that's already in your Sound Sets folder (in the Appearance folder, in the System Folder). Open that file with ResEdit and double-click the *snd* icon (see Chapter 21 for details). To replace one of the Platinum sounds, carefully note its ID number and name — and then delete it. Paste in a replacement sound, and — using the Resource ➪ Get Resource Info command — change your pasted-in replacement's ID and name to exactly match the one you deleted. Save the file.

Lather, rinse, repeat.

- **Options** — Apple has a fine tradition of observing which shareware doodads Mac fans download and install — and then incorporating those functions into the operating system. The scroll-bar option on the Options panel is no exception; it places both the up- and down-scroll arrows in the lower-right corner of your scrollbars, which can be handy for big-monitor owners (see Figure 4-7).

  This option also makes the *scroll box* (the square handle you drag) larger or smaller to reflect the amount of the document that's currently visible in the window. That is, if the scroll bar handle is one-third the height of the scroll bar, you're seeing one-third of the document in your document window (see Figure 4-7).
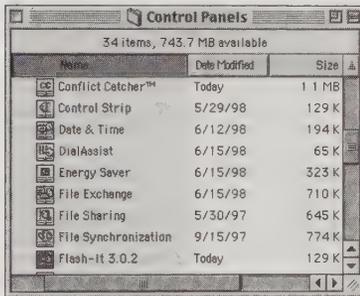
Figure 4-7: The new scrollbar option makes possible these double-arrowed, proportionally-sized scroll bars.

Apple Menu Options

Apple Menu Options adds two extremely useful functions to the menu. First, it adds a submenu to any *folder* listed in the menu (such as Control Panels), listing that folder's contents (see Figure 4-8). Choose a submenu item to open it.
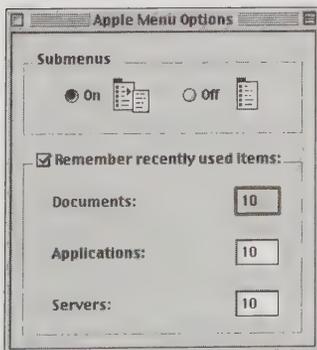
Figure 4-8: You are now the master of your own menu's submenus.

(OS 8.5) Second, the Recent Items control adds three new folders to the menu: Recent Applications, Recent Documents, and Recent Servers (that is, networked disks). The control panel keeps track of the last few items you worked on and lists them in these submenus. (You use the control panel to specify *how many* of the most recent items you want it to track. In Mac OS 8.5 and later, these numbers also determine how many recent items show up in the new Open and Save dialog boxes, described in Chapter 15.)

The Recent Items feature works by putting an *alias* of each item you open into the Recent Documents folder (or other appropriate Recent folder). We mention this fact so that when you fear that the boss might be walking by your desk soon, you can open your System Folder, open the Apple Menu Options folder, open your Recent Applications folder, and throw away the *Super Mario Tetris Plus! Pro* alias. No one will suspect what you've really been doing…recently.

Apple Menu Options Secrets ━━━━━━━━━━━━━━━━━━━━━━━━━━■

Turn off those recent items

Worth Learning

So you're not *on* a network. Are you forced to put up with a pointless Recent Servers command in your menu?

No. Open the Apple Menu Options control panel. Change the number of Recent Servers to zero; that item will no longer appear in your menu. If you're not the kind of person who uses the Recent Documents and Recent Applications feature, by the way, turn those off, too. You'll get a small but measurable speed boost when you open and close programs and documents.

Add your own submenus

When you first install it, Apple Menu Options makes a submenu spring out of four menu commands: Control Panels, plus those three Recent items. But *any* folder you put into the Apple Menu Items folder (inside your System Folder) will automatically sprout submenus. And any folders inside *those* folders will sprout submenus, too…and so on, up to five nested folders deep.

In other words, your menu can become a powerful navigation tool. Stick an alias of your *hard drive* into your Apple Menu Items folder, for example, and suddenly you can open any item in any folder on your drive, up to four nested folders deep. If you're on a network, make aliases of the hard drives you frequently log onto; put them into a Frequently Used Servers folder in your Apple Menu Items folder. From then on, mounting one of those disks is only an -menu choice away.

■━━■

AppleTalk

The AppleTalk control panel is the Open Transport-era replacement for the old Network control panel. You use AppleTalk's simple pop-up menu to choose the networking method you prefer: LocalTalk, Ethernet, and so on — a crucial step when you're trying to connect one Mac to another. See "Open Transport (and related files)" later in this chapter, and see Chapter 35 for step-by-step instructions.

AppleVision Setup

This application offers settings, obviously, for the AppleVision monitor series — made obsolete by the Monitors & Sound control panel (described later).

At Ease Setup

At Ease is a Finder-hiding gadget designed for those in control (a parent, a teacher, a service-bureau owner); it's designed to protect the Mac from those who are *out* of control (a kid, a student, a customer). It comes with the At Ease Startup extension.

At Ease came free with the Performa series; you can also buy it from Apple or a mail-order place. It has certain aspects in common with the Launcher or Mac OS 8's Button View, in that it creates a palette of jumbo icons that one click, not two, will open. But At Ease fills up the entire screen — Control Panels, the Trash can, and your disk icons are all hidden from view, making it impossible for accidental renaming, deleting, or setting changes to occur without the grown-up's knowledge.

In its place, you see something like Figure 4-9. When you launch a program, the At Ease window itself disappears, only to reappear when you quit that program.
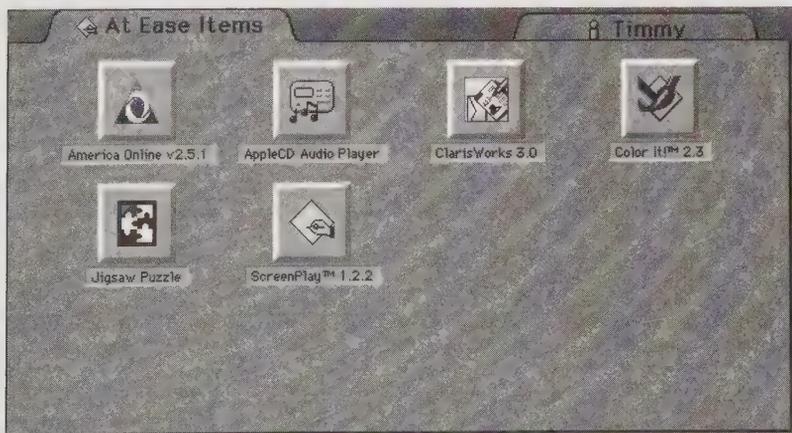
Figure 4-9: What you see instead of the Finder when you're in At Ease.

Each student/child/customer can have his/her own selection of icons installed on these screens. When the Mac starts up, it presents a list of all such setups (Timmy, Mom, Dad, Sissie, and so on), and you double-click to tell the program which configuration to use.

You can even set up a "restricted Finder" environment for certain users, in which the regular world of movable icons, folders, and menus is available — but only designated ones. You, the administrator, decide which folders and files are visible and usable, using the At Ease Setup program.

At Ease Secrets

At Ease and the death of your hard drive

The manual tells you that before removing At Ease, you must open the At Ease control panel and *click the Off button.* It specifically warns you *not* to drag the At Ease files to the Trash. The manual doesn't, however, specify exactly what will happen if you *don't* remove At Ease in the officially sanctioned manner: Basically, you *trash your hard drive.*

At Ease does something rather un-kosher when it installs itself — it modifies the boot blocks of your hard drive (the very first instructions that get processed when the Mac is turned on) to ignore the Finder and launch At Ease instead. Of course, if you've thrown away At Ease, the Mac goes on a wild-goose chase, and throws up its electronic hands in frustration. It gives you a flickering system-bomb icon in an empty dialog box — and, after a while, the blinking question-mark Icon of Doom.

Sometimes, running the Disk Tools program can repair the damage. Other times, doing a clean system reinstall (see Chapter 36) does the trick.

Much better, though, to avoid the problem in the first place: Turn off At Ease before removing any of its components, or remove it using its original Installer program's Remove option.

The forgotten-At-Ease-password trick

It could happen to you: You forget your own At Ease password. Holding down the Shift key at startup, of course, doesn't bypass At Ease. How can you get back to your Finder?

Restart the Mac from your Disk Tools disk or your system software CD-ROM. Now just open your hard drive's System Folder, open the Preferences folder, and throw away At Ease Preferences. Now At Ease can't remember your password, either!

Restart the Mac and you're back in business.

Roll credits!

With At Ease running, hold down the Option key while choosing About At Ease from the menu; you'll uncover a picture of the At Ease programmers.

But those secret Easter egg credits are only an omelet compared to Part II: Click to get rid of the About At Ease screen. Now choose At Ease from the menu — this time, *without* holding down any keys.

The regular At Ease About box appears, without scrolling credits. Carefully point the tip of your cursor at the head of the upper-middle Weeble head.

Watch in amazement as the little cartoon head changes into the *real*, photographic head of the main programmer. Double your fun by pointing to the *lower* middle Weeble, too, and marvel as Scott Marcy's head pops into sight.

ATM

CD

ATM is Adobe Type Manager, which makes PostScript fonts look smooth on the screen and in inkjet printouts (see Chapter 29). You may have any of several versions. One gets installed when you install Adobe Acrobat Reader (which is included on the CD-ROM with this book). Another, called ATM GX, is installed if you're one of the eight people who've installed QuickDraw GX. Yet another control panel is the heart of ATM Deluxe, sold by Adobe just for managing fonts.

Auto Power On/Off

This ancient control panel lets you specify times at which you want your Mac to turn itself on or off. For details, see "Energy Saver 2.0 (and related files)," later in this chapter.

AutoRemounter

Suppose you're using your PowerBook. (Let's assume it's a PowerBook that came before 1998's PowerBook G3 series. AutoRemounter disappeared with the debut of these PowerBooks; its functions became part of the Energy Saver control panel, described later in this chapter.)

Using your office's network (see Chapter 35), you bring the hard drive of some other Mac (or two) to your PowerBook Desktop so that you can transfer files. AutoRemounter's job is to bring the other Macs' icons *back* to your PowerBook's screen after it's been off or asleep.

If you have a desktop Mac, forget it; networked disks *stay* on your screen when a desktop Mac goes to sleep, so AutoRemounter serves no purpose.

If you *do* have a pre-1998 PowerBook, however, AutoRemounter has another handy side effect: It lets you put the laptop to sleep without encountering that annoying "You're about to lose network services" alert message, which appears whenever you put a PowerBook to sleep when AppleTalk is turned on. If you're not on a network, though, we recommend trashing this control panel.

Button Disabler

Speed Tip

Only for LC or Performa 500, 5000, or 6000 models running System 7.5 (and later). This doodad disables the volume and brightness buttons on the front panels of those models (to prevent tampering in school situations).

CloseView

CloseView is designed to help the visually impaired. It magnifies a portion of the screen, making the screen image 2 to 16 times larger. CloseView isn't installed automatically these days; you generally have to install it with the system installer's Custom option (see Chapter 5) or by looking in your system-software CD's Universal Access folder (in the CD Extras folder).

Once CloseView is installed, you can switch it on and off by pressing ⌘-Option-O (before System 7.5.3) or ⌘-Option-K (System 7.5.3 and later). (See Figure 4-10.)

To increase or decrease the degree of magnification, while holding down ⌘ and Option, press the up- or down-arrow key (before System 7.5.3), or the plus and minus keys (System 7.5.3 and later). The enlarged screen view follows the insertion point — an arrangement that takes some getting used to.

CloseView also lets you reverse your monitor's display black-for-white. Some people find this inverted-video setup easier on the eyes for long-term Mac work. (On color monitors, *all* the colors are inverted, making the screen appear drugged-out.)
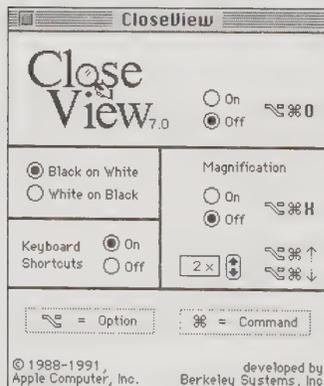
Figure 4-10: Zoom in close and invert screen colors with the CloseView control panel.

Color

With this pre-Mac OS 8 control panel, you can change the color of text highlighting and the tint of windows in the Finder. The first pop-up menu lets you choose what color text turns when you drag across it, and the second affects the shading of window title bars, scroll arrows, and scroll sliders. See "Appearance," earlier in this chapter, for some fascinating details about color-picking on the Mac.

Color Control Panel Secrets ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━■

Roll credits!

Click the words *Sample Text*, and the text is replaced with the words *by Dean Yu*. Click again, and you see the name of Dean's collaborator, Vincent Lo.

But that's only the start. Keep clicking. At click #16 (keep your mouse button pressed), a surprising new name appears: Don Louv, the mysterious third programmer.

And if you click 26 more times, at click #42, a startling new expression appears in the little sample-text box: *doodle doodle dee*.

Strange But True But the fun still isn't over! This is a full five-minute Easter egg. If you click *42* more times, at click #84, you get the final surprise of the evening: the words *wubba wubba wubba*. Do you suppose the programmers were getting just a *little* slap-happy?

MACINTOSH SECRET

The secret of the Color control panel secret

"If you click *42* more times," we wrote, "at click #84, you get the final surprise of the evening: the words *wubba wubba wubba*. Do you suppose the programmers were getting just a *little* slap-happy?"

And for two editions of this book, that's where our secret stood: a mystery of nonsense syllables. The beauty of publication, though, is that if enough readers join the quest, the truth eventually emerges.

"By a quirk of fate," wrote reader Scott Maxwell, "I happened to be watching 'The History of Rock 'n Roll' on The Learning Channel, when they began talking about MTV. They ran one of the very first ads for MTV, which was two phrases on the screen, one at a time, and a deadpan voice reading them. The phrases were, of course, 'Doodle Doodle Dee' and 'Wubba Wubba Wubba.' Then they threw up the MTV logo. (As far as I know, 'Wubba wubba wubba' was a catch-phrase that Downtown Julie Brown used to say when she hosted Club MTV."

Glad *somebody's* paying attention.

ColorSync or ColorSync System Profile

ColorSync is Apple's solution to the age-old problem of printed colors that don't match the colors on-screen—and for graphics pros, such color consistency is an important advantage of the Mac over Windows. Each piece of color equipment—scanner, monitor, printer—is supposed to have its own ColorSync Profile file that identifies its peculiar color quirks. (The profile documents, by the way, get stored inside the ColorSync Profiles folder, which lives within the Preferences folder in the System Folder.)

You use this control panel's pop-up menu to select the kind of monitor you're using—Apple 16-inch, Performa Color Display, and so on—so that the behind-the-scenes software will know how to keep colors consistent on other color units. (The ColorSync *extension,* described later in this chapter, is required for this control panel to work.)

ColorSync is absolutely useless unless you have *exactly* the right profiles installed for your specific monitor and printer. If you have a Radius 20-inch monitor, don't use the profile for the Apple 20-inch monitor. (Unfortunately, profiles for non-Apple equipment may be hard to find.) In fact, if you use the wrong profile, your color matching might even get *worse* with ColorSync.

If you don't do any color scanning or printing, trash ColorSync, the ColorSync extension (which this control panel requires), and related files.

Control Strip

Mac Basics

The Control Strip is one of the most important and useful features ever added to the Mac. Over the course of your computing career, it can save you thousands of trips to your control panels to change everyday settings. If you're not using the Control Strip, today's the day.

The Control Strip was originally designed for PowerBooks, but it was such a hit that it became part of System 7.5.3 and later. In Mac OS 8 and later, for example, the Control Strip is automatically installed (you don't have to do a custom install, as you did for earlier OS versions).

It's a rack of control tiles, as shown in Figure 4-11, that floats in a handy strip above whatever other windows are open. Each tile actually is a tiny pop-up menu. Hold the mouse button down steadily on a tile, and then slide up or down to the command you want. Most of the tiles are affiliated with (and save you a trip to) a particular control panel, as indicated in the following descriptions.
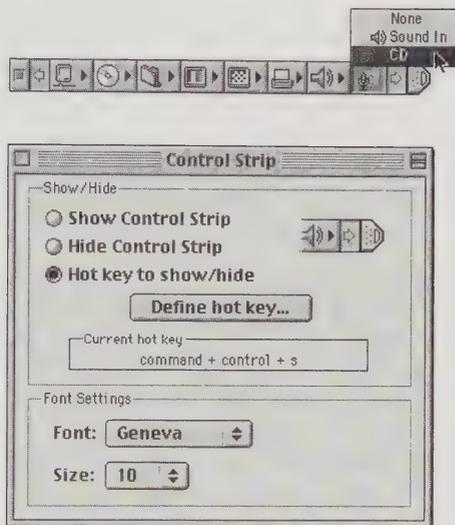
Figure 4-11: The awesomely handy PowerBook Control Strip, as shown on a desktop Mac (top), and the control panel that controls it (bottom).

The original tiles provided by Apple include:

- **AppleTalk Switch** — Turns AppleTalk on or off. *Trip saved to:* the Chooser.

- **Battery Monitor** — A PowerBook battery/recharging gauge. The pop-up menu allows you to hide the power graph.

- **CDStrip** — For Macs with CD-ROM drives: lets you control *music* CDs. The pop-up menu has controls for Play, Stop, Eject, AutoPlay (starts playing a music CD immediately upon insertion), and so on. *Trip saved to:* AppleCD Audio Player desk accessory.

- **Energy Settings** — Debuting in Mac OS 8.5, this module gives you quick access to your Mac's (and monitor's) auto-shutdown or auto-sleep features. On a PowerBook, it also controls overall battery conservation settings. *Trip saved to:* Energy Saver control panel.

- **File Sharing Strip** — A File Sharing on/off switch (and indicator), for when you're working on a network. See Chapter 35. *Trip saved to:* File Sharing (or, before Mac OS 8, Sharing Setup) control panel.

- **HD Spin Down** — A power-conserving command, for PowerBooks only, to make your internal hard drive stop spinning (and a spinning/not spinning indicator).

- **Location Manager Controls** — Offers a choice of locations (New York, Washington, Seattle, etc.) that you've previously set up using the Location Manager control panel (described later in this chapter). Each "location" stores the local Internet phone number, your file sharing and printer selections, a speaker-volume level, and so on. Lets you switch conveniently among them. *Trip saved to:* Location Manager control panel.

OS 8.5

■ **Media Bay** — Another fresh face that debuted in Mac OS 8.5; for PowerBooks only (such as the G3 Series). Tells you at a glance if anything (a battery, a CD drive, a floppy or Zip drive) is inserted in each of the laptop's side compartments. A tiny red X even tells you when it's safe to remove whatever's there at the moment.

■ **Monitor BitDepth** — The pop-up menu lists "256 Colors," "Thousands of Colors," and so on, which change the number of colors displayed on your monitor. (See Chapter 11 for more on *color depths*.) *Trip saved to:* Monitors & Sound control panel.

Strange But True

■ **Monitor Resolution** — Lets you change the *resolution* (the magnification level) of your screen. For certain PowerBook owners, a crucial undocumented feature lurks: If you *Control-click* this tile, the pop-up menu lists many more resolution settings. Among them, you'll find one called *simulscan*. This is the setting you must use when you want to display a recent PowerBook's image on an external monitor! *Trip saved to:* Monitors & Sound control panel.

■ **Power Settings** — For pre-Mac OS 8.5 PowerBooks only. A tile for adjusting the overall power conservation/speed balance of your laptop's screen, disk, and system sleep functions. *Trip saved to:* PowerBook control panel.

■ **Printer Selector** — If you're connected to more than one printer, and you're using the Desktop Printing extension (see Chapter 30), this pop-up menu lets you choose a printer as the destination for your printouts. *Trip saved to:* the Chooser desk accessory.

OS 8.5

■ **Remote Access Control Strip** — A long-overdue, profoundly useful tile that controls your Internet connection. See an illustration and description in Chapter 25. *Trip saved to:* Mac OS 8.5's Remote Access control panel.

■ **Sleep Now** — For PowerBooks only. A tile with an instant-sleep command. *Trip saved to:* the Finder's Special menu. (In Mac OS 8.5 and later, this command has been incorporated into the Energy Settings tile.)

■ **SoundSource Strip** — Debuting in Mac OS 8.1, this control panel lets you choose which source you want your Mac to "listen" to for recording new sounds (or just listening). *Trip saved to:* Monitors & Sound control panel.

■ **Sound Volume** — A sound-level slider that changes the Mac's built-in speaker volume. *Trip saved to:* Monitors & Sound control panel.

■ **TV Mirroring** — For Macs with TV output jacks (RCA or S-VHS video outs), such as the PowerBook G3 Series. Lets you turn TV mirroring (showing the same thing on the Mac's screen and the attached TV) on and off in either the standard USA (NTSC) or European (PAL) format.

■ **Video Mirroring** — Appears only when an external monitor is attached to your desktop Mac or your pre-1997 PowerBook. Lets you control whether or not *video mirroring* is on — that is, whether or not the external monitor should display the same thing that's on the primary monitor.

■ **Web Sharing CS**—Lets you turn on and off Mac OS 8-and-later's *Web sharing* feature, in which you make certain folders on your hard drive available to anyone on the Internet (or on your corporate network). See Chapter 28 for details on Web Sharing.

Control Strip Secrets ─────────────────■

Changing the Strip: before Mac OS 8.5

If a particular Control Strip tile is of no use to you, by all means get rid of it. To do so, open your System Folder; open your Control Strip Modules folder; and throw away (or file away) any module you don't use. You can always restore one by putting it back into the Control Strip Modules folder and restarting the Macintosh. (Conflict Catcher can also turn them on and off, sparing you the trouble of moving Control Strip icons manually.)

You can also *add* new tiles to the Control Strip, thanks to its modular construction. Install new modules as they're written by shareware (or commercial-ware) authors simply by adding them to the Control Strip Modules folder (in the System Folder) and restarting.

CD

Some of our favorites are Control Strip Terminator (lets you quickly quit all your programs, or just the background ones, or even the Finder); OT/PPP Strip (described in Chapter 25); and Bunch-O-Apps (serves as a quick launching list for your favorite programs). You'll find them on the CD-ROM that comes with this book.

For dozens more, of every possible description, point your Web browser to `www2.gol.com/users/sytsma/csm`, better known as Control Strip Haven.

Changing the Strip: Mac OS 8.5 and later

OS 8.5

Control Strip 2.0, which debuted in Mac OS 8.5, makes adding and removing tiles much easier than before. To install a Control Strip module, simply drag it onto the expanded strip; you don't even have to restart the Mac.

To remove a tile, Option-drag it off the strip and directly to the Trash. Sound familiar, Launcher fans?

Move it, baby

The Control Strip is much more flexible than it looks. For example, you can shrink it to any length by tugging its little end tab. If you simply *click* the tab, in fact, the Strip collapses so that *only* the tab appears, at the very edge of your screen—waiting for another click to expand again.

Mac Basics

Furthermore, if you press Option, you can drag the entire strip up or down the side of your screen—or sideways, to the opposite edge. You can't drag the Strip to the middle of the screen, however—it must hug the right or left side.

Can't find a place to put it where that darned tab isn't in your way? Then hide it completely until you want it again. Open up the Control Strip control panel, select "Hot key to show/hide," click in the keystroke box, and specify a key combination that you'd like to be the on/off switch for the Control Strip's presence on your screen.

Permanently rearrange, add, or remove tiles

Worth Learning

The Option key has another handy effect on the Control Strip: If you drag one of the little tiles while pressing Option, you can slide the tile horizontally to a new position. (Combine this feature with the drag-to-stretch feature in the preceding secret, and you can customize the Strip to show only the tiles that you find useful.)

Roll credits!

The author of this glorious tool is Steve Christensen, who wrote the classic SuperClock control panel (which *also* was adopted by Apple and made part of System 7.5). How do we know these things? Easy: Reader Lubomir Stroetmann told us to turn on the "Hot key to show/hide" button. With the Option key pressed, hold the mouse button down in the box where the keystroke shows up —and examine the title bar of the window. (Older versions: Option-click the version number instead.)

CPU Energy Saver

This control panel is one of the five control panels that have represented Apple's effort to conserve electricity—and to qualify its Macs for the Environmental Protection Agency's Energy Star seal of approval. See "Energy Saver 2.0 (and related files)," later in this chapter, for the complete rundown.

Date & Time

This control panel (see Figure 4-12), which debuted with System 7.1, lets you set the Mac's clock. To do so, click in the time or date blanks and then type numbers (or click the up-arrow or down-arrow buttons). Be sure you also click Set Time Zone and select a city in your time zone; if you don't, your e-mail and other documents may wind up stamped with wacky times.

Date & Time also lets you change the way times and dates are displayed (in Finder-window list views, for example). The usual value is the default one — American — but you can make dates appear in European format (day of month first) or in any zany order you can think up.

Finally, Date & Time controls the handy menu-bar clock that for years was known in the shareware world as SuperClock. Click the Clock Options button for a wealth of choices about the font, display, chimes, and other characteristics of the menu-bar clock at the top of every Mac's screen.
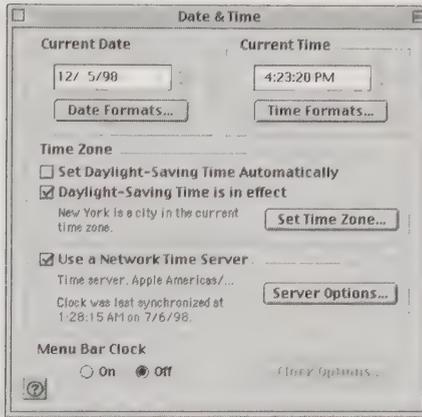
Figure 4-12: The Date & Time control panel. Hint: click the time display in your menu bar to see the date.

In Mac OS 8.5, by the way, Date & Time got a huge syringe full of intelligence juice. For the first time, it got smart enough to:

- Adjust for Daylight Savings Time automatically. (Click the Set Time Zone button to indicate where in the world you are, and then turn on the Set Daylight-Saving Time Automatically checkbox.)

- Set itself — to the second — by consulting a master clock on the Internet. Click the Server Options button to display the dialog box shown in Figure 4-13; as you can see, it lets you specify when you want this clock-setting to take place, such as every few weeks — or *right now* (by clicking the Set Time Now box). Of course, you have to have an Internet account to make this work. (You also need the Time Synchronizer extension in your Extensions folder.)

  Note, by the way, that this Date & Time control panel does its thing by consulting Apple's own *time server* (Web page clock). If you'd prefer to set your Mac's clock against a time server run by a company with a better track record for time management, visit www.eecis.udel.edu/~ntp with your Web browser. There you'll find a list of other Web-based time servers. Use the pop-up menu shown at top in Figure 4-13 to type in the Web address of the time server you prefer.
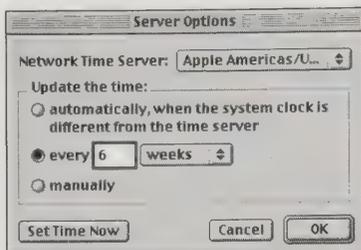
Figure 4-13: In Mac OS 8.5, let your Mac set its own clock.

Date & Time Secrets

How time flies
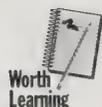
Worth Learning

Considering the increasing number of today's programs that put their own little iconic menus in your menu bar, it would be nice if you could hide the Date & Time's clock display without having to restart the computer.

You can. If you're running system software before Mac OS 8.5, Option-click the clock to make it disappear — and Option-click again to make it return.

OS 8.5

If you have Mac OS 8.5 or later, open the Date & Time control panel and turn off the clock; you no longer have to restart the Mac. (You can no longer Option-click the clock to hide it, however.)

Insta-sleep for PowerBooks

Speed Tip

Another holdover from this control panel's original incarnation as the freeware SuperClock program: If you Control-click the battery icon (which appears automatically when you're using a PowerBook), you put your PowerBook to sleep. (This feature, too, was removed from Mac OS 8.5, although there's no shortage of alternate ways to sleep your laptop, as Chapter 14 makes clear.)

Set your clock, or live in peril

Worth Learning

Don't underestimate the importance of keeping your clock set correctly, including setting your time zone with the Set Time Zone button (and even the Daylight Savings Time checkbox, if you don't have Mac OS 8.5 or later). It's not particularly important that your Mac *shows* the correct time. But it *is* important that your Mac *stamps your files* with the correct times. Many Mac users — even experts — have suffered grief because their files were incorrectly time-stamped, and there's nothing weirder than sending people e-mail that appears to *arrive* before it was *sent*. See "Map," later in this chapter, for the rationale.

The mystery of Lower Burrell

Even we are confounded by the presence of Lower Burrell, PA—population 13,200—in the databases of both the Map and the Date & Time control panels (in systems before Mac OS 8.5). Yes, Lower Burrell...but *not* Pittsburgh!

Even stranger: Lower Burrell's time zone seems to be an hour earlier than anywhere else in Pennsylvania. We suspect that it's a programmer's hometown... but we'd love some knowledgeable reader to fill us in on the details.

Strange But True

And while you're doing research: find out who's from Lake Nebagamon, WI. This geographical puzzler is, like Lower Burrell, an entry in the databases of both the Map and the Date & Time control panels.

Finally, there's Steubenville. As reader Tom Bartholomew discovered, the small town of Steubenville is the only city listed in Ohio. No Cleveland, Columbus, Cincinnati—just Steubenville.

("It's possible that this is the hometown of one of the programmers," Tom wrote us, "but it is also the birthplace of porn 'actress' Traci Lords. Maybe one of the programmers is a fan?")

Desktop Patterns

For the Mac's first seven years, the General Controls panel included a tiny painting square, in which you could draw your own Desktop background patterns (see "General Controls [pre-System 7.5]"). Apple's studies indicated that too many people had trouble figuring out how to work that mini-pattern editor.

System 7.5 through 7.6, therefore, came with a control panel called Desktop Patterns, which lets you scroll through 64 ready-to-use patterns (see Figure 4-14). When you see the one you like, double-click it, or click the Set Desktop Pattern button. If you absolutely despise a pattern, you can get rid of it by choosing Cut or Clear from the Edit menu.

Desktop Pattern

45/56

Set Desktop Pattern
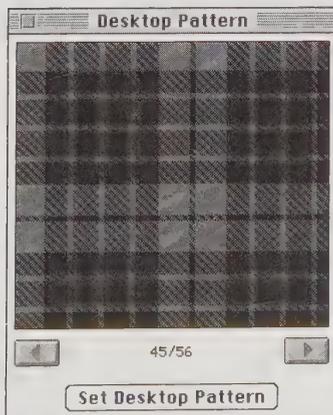
Figure 4-14: The Desktop Pattern control panel isn't really a control panel—it's actually an application residing in the Control Panels folder. You can move from pattern to pattern by clicking the arrow buttons, or by pressing the arrow keys on your keyboard.

On the one hand, you can't edit these patterns directly (unless you use ResEdit; see Chapter 21). On the other hand, these patterns are bigger and nicer-looking than anything Apple had provided before.

Desktop Patterns Secrets ━━━━━━━━━━━━━━━━━━━■

Make your own patterns

CD

You can't edit the Desktop Patterns directly in the control panel. But you can do much better: You can whip up your own in a graphics program like Color It, included on the CD-ROM with this book (see the appendix). Simply copy your custom pattern and then paste it into the Desktop Patterns window.

If you're not artistically inclined, you can still try the following trick. Desktop Patterns works with Macintosh drag-and-drop. In other words, you can open your Scrapbook or your Jigsaw Puzzle and drag a graphic directly into the Desktop Patterns window, where it appears like magic.

CD

Because this program works with Drag-and-Drop, we discovered something terrific: You can turn Desktop patterns into picture clippings files on your Desktop! We've included an even better collection on the CD-ROM with this book. Simply drag one into the Desktop Patterns "control panel" window to install it there.

The classic interior-decoration trick

Strange
But True

If you press the Option key, the button in the Desktop Patterns window changes to say "Set Utilities Pattern." If you click this special button, you won't notice anything different at first (except a strange alert message, which you must OK). But now open some of your menu programs, such as the Calculator, Find File, Jigsaw Puzzle, Key Caps, and Scrapbook. Sure enough, you've changed their window interiors to match the pattern you chose! (To our dismay, this delightful feature is missing from Mac OS 8 and later.)

The secret of Desktop Patterns Prefs

Inquiring minds want to know: Where are all those patterns stored? You can poke around the Desktop Patterns program with ResEdit all you want, but you won't find them.

Cooperative authors answer: in the Desktop Patterns Prefs file, in the Preferences folder (in the System Folder). It contains all 64 of the default patterns.

This revelation has several repercussions. First, if you take that Prefs file out of the Preferences folder, the Mac will generate a new one the next time you run Desktop Patterns. By selectively placing Desktop Patterns Prefs files back into the Preferences folder, therefore, you can easily swap among several different sets of patterns you've created. (Each Prefs file can hold 226 patterns.)

Strange But True

There's another good reason to remember this secret, too. Believe it or not, when you delete a pattern from Desktop Patterns, it isn't *actually* deleted; it's only hidden. It remains in your Prefs file, inaccessible but taking up disk space! After a lot of cuts and pastes, therefore, your Prefs file can get enormous. By removing it —and forcing Desktop Patterns to generate a fresh default Prefs file—you start over with a relatively compact default set of patterns.

The full-height Desktop pattern secret

The question is: exactly how big is one tile of a Desktop pattern? Most people answer: "128 pixels square."

That may *usually* be the answer. But *one* Desktop pattern provided by Apple is much taller—tall enough, in fact, to stretch from the top to the bottom of a standard 14-inch monitor. Here's how you can make use of it.

Open Desktop Patterns. Scroll to pattern #62—it looks like a soft purple solid color. But if you apply it to your Desktop, you'll discover that it's actually shaded, blending softly from the top of the screen to the bottom. Choose Copy from the Edit menu.

CD

Now launch a graphics program, such as Color It (included on the CD-ROM with this book) or Photoshop. Paste the Desktop pattern into a window exactly 32 pixels wide and 512 tall (the original pattern's dimensions). Now dress up this special pattern slice in any way you want: paint over it, paste in your own photo, and so on. Once you've finished, copy and paste the doctored 32 x 512 image back into Desktop Patterns. Apply it to your Desktop—and be amazed (see Figure 4-15).

Contest Winner

But wait, there's more! Free book winner Jason Darvick poked around long enough to discover that there's nothing magical about pixel dimensions of 128 x 128 or even 32 x 512. In fact, *any* dimensions work that, when multiplied, come out to 16,384.

Your choices are 1 x 16,384 (now *that's* useful!); 2 x 8,192; 4 x 4096; 8 x 2048; 16 x 1024; 32 x 512; 64 x 256; and 128 x 128. Using this heretofore unpublished info, your creative impulses should no longer feel fettered by the Desktop Patterns' typical square shape.
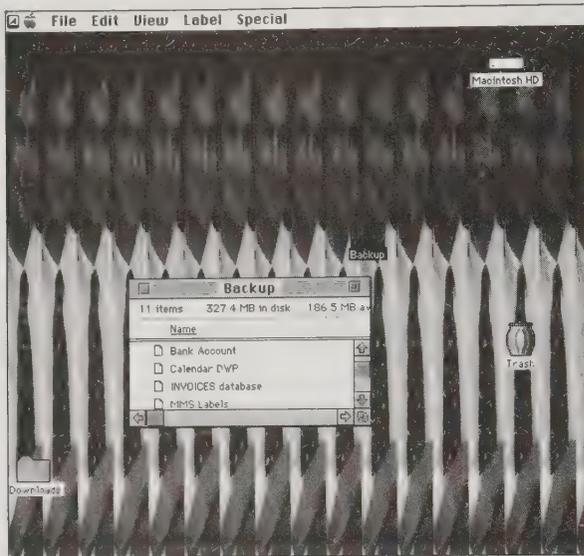
Figure 4-15 A full-height Desktop pattern? Impossible! Amaze your friends!

Desktop Pictures

For several editions of this book, we prided ourselves on providing our readers with the software needed to plaster *one big* photo onto your desktop. Not some measly repeating tile (see "Desktop Patterns" in this chapter), but a single image to gloriously span your backdrop. Few aspects of the Mac are so endearing and personal as this simple cosmetic option; you are what you hang on your desktop.

Beginning in Mac OS 8, Apple took the wind out of our sails. The new Desktop Pictures program lets you choose almost any kind of graphic image — PICT, GIF, JPEG, even native Photoshop — and slap it up behind your windows and icons. (The QuickTime extension, of all things, is the file-format interpreter. Any graphics file *it* can understand, Desktop Pictures can understand.)

To open Desktop Pictures, you *can* choose its name from your Control Panels folder, of course. But it's faster to Control-click the desktop and choose Change Desktop Background from the contextual pop-up menu that results.

Now you see two buttons on the left side of the Desktop Pictures window. Click Pattern to enter, in effect, the Desktop *Patterns* program of system software versions gone by — in other words, do this if you prefer a repeating, tiled, smaller image or texture, such as the denim or grassy lawn that Apple provides. Press the right or left arrow keys (or use the scroll bar) to navigate

through the 48 sweetly named textures, such as Neon Blue, Sidewalk, and It's Purple. (You can also paste a graphic into this window, or drag-and-drop one from the desktop, although wacky resizing and distortion may result.) When you see a backdrop pattern you like, double-click it (or click Set Desktop) to apply it to your actual screen.

Click the Picture button, however, to enable the full-screen-photo feature. Now you can specify the picture you want in any of three ways. First, you can *drag* a graphics file's icon from the desktop directly into the Desktop Pictures window, as shown in Figure 4-16. Second, you can click Select Picture and choose a graphics file by navigating the Open File box that appears. Finally, you can paste a previously copied image directly into the window.

Similarly, there are three ways to *remove* a desktop picture: drag it from the mini-desktop to the Trash; click Remove; or Control-click on the mini-desktop and choose the Remove Picture command. You don't have to remove a picture, however, if you simply want to replace it with another; instead, just drag or paste a new picture into the control panel. The previous picture vanishes automatically.

Before we start unloading our basket of Desktop Pictures secrets, note the two following important tidbits:

- All of this program's drag-and-drop smarts (such as dragging a picture file into the mini-desktop) require the AppleScript extension.

- A few of the following secrets work equally well in Mac OS 8.5 — but the Desktop Pictures program no longer exists. Instead, open the Appearance control panel and click the Desktop tab.
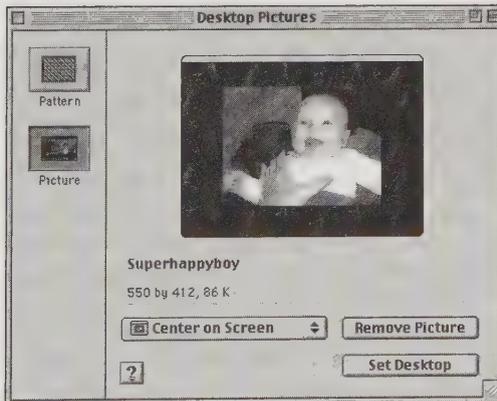
Figure 4-16: In Mac OS 8 and 8.1, turn your own family pix into desktop pinups, thanks to Desktop Pictures.

Desktop Pictures Secrets ───────────────────■

Of graphic sizes, proportions, and monitors

To avoid having Desktop Pictures distort your chosen image, choose an image that's the right size to begin with: 640 by 480 pixels for a 14-inch monitor, for example.

If your picture isn't exactly the right size for your monitor, the pop-up menu in Desktop Pictures offers several options for resizing it. "Tile on the Screen" repeats your too-small picture, side-by-side and top-to-bottom, until the screen is completely filled. (You might think of this option as a Pattern feature that has no upper limit on the size of the repeated tile.) "Center on the Screen" puts the picture in the middle of your desktop — and fills the leftover margin with whatever desktop *pattern* you've chosen.

"Scale to Screen" enlarges or reduces your picture enough to fill the monitor, but preserves its relative height and width proportions. (Because this option preserves the picture's aspect ratio, you may see some desktop pattern around the top or side edges.) Although distortion can result, the result won't be as bad as with the "Fill Screen" option; this one may stretch the picture horizontally *and* vertically, by different amounts — whatever's necessary to blanket the screen area. The "Position Automatically" choice uses either "Scale to Screen" or "Fill Screen," whichever results in the least distortion.

When you use any of the options that leave desktop area visible around the margins of your photo (such as the Center or Scale options, as shown in Figure 4-14), press the right- or left-arrow keys on your keyboard to cycle through the various desktop patterns *behind* your picture! Hold down an arrow key continuously for a truly psychedelic flashback effect.

The unknown positioning keystrokes

The pop-up menu controls the *sizing* of your image, but offers no control over its *positioning.* If your chosen picture is smaller than your monitor, you can slam your image against the top, bottom, left, or right side of the monitor — a total of nine different positions — by pressing the arrow keys while holding down the Option key! For example, if you choose the pop-up menu's Centered option, press Option-up arrow to align your picture with the top of the desktop (against the menu bar). Pressing Option-left arrow shifts the picture to the screen's far-left edge, and so on.

And with the Tile On Screen option selected, you can use the same keystrokes to determine the starting point for tiling a picture.

Alas, none of these features work in Mac OS 8.5's Appearance control panel.

The hidden contextual menu

Once you've installed a desktop picture, the Control key continues its usefulness. Control-click the mini-desktop, where your picture is being shown in miniature, to view yet another contextual pop-up menu. It lists the various centering and scaling options discussed in the previous secret (at least in systems before Mac OS 8.5).

Where'd this picture come from?

The secret contextual menu described in the previous secret offers a command called Find Picture File. This fascinating option locates the *original icon* of the graphic now displayed in the mini-desktop, wherever it may be on your hard drive, in whatever folder it may be buried. The corresponding window opens automatically, and the original graphic file is highlighted. (You can also press ⌘-F, or choose Show Picture File in Finder from the Edit menu, to accomplish the same thing.)

Random pictures at each startup

Worth Learning
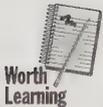
If you're tiring of looking at the same baby picture/mountain vista/gorgeous Hollywood star week in and week out, try the Desktop Pictures' undocumented randomizing feature. Once you've set this up, the Mac will show a *different* picture on your desktop each time you turn it on.

Start by putting all the photo files in a folder. Drag that folder onto the Desktop Pictures mini-desktop. (Alternatively, *Option-click* the Select Picture button. In the resulting Open File dialog box, click the folder containing the graphics files you want.)

That's it; click Set Desktop, quit the program, and look forward to tomorrow's startup. (You can drag-and-drop a folder of pictures onto the Desktop tab of Mac OS 8.5's Appearance control panel, too, although the Option-clicking part doesn't work.)

Our favorite Mac prank ever

April 1 rolling around? Had enough attitude from the coworker with the 400-megahertz G3 machine?

Strange But True

Take a snapshot of the desktop by pressing ⌘-shift-3. Install the resulting picture file (which appears on your hard disk as Picture 1) *as* your desktop picture.

The wild result: all your desktop icons appear directly on top of *exact replicas of themselves.* Windows aren't windows, the Trash isn't the trash, and you can't open one of your two hard drive icons. Your hapless victim will become very, very confused, suspect some hideous SCSI conflict—and come begging you for help.

Dial Assist

The Dial Assist control panel has been available for years as part of Apple Remote Access (ARA), a software kit that lets you dial into one Mac from another. Its function is to let you create and store complicated dialing instructions for making the call. As you can see by Figure 4-17, this control panel lets you specify your calling-card numbers, dial-out prefix (such as 9), area code, and so on.

Figure 4-17: Dial Assist gives you a central place to store your complex dialing strings.

In Mac OS 8.5, however, Remote Access and PPP (Internet dialing) are no longer two different things. As a result, Dial Assist is part of the standard system software—a handy benefit to anyone who travels.

Of course, this benefit won't materialize until your programs are updated to take advantage of the dialing digits you've specified in this control panel. At this writing, only one program offers a "Use Dial Assist" checkbox—the Remote Access Client program that you actually use to dial into another Mac.

Easy Access

Easy Access makes using the keyboard easier for people who type with one hand or find it difficult to use a mouse—or, as you'll read later, for graphic artists who might appreciate the fine precision control Easy Access provides. (If you don't find Easy Access in your Control Panels folder, and you'd like to, use the Custom Install option of your system-software Installer, or look in the CD Extras folder of your system-software CD, where you'll find a Universal Access folder containing this control panel.)

■ **Mouse Keys**— Turning on Mouse Keys allows you to use the numeric keypad, instead of the mouse, to control the pointer. The 5 key becomes the mouse button; the number keys surrounding it move the pointer up, down, diagonally, and so on. You can change the speed of the pointer (Maximum Speed) and the length of the delay before the pointer starts moving (Initial Delay). (See Figure 4-18.)
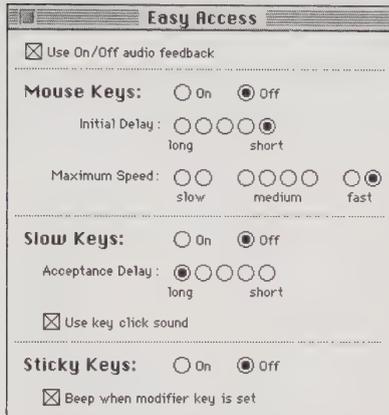
Figure 4-18: You can make your keyboard slow, sticky, or mouselike with Easy Access.

To turn on Mouse Keys mode, press ⌘-Shift-Clear (the Clear key is on your number pad). At this point, you can press the arrow keys to move the cursor. If you're a graphic artist, try the 0 key, which is a mouse-button lock feature—a real help in precise graphic tasks.

■ **Sticky Keys**— With Sticky Keys, you type keyboard shortcuts by pressing the key combinations *successively* rather than simultaneously. For example, the keyboard shortcut for turning on the Mouse Keys feature is ⌘-Shift-Clear. With Sticky Keys on, you press the keys one at a time: first the ⌘ key, then the Shift key, and finally the Clear key (see Figure 4-19).
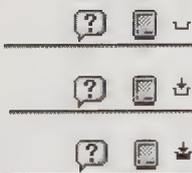
Figure 4-19: When Sticky Keys is on, a little indicator appears at the far right side of the menu (topmost figure). When you press a modifier key (Shift, Option, or ⌘) once, a little arrow appears (middle). That's a signal that Sticky Keys is waiting for a nonmodifier key (such as a letter) to complete the keystroke. If you press a modifier key *twice,* you lock it down. As you type letter keys now, the Mac acts as though the modifier key is being held down continuously (bottom).

*Strange
But True*

You can turn on Sticky Keys from the keyboard by pressing the Shift key five times in a row. The five keystrokes can be separated by several seconds, or even several minutes, as long as the mouse doesn't move between key presses. You hear a neat little starting-up chirp as confirmation that Sticky Keys is on. (If we had a dollar for every reader who's written us in confusion, wondering what that little chirping sound is ...)

To turn Sticky Keys off, press the Shift key five times again, or press any two modifier keys simultaneously.

- **Slow Keys** — Slow Keys delays the acceptance of each keystroke. At its highest setting, the Mac won't acknowledge a keystroke unless you hold the key down for at least a second and a half. This feature helps screen out inadvertent keystrokes.

Editor Setup

See "OpenDoc Libraries," later in this chapter.

Energy Saver 1.0

There have actually been *two* Energy Saver control panels. This one, a monitor-only version, shuts off certain Mac monitors after a defined period of inactivity — the ultimate screen saver. (To wake up a monitor that's been put to sleep in this way, click the mouse or press a key. After about 20 seconds of beeping — there's no way to adjust the volume — the monitor wakes up.)

This control panel works only with "Energy Star–compliant" monitors, such as all Apple Multiple Scan and AppleVision monitors. It does indeed *black out* all other kinds of monitors, but you don't save any electricity that way.

Energy Saver 2.0 (and related files)

If you've read this much of the chapter, you're probably by now totally confused about all these energy-saving control panels. Each seems to be only a partial solution to the turn-off-the-Mac-when-it's-idle problem; each seems to work only with certain models.

In an effort to clear up the confusion, Apple finally combined all of its earlier energy-saving efforts — Auto Power On/Off, CPU Energy Saver, and Energy Saver 1.0 (which shuts off monitors only) — into a single new application in the Control Panels folder: Energy Saver 2.0 (Figure 4-20). As promised, it controls the automatic on/off management of both the Mac and the monitors. It works only on Power Macs (but not the 6100, 7100, or 8100).
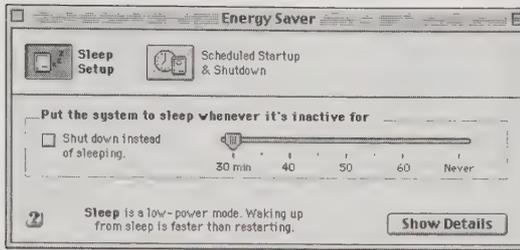
Figure 4-20: The modern Energy Saver control panel can put your Mac to sleep (or shut it down) either after a period of inactivity or at specified times of day.

This "control panel" lets you specify intervals before the monitor, the hard drive, and the computer itself go to sleep. (See Chapter 7 for more on desktop Macs going to sleep.) And, since it incorporates the functions of Auto Power On/Off, you can click the Scheduled Startup & Shutdown button to see the timing controls for powering your Mac on and off unattended.

The rule then, is simple: If you have a PCI Power Mac or a recent PowerBook, use Energy Saver 2.0 or later. If you have an older Mac, and you really care about which Apple control panel to use for energy savings, consult the table in Chapter 4 of *Macworld Mac Secrets, 4th Edition* (on the CD that came with this book).

Energy Saver Secrets

The mystery of the new-Mac Energy Saver alert

Have you ever installed new system software on your Mac — or bought a new Mac — and discovered that it wouldn't let you start working until you'd set up your Energy Saver settings? That's right — the urgent dialog box encouraging you to do so is among the very first things you see on a newly installed Mac.

We can explain. The Energy Saver sleep settings are stored in the Energy Saver Preferences file (in the Preferences folder within the System Folder). If you move or throw away that preferences file and restart the Mac, the Energy Saver control panel snaps back to its default sleep time of 30 minutes.

But when the Macintosh restarts, if it can't find the Energy Saver preferences file, the control panel creates an alias of itself in your Startup Items folder. Thereafter, each time you power on your Macintosh, the Energy Saver welcome screen appears, begging you to set up your preferred settings. After you comply — by opening the control panel and changing the settings — the alias is removed from the Startup Items folder and a preference file is created.

The 15-minute self-protection delay

If you're using Energy Saver to schedule a shutdown time, the shutdown time must be at least 15 minutes away. When you're fooling around, therefore, don't bother setting it for two minutes away just to see your Mac shut down by itself. You'll get to see nada.

The secret duality of sleep modes

Strange But True

Believe it or not, although there's not a word about it in the online help, the Energy Saver control panel can put your monitor to sleep in two different ways. There's screen-saver (light) sleep, which saves no energy, but pops back to life at the touch of a key. And then there's deep sleep, which saves electricity but requires you to press a key to wake up the machine.

For details and instructions on choosing the option you prefer, see the end of Chapter 7.

Energy Saver and G3 PowerBooks

If you're running the Energy Saver program on a 1998-or-later PowerBook, such as the PowerBook G3 series, a raft of additional controls await your perusal. For one thing, you've got a pop-up menu that lets you switch between Battery and Power Adapter — that is, you can control Energy Saver's *entire* behavior (including automatic sleep and wakeup) independently, depending on whether or not your laptop is plugged in.

But if you click the Advanced Settings button, things *really* get strange. Suddenly you're looking at options like "Reconnect to servers when waking" — which you may distinctly remember as being part of the AutoRemounter control panel (described earlier in this chapter) — and Reduce Processor Speed, formerly part of the PowerBook control panel (described later in this chapter).

Sure enough, it dawned on Apple that all of these settings could be combined into a single control panel. See the individual entries for those other control panels to see what these features do; for now, it's enough to note these two oddities:

■ **Turn off power to inactive PC cards.** *PC cards* (formerly known as PCMCIA cards) are those credit-card-sized things you insert to add a modem or video-output features to your laptop. This checkbox cuts all power to PC cards, many of which draw power even when they're not in use. (Not all cards respond to this command.)

■ **Wake up when the modem detects a ring.** This option could conceivably be useful if you're using your PowerBook as a fax machine. Unfortunately, this option is permanently disabled on the PowerBook G3 Series laptops. What a tease!

Energy Saver Auto-Save

Q: My Energy Saver control panel has a checkbox called Document Auto-Save. I'd love my documents to save automatically — how do I turn on this feature?

A: Alas, you're misinterpreting the whole thing.

Suppose you've set Energy Saver to shut down your Mac at 8:00 p.m. every night. But what if you've got unsaved documents on the screen?

The purpose of this feature is to quit all open programs, automatically saving changes to any open documents in each application. In fact, if you had documents that you had *never* saved, and therefore had no titles yet, the Mac gives them generic names and puts them into folders on the Desktop named for the date and time the Mac shuts down.

There's even an option to auto-reopen, at the next startup, whatever documents the Mac closed. It's all pretty thoughtful, really.

Unfortunately, Apple discovered that this feature didn't always work — there are simply too many different programs written too many different ways. Therefore, in current versions of Energy Saver, there's no auto-save option at all. If you schedule an automatic shutdown for your Mac, and there are unsaved documents on the screen, tough patooties; the Mac simply doesn't shut down.

Express Modem

This control panel is confusing; you may need it even if you *don't* have an Express Modem (for many years, Apple's internal PowerBook modem). In fact, it's more likely that you'll use this control panel because you have a GeoPort Telecom Adapter on your Power Mac or AV Mac; the same software is used for both. (See Chapter 24 to read about the GeoPort.)

In any case, this control panel allows you to choose *Express* Modem or *External* Modem. These controls were originally provided for the PowerBook so that you could choose between its built-in modem and (if you had one attached) an external modem.

But when you're using a GeoPort, a paradox arises: Is the modem an *Express* Modem, because it uses the Express Modem software, or is it *External*, because the Telecom Adapter dangles off the back of the Mac?

Answer: Use the Express Modem setting.

Extensions Manager

When Apple added 60 control panels and extensions to System 7.5, someone decided that it might be nice to provide you, the humble user, with some means of controlling them all. After all, if you're settling in for a nice afternoon of word processing, you might not need the 24 PowerTalk

extensions, the 36 Open Transport extensions, and the 53 QuickDraw GX extensions. And when trying to track down conflicting extensions, the world needed an easier way to turn sets of extensions on and off than manually dragging them out of the System Folder (see Chapter 36).

Mac Basics

Extensions Manager is very simple. When you turn on your Mac, hold down the space bar. After a moment, you see a list of your control panels and extensions, and you can click to turn off the ones that you won't be needing (see Figure 4-21). For every item that you turn off, you'll have fewer conflicts, more memory, and a faster start-up sequence. (You can also open Extensions Manager by opening the control panel — but then you must restart the Mac to make your new extension selection take effect.)

Behind the scenes, Extensions Manager works by moving files from the Extensions folder into a folder called Extensions (Disabled), where the Mac ignores them. Control panels you turn off get moved into a folder called Control Panels (Disabled). Knowing about these folders is a troubleshooting advantage; you can restore an extension by moving it back into the Extensions or Control Panels folder, even if Extensions Manager isn't around.
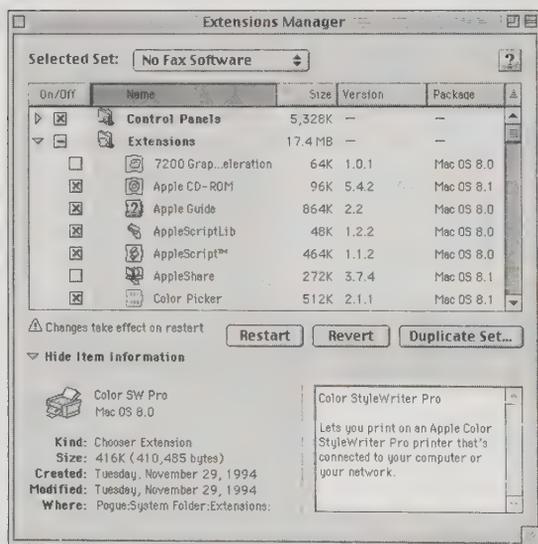
Figure 4-21: Extensions Manager, as shown with the "Show Item Information" flippy triangle turned down.

CD

Versions 4.0 (which debuted with System 7.6) and later offer a well-organized mountain of information about your extensions and control panels. For the first time, you can click the Show Item Information triangle to view an information panel that explains the function of each item you select (well, attempts to explain). New columns show information about the size, version, and original installation source ("package") of each item. And what Apple

programmers affectionately call "flippy triangles" let you collapse or expand various startup-file categories, such as Control Panels and Extensions. These features, plus the new, semi-3D look, make this latest incarnation of Extensions Manager a vastly more useful tool. (We look forward to the day Apple's descriptions of the 30 million startup-file crumbs in your System folder are complete enough to make this chapter unnecessary.)

Extensions Manager Secrets ━━━━━━━━━━━━━━■

What Extensions Manager sees

CD

When you install Conflict Catcher, a commercial, much smarter extensions manager from Casady & Greene (or the demo version included on the CD-ROM with this book), you may be startled to discover *dozens* of extensions you didn't know you had—icons listed in Conflict Catcher that Extensions Manager never showed you.

That's because Extensions Manager has a very narrow definition of an extension: something that's (a) in your Extensions or Control Panels folder that (b) has code that loads into memory when the Mac starts up. Among other things, *shared libraries,* of which there are dozens (including many from Microsoft), don't necessarily load their code at startup, so they don't show up in Extensions Manager.

As a result of the extensions that Extensions Manager "misses," don't use Extensions Manger's All Off command (in the Selected Set pop-up menu) when you want to start the Mac with a clean, extension-free, minimal system. To do *that*, press the Shift key during startup.

How to make new sets

Extensions Manager can't create *links* between related extensions—subsets that switch on or off together when you click any *one* of them—as Conflict Catcher does. But it does let you create predefined sets of *all* extensions, which you can switch at each startup.

The usual method of working on the Mac is: First you do some work, and then you save the document. In Extensions Manager, the process is backward: here, you *start* by saving the set (by clicking the Duplicate Set button and then naming the new set). After naming the set, *then* you can go about selecting which extensions you want included. From now on, your newly named set shows up in the Selected Set pop-up menu; choose its name to enable or disable the corresponding extensions.

Worth Learning

If you think you'll never need this Sets feature, you're wrong. At the very least, create a set called CD-ROM Only that contains only the extensions for your CD-ROM drive — usually Apple CD-ROM and Foreign File Access. Switch to this CD-ROM set before installing new software from a CD-ROM! (Before installing software that's *not* on a CD-ROM, turn off *all* extensions.) After the installation, switch back to your regularly scheduled set of extensions. You'll find that your Mac is much stabler and more trouble-free in the long term.

And what about those two pre-existing sets called Mac OS 8.5 Base and Mac OS 8.5 All (named for whatever system-software version you're using)? They're useful in troubleshooting; they automatically shut off any extensions *you've* added, retaining only the extensions the Mac came with. (There's not much difference between Base and All, by the way; Base leaves on 114 extensions and control panels, whereas All leaves on 130.)

Customized to the hilt

Extensions Manager 4.0 and later is filled with features that let you customize the way it shows your extension information. For example, you can drag the dividers between column names (Name, Size, Version, etc.) to resize the columns. You can click the tiny pyramid button just above the scroll bar to change the order in which your extensions are *sorted* (from A to Z or in reverse). You can also control what the extensions are sorted *by* — name, version, size, and so on — by clicking the name at the top of a column.

Extensions Manager also has a menu bar offering still more options — but most people have never seen it. That's because you see this menu only when you open Extensions Manager *in the Finder* (from the Control Panels folder). If you open the program during startup (by pressing the space bar), you *don't* see the menu.

The menu offers some useful options, however. For example, the View menu's commands can cluster your extensions by Folder (Control Panels, Extensions, and so on) or by Package (that is, grouped according to the software that installed these extensions, such as Microsoft Office or RAM Doubler). The File menu offers commands for deleting or renaming sets; finally, you can change the default name "My Settings" to something less kindergarten-ish. And the Preferences command lets you add two new columns to the Extensions Manager display — Type and Creator — that reveal the usually invisible four-letter codes associated with every icon on your Mac (see Chapter 15).

Keyboard power in Extensions Manager

Speed Tip

Regardless of how you're viewing your extensions in Extensions Manager (by Item, by Package, or by Folder), you don't have to scroll to locate a particular item. Instead, you can press the up- or down-arrow keys, or the Page Up and Page Down keys — or you can type the first letter or two of the extension's name. The window scrolls automatically to the nearest match.

Locking your extension sets

You may have noticed that Extensions Manager comes with two predefined sets of extensions: "Mac OS 8.5 base" and "Mac OS 8.5 All," for example. A small padlock icon appears beside each one's name, indicating that you can't add to, or delete extensions from, these sets.

Ordinarily, any new extensions you install are automatically added to sets *you* make (such as My Settings). That's usually what you want: after all, if you've just paid $900 for a new digital camera, of *course* you want its extension added to your sets—otherwise, you can't use the camera.

On the other hand, once you get your Mac stabilized and working, you may find it useful to lock one of *your* sets. Doing so simply involves changing the settings file's four-letter *type code* (see Chapter 15).

CD

To do so, open your hard drive; open your System folder; open Preferences; open Extensions Manager Preferences. Inside, you'll see an icon for each set you've saved (such as My Settings). Drag this icon onto the icon of FileTyper, which is included on the CD-ROM with this book. Change the type code for the file you opened from *ESET* (a changeable settings file) to *RSET* (a locked settings file). Capitals count. Click Change, and you're done—now your My Settings set (or whatever you've edited) shows up with a padlock icon, just like Apple's sets.

It doesn't take much imagination to see how you might modify Apple's canned sets in the same way—just change the type code to ESET using this technique.

ANSWER MAN

The Extensions Manager Protest Message

Q: Every so often, when I try to open Extensions Manager, it gives me some utterly incomprehensible message like, "The selected set doesn't match your System folder." It offers me three buttons: Update, Revert, or Create New Set. Or sometimes it says Cancel or Create Report. What the hell is it talking about?

A: You moved something behind Extensions Manager's back! That is, since EM was last open, you dragged something from the Extensions (Disabled) folder into the regular Extensions folder, or vice versa. EM has noticed that something went on while it wasn't looking—has discovered a discrepancy between what's *there* and what's *supposed* to be there—and wants to know how you want to handle it.

If you click Revert, EM puts whatever icons you manually moved *back* where they came from—a disturbing thought, since you can't see what's being moved.

And if you click Create New Set (or press Return), EM automatically creates a newly named set of extensions (called, for example, My Settings 2) that reflects the actual contents of your Extensions folders. Now it's up to you to sort out the mess.

The button you'll most want to click, therefore, is Update or Cancel (even though that's not the default button). The Update or Cancel button means, "I have it like I want it. Shut up."

File Exchange

This control panel is Mac OS 8.5's renamed version of PC Exchange, which has come with Macs since System 7.5. (This discussion applies to both File Exchange and PC Exchange.) File Exchange's File Translation tab even incorporates the functions of the old Mac OS Easy Open control panel, described later in this chapter.

Its purpose is to break down the barriers between Macs and IBM-compatibles. With File Exchange installed, you can insert a DOS or Windows disk into your Mac and see its icon on the Desktop, just like a Mac disk. And not just floppies — File Exchange also lets Windows-formatted SyQuests, Zip disks, and other removables appear on your Desktop. The Mac OS 8.5 version, File Exchange, even has a new tab called File Translation, where you can specify *conversions* that can take place automatically.

To make matters better, File Exchange also affects the dialog box that appears when you *erase* a floppy. It adds choice for DOS (making the disk readable by Windows computers) and ProDOS (for Apple II computers). In other words, you can turn a Mac disk *into* a Windows disk, if you're willing to erase it in the process. (File Exchange doesn't let you format Zip or other removable cartridges for Windows, however — only floppies. See Chapter 8 for details.)

The control panel itself is designed to let you map various kinds of DOS or Windows files to appropriate *Macintosh* programs that know how to open them (see Figure 4-22). After you've established these assignments, you can double-click a Word for Windows document on that PC disk you inserted, and the document will open smoothly in your Mac version of Word.
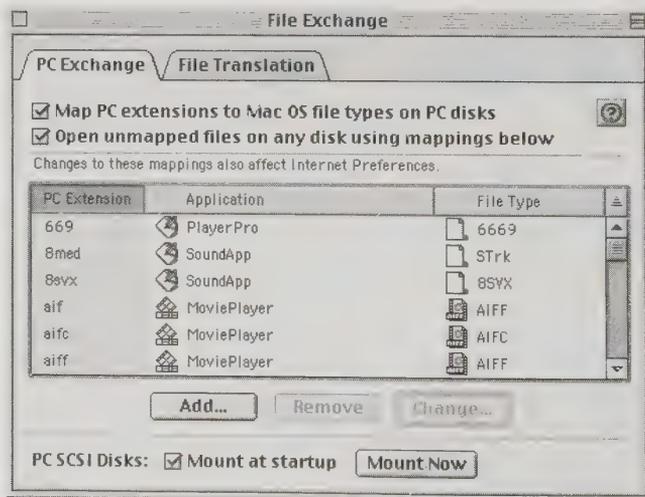
Figure 4-22: A tool for trafficking with disks from the Dark Side.

File Exchange Secrets

What about Jaz? What about long file names?

For most of PC Exchange's life, it was disappointing in two important respects. First, it couldn't handle *large* removable disks, such as Jaz disks, that had been formatted on Windows 95. Second, even though both Windows 95 and the Macintosh can handle file names longer than eight letters, PC Exchange, firmly buried in a DOS mentality, automatically chopped off file names at eight letters long.

The solution to both problems is to get the latest version of PC Exchange (Mac OS 8.1) or File Exchange (Mac OS 8.5). It fixes both problems, and adds a host of other compatibility enhancements.

Why you don't want to use PC disks all the time

Speed Tip

File Exchange works so well that we've actually met people who have been using PC floppy disks—which they bought by mistake—for months without even noticing it. Since the Mac treats them *exactly* like Mac floppies, there's no way those people would know.

Well, almost. PC disks, mounted on your Desktop via File Exchange, are even slower than they usually are. *Much* slower. If this sounds like you, reformat your PC disks as Mac disks and enjoy the newfound speed.

A view of your SCSI situation

Behind the Options button of the PC Exchange control panel (but not the newer File Exchange) lurks some fascinating information about the SCSI appliances (scanner, Zip drive, CD-ROM, and so on) attached to your Mac. This little window provides immediate feedback on whether or not the Mac is "seeing" all of your gadgets—an invaluable troubleshooting aid.

CD

Alas, there's not much more you can do here except read about your SCSI chain and check the ID numbers assigned to each. To actually "mount" them onto the Desktop, you need SCSIProbe, included on the CD-ROM with this book. But if SCSIProbe isn't handy, PC Exchange gives a useful hint as to what's going on with your SCSI setup.

File Sharing

(OS 8) As its name denotes, this Mac OS 8-and-later control panel (see Figure 4-23) is the central control for *file sharing* (making your Mac's hard-drive contents available to other people on your office's network). It's the master on/off switch for file sharing; it's where you indicate what your Mac's name is (as viewed by others on the network); and it's where you specify your own password (for when you want to get at your Mac while seated elsewhere on the network). For complete instructions in using this control panel, see Chapter 35.

A second tab within this control panel shows you file sharing *activity* going on at the moment. Click the tab to see who, if anyone, has logged onto your hard drive, and which folders you've given them access to. If it's somebody you're angry at, you can click the Disconnect button.

By the way: you can't open this control panel unless AppleTalk is active. For more information, see "AppleShare (and related files)" later in this chapter. Also, by the way: this single Mac OS 8 control panel incorporates *two* control panels in previous system versions — File Sharing Monitor and Sharing Setup.
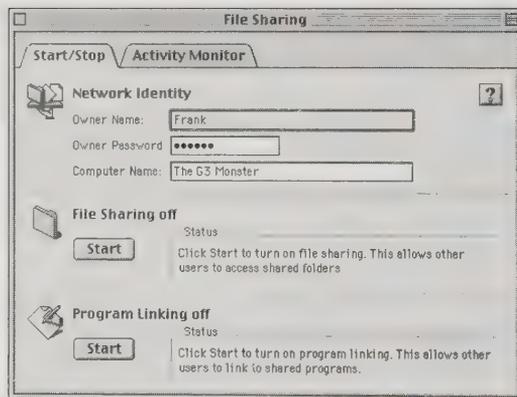
Figure 4-23: The File Sharing control panel has two different screens, depending on which tab you click.

File Sharing Monitor

This pre-Mac OS 8 control panel provides an overview of your file-sharing activity at the moment. It displays a list of all your shared files, folders, and disks and allows you to keep track of which network users are currently connected to your Mac. For details, see Chapter 35. (In Mac OS 8, this control panel has been incorporated into the File Sharing control panel, discussed above.)

File Synchronization

It took until Mac OS 8.5 for Apple to include a backup program as part of the built-in system software — but better late than never, we say. This program, closely modeled on the file-synchronization program included with PowerBooks for several years, lets you set up pairs of folders that you want to keep updated with each other. You indicate the two folders you'd like kept up-to-date with each other by simply dragging them, one at a time, directly onto the pictures of folders (shown in Figure 4-24) in the File Synchronization program's window.

The obvious use for this program is to pair your Documents folder with a matching folder on your backup disk. Whenever you open this control panel and click Synchronize, the Mac analyzes the contents of each folder and copies the most recent documents to each. If you have a PowerBook, you might set up File Synchronization to bring key folders up to date with your laptop *before* a trip, and then to bring the main Mac's folders up to date *after* the trip.

Take special note, by the way, of the program's *menus,* which control (for example) whether the file updating goes in two directions or only one (and which way).
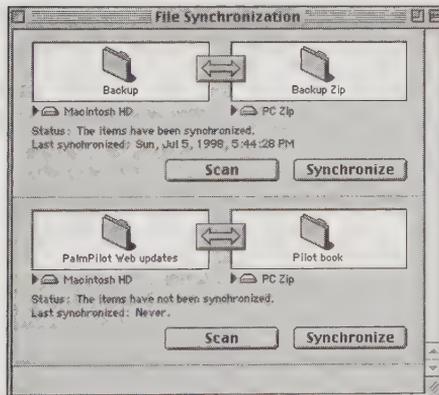
Figure 4-24: Mac OS 8.5's File Synchronization control panel backs up chosen folders to corresponding folders on your backup drive.

General Controls (7.5 and later)

The General Controls panel, shown in Figure 4-25, governs several miscellaneous elements in the Macintosh work environment.
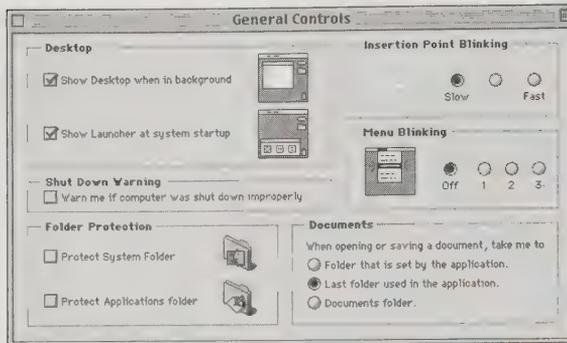
Figure 4-25: A better name for General Controls would have been Miscellaneous Controls.

Show Desktop when in background: This option is normally on. If you turn it off, then every time you launch a program, the world of Finder icons and windows disappears. You're now protected from inadvertently switching to the Finder when you accidentally click outside your document window. (Turn this checkbox off for beginners!)

Show Launcher at system startup: The Launcher control panel provides easy one-click access to your favorite programs, folders, and files (see "Launcher," later in this chapter). This option simply controls whether or not your Launcher window appears automatically when you turn on the Mac. (How does it work? The method isn't very mysterious: If you turn this checkbox on, the Mac just puts an alias of the Launcher control panel into your System folder's Startup Items folder!)

Protect System Folder: This checkbox is designed to prevent little hands (or mischievous ones) from dragging icons out of the System Folder's main window (its *root level*), which could disable the Mac completely.

But few options have gotten *adults* into more trouble! When this feature is turned on, you can't drag *anything* out of, or even into, the System Folder. (You can move things into, or out of, folders *within* the System Folder, such as Control Panels or Apple Menu Items.) If you try, an error message appears. In Mac OS 8 and later, the message is fairly helpful: "To move this item, first turn off System Folder Protection in the General Controls panel." But in previous systems, the message is bewildering and frustrating: "You do not have enough access privileges" — scarcely a comforting message to an adult who's just paid $3,000 for a computer!

A warning: the Mac's Protect System Folder (and Protect Applications Folder) options are mutually incompatible with File Sharing. If you've got File Sharing turned on (see Chapter 35), these two Protect checkboxes are dimmed and unavailable.

Another warning: The Protect System Folder checkbox can interfere with certain software installations. It's better to have this turned off when installing new programs, which sometimes involves moving items into and out of the System Folder.

Protect Applications Folder: This option works just like the Protect System Folder checkbox — except that it applies to the Applications folder, if you have one, in your main hard drive window.

Warn me if computer was shut down improperly: Speaking of warnings you may prefer to do without: After a few repetitions of the "This Macintosh was not shut down properly" message when you turn on the Mac following a system crash, you may want to turn off this checkbox, too. It simply tells you, as though you didn't know, that you didn't shut down the Mac using the Shut Down command (or the Shut Down button in a dialog box). What's annoying is that this option *defaults* to being on; after you restart following a crash, therefore, the startup process is interrupted by a warning message ("The Macintosh was not shut down properly"). You must OK that box, in person, before the startup finishes.

Beginning with Mac OS 8.5, however, this option becomes far more useful. *Now* when your Mac starts up after a crash, it automatically starts running the Disk First Aid utility (see Chapter 8) to inspect your hard drive for damage. Since system crashes are indeed a leading cause of incipient corruption, this preemptive strike nips many future problems in the bud, and is well worth waiting for. (At least you don't have to start up from a different startup disk in order to run Disk First Aid, as you did in all systems before Mac OS 8.5.)

Insertion Point Blinking: Hey, check it out: you can change the rate at which the insertion point blinks (the *insertion point* is the I-beam cursor that appears whenever you're editing text). The Slow setting produces 30 blinks per minute; the Fast setting goes at a hyperactive 100 bpm. The middle setting is roughly 50 times per minute. (Did somebody *ask* for this?)

Incredibly, this setting also affects the speed at which you must type when type-selecting icons in the Finder (see Chapter 1). That is, if you set a slow blinking rate, you can type more slowly to highlight a file in a window. If you set the rate to the fastest setting, the Mac is more likely to think that, as you type the second letter, you're actually starting over with a new typed word.

Menu Blinking: When you release the mouse button after choosing a command from a menu, the command blinks: black-white-black. You may never even have noticed it. This setting specifies how many times it should blink.

Why should a menu command blink at all? About the only reason we've ever heard is that it gives you a split second to confirm what you just did. Frankly, we don't get that logic. The menu blinks *after* you let go of the menu — when it's too late to change your mind!

Furthermore, suppose that it takes one second for a command to blink three times. If you use, say, ten menu commands an hour, that means that if you work a typical work week, in ten years you'll have wasted *two and a half days* — full 24-hour periods — doing nothing but sitting in front of your Mac waiting for menus to blink.

We can think of many other things that we'd rather do with a free weekend. The best choice for this setting is Off.

When opening or saving a document, take me to: The era of "*Where* did I file that darned document?" cries ended with this option. This setting specifies what folder's contents you see whenever you choose Save As or Open from a program's File menu. Novices will appreciate the "Documents folder" choice, which makes all new documents fall into a central Documents folder on the Desktop. Most others prefer the "Last folder used in the application" choice, which is good for keeping all related project documents together in their appointed folders.

Both the grammar and the function of the third option were lousy before System 7.5.3. It used to say, "Folder which contains the application," and it meant that any new files got saved into whatever folder the *program's* in, no matter how many nested folders deep, no matter how useless this function. This option was mercifully corrected in System 7.5.3 — it now says "Folder that is set by the application." It refers to the times when you launch a program by double-clicking a *document.* In that case, all *new* documents will get dumped into the same folder that contained that original document.

General Controls (pre–System 7.5)

The original General Controls panel, circa 1984 to 1994, looked quite different from today's General Controls. Most of its elements were the same, but a few were different:

Setting the date and time: This control panel was used to set the Mac's clock. (Click a number to edit it by typing, or click the up- and down-arrows that appear whenever numeric text is selected.)

Changing the Desktop pattern: Before the era of Desktop Pictures and Desktop Patterns, the General Controls panel let you choose, apply, and even draw your own backdrop patterns for your desktop. Click the little triangles (or click just outside them) at the top of the mini-desktop to cycle through the dozen or so Desktop patterns that come stored in the Mac. Click the mini-desktop (*below* the little triangles) to apply the selected pattern to your actual Desktop. The real fun, of course, comes from creating your *own* Desktop patterns, as shown in Figure 4-26.

The point to remember when you create new Desktop patterns is that *single-clicking* the mini-desktop applies the selected pattern to your Finder background, but *double-clicking* saves the new pattern permanently. If you don't save your current Desktop pattern, it disappears the next time you change patterns.

Click the individual dots
in this enlarged view
to change the pattern.

Click the mini Desktop to
apply this pattern to your
entire desktop.

This is your color palette.
Click a square to change
your "pencil's" color.
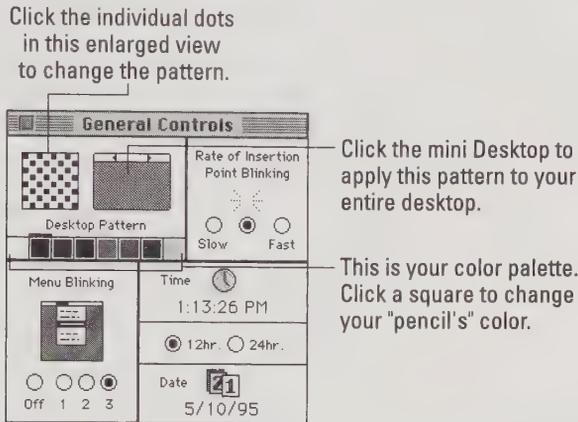
Figure 4-26: Getting down to basics with the General Controls.

Performa note: The specially designed General Controls panel was one of the few differences between the system software for the Performa line and mainstream Macs. The option to edit your own Desktop patterns was gone; in its place was a pop-up menu of pre-made patterns.

Infrared

As you can read in Chapter 14, the infrared capability of today's PowerBooks is one of their cooler attributes. Aim the backs of two PowerBooks at each other, and you've got yourself an invisible, through-the-air network, over which you can shunt files back and forth between the two machines.

As you can also read in that chapter, there are two different infrared "languages" your PowerBook can speak: *IRTalk,* is a Macintosh-only language, and *IrDA,* a faster, more universal networking scheme. This control panel serves as a status panel, letting you know when it perceives any other infrared Macs within shooting distance — and, when you click the Options button, you can switch between the two infrared protocols. (You can't even open this control panel unless you also have the IrDALib and IrLanScannerPPC files in your Extensions folder.)

Internet

Aren't you tired of typing your name, address, e-mail address, SMTP codes, and other Internet junk into each of your Internet programs? That's what Internet Config is for (see "Internet Config Extension" later in this chapter). But beginning in Mac OS 8.5, Apple reinvented the wheel and made it official: the Internet control panel (see Figure 4-27) lets you type in every shred of information about you and your Internet connection — right down to the signature at the bottom of your e-mails — so that Internet software will already know the key information.

Of course, this presumes that you're using Internet programs that *know* about Mac OS 8.5's Internet control panel. Fortunately, almost every Internet-related program we could find offers an option to "Use Internet Config" settings — which means, in the case of Mac OS 8.5 and later, the settings you've entered into the Internet control panel.

For example, in Claris Emailer, choose Setup ⇨ Accounts; in the dialog box that appears, double-click one of your e-mail accounts. You'll see the option to use Internet Config (i.e., the Internet control panel) settings. In Netscape Navigator, choose Edit ⇨ Preferences and click Identity to see the "Use Internet Config" checkbox. In every case, you'll see your Internet configuration information automatically slapped into the correct blanks.
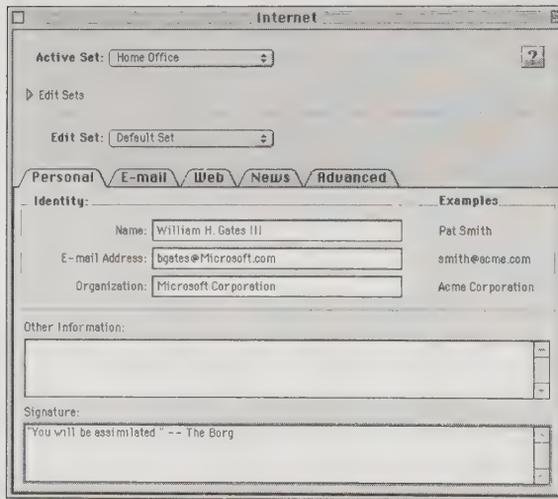
Figure 4-27: Type in all those geeky Internet codes just once in this central space.

Keyboard

The Keyboard control panel (see Figure 4-28) lets you switch from one keyboard layout to another. A *keyboard layout* is a little file placed in your System file that defines what key the Mac understands when you press each key on your keyboard.
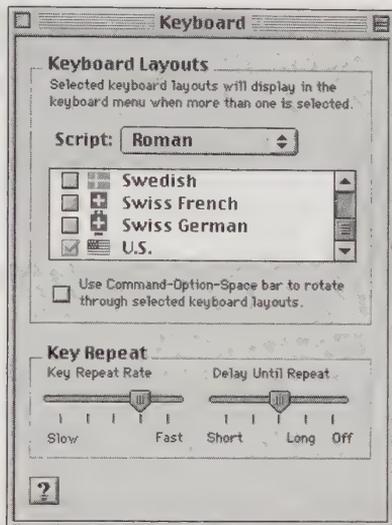
Figure 4-28: The Keyboard control panel awaits your command.

What good are keyboard layouts? Here are a few tricks you can pull off with them:

- Replace your current layout (called U.S.) with the famous Dvorak layout (an arrangement of keys scientifically designed to be easier and more efficient to use). Using Dvorak requires that you to spend a couple of weeks adjusting, which isn't made any easier by the fact that your keyboard keys are still labeled the old way. But many people who have made the switch swear that the Dvorak layout (included on the CD-ROM with this book) is faster, more comfortable, and less conducive to typos. (See "Dvorak keyboard layouts" in Appendix A for details.)

- Replace only two symbols of the keyboard: < and >. They're what come out if you type a period or comma while the Shift key is down, and that usually leads people to type things like **P>O> Box 234** by accident. If you replace the < and > symbols with another comma and period, you won't have that trouble.

- For PowerBook users only, equip your keyboard with a numeric keypad. That is, create a keyboard layout in which pressing a certain key — Ctrl, say — turns the letter keys on the right half of your keyboard into a numeric keypad: K is 5, L is 6, and so on. (PowerBook G3 series owners already have something similiar.)

- Switch between the System 6 and System 7 keyboard layouts. Believe it or not, Apple switched the locations of a few obscure symbols.

- For non-American Mac users, if you buy System 7.1's WorldScript software, you can use the Keyboard control panel to switch between an American key set and yours.

How to lose a manuscript

We once saw a certain international best-selling novelist — a beginning Mac user — fill ten pages of his word processing document with spaces when he inadvertently leaned a book on his spacebar. If the Delay Until Repeat setting in the Keyboard control panel had been Off, this accident would have produced only a single space on-screen.

OK, we admit it: 95 percent of Americans will never use any layout except the one that came with the Mac. Open your System folder, double-click the System suitcase, and trash any keyboard layouts you don't intend to use (German, Norwegian, and so on).

Key Repeat Rate: The Keyboard control panel also controls two minor functions involving repeating keys. The Key Repeat Rate setting controls the rate at which characters repeat when you hold down a key. At the slowest setting, characters repeat once every two seconds — an utterly pointless choice. It's much faster to just press the key repeatedly.

Delay Until Repeat: The Delay Until Repeat setting controls how long you have to hold a key down *before* it starts repeating the character. At the slowest setting, the delay is less than one second; at the fastest setting, repeats begin almost instantly. You can disable repeating keys by choosing Off in the control panel — an excellent choice for beginners who are used to nonrepeating typewriters.

Honestly, though, after you make these settings, you probably won't ever need to adjust them. Most people can afford to disable or trash this control panel.

Labels

As described in Chapter 1, the Mac's Label feature (born System 7, died System 7.6.1) enables you to apply text and/or color labels to your files and folders. You use the Labels control panel to set up the label categories and pick the color associated with each label, exactly as in Mac OS 8's Preferences command. See Chapter 2 for instructions on editing your Mac's label names and colors.

We have only one Label control panel secret. It takes a little more work than most, but it's weird. Select and delete all seven label names in the control panel so that all the fields are blank; then restart your Mac and check out the Labels menu. Read vertically, the labels spell out the names *alan* and *jef* — the two programmers.

Of course, there's a much more creative use of your Labels menu awaiting you with this book — Label Secrets Pro. See the appendix for details.

Launcher

The Launcher isn't like any other control panel; it has no options to set, no controls to adjust. Instead, when you double-click the Launcher icon, you get the Launcher *window,* as shown in Figure 4-29 — a launching pad filled with one-click buttons for your favorite files and folders.

Actually, there have been *three* Launchers over time. The original Launcher control panel gave the Performa its user-friendly features, such as the Documents folder and automatic Finder-hiding. Then there was the Launcher introduced with System 7.5 (and with some pre-7.5 PowerBooks and Performa models).

Finally, when Apple introduced System 7.5.1 (see Chapter 6), it overhauled the Launcher yet again, this time endowing it with a host of user-friendly conveniences — such as drag-and-drop icon installation. The modern-day Launcher window offers separate "pages," each listing a different array of jumbo icons.
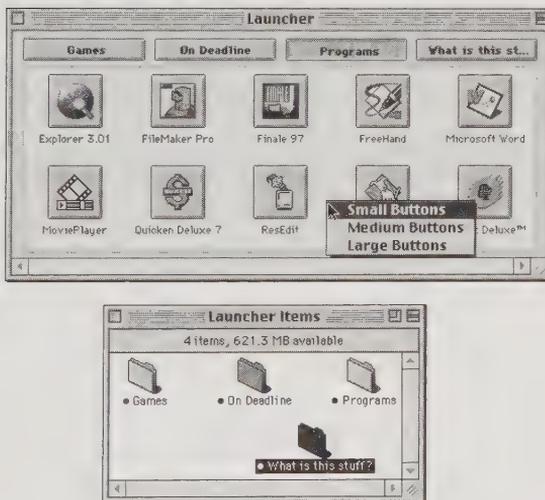
Figure 4-29: To change the names of the big Launcher topic buttons (top), change the names of the bulleted folders in the Launcher Items folder (bottom).

Here's how it works. In the System Folder is a folder called Launcher Items. Anything you put in this folder — or anything you drag onto the Launcher window — instantly appears *in* the Launcher window as a jumbo icon (see Figure 4-29). (In many ways, this process resembles adding items to the menu.) One click in the Launcher window suffices to open that icon. (Apparently focus groups found that double-clicking was too hard to remember.)

Here, for example, are some ideas for stuff to stick onto your Launcher:

■ Drag frequently accessed folders to the Launcher to create one-click shortcuts. This is especially useful if you root around in deeply-buried folders on a number of different file servers over a network; you'll have access to all of them from one central location.

■ Make a Launcher "page" called Control Panels, adding buttons to the Launcher for all the control panels you use the most.

■ Create Stickies stationery documents (see "Stickies" in Chapter 3) and drag them to the Launcher to generate ready-to-use Post-It notes.

■ If you use AppleScripts to automate tasks on your Mac, drag the applets to the Launcher as a command center for all your automated tasks.

■ Create category buttons for projects you're working on, and then group all related documents and applications under the appropriate categories.

CD

Even in the era of Mac OS 8, when *any* folder can be turned into a Launcher-style window with one-click jumbo buttons, we find the Launcher worth trying out. (Of course, if you wind up liking the Launcher, you'll probably like the infinitely more flexible, powerful, customizable OneClick better — it's included on the CD-ROM with this book. See Chapter 22.)

Launcher Control Panel Secrets ────────────■

Make your own topic buttons

If you poke around a little, you'll find out how Apple makes those big topic buttons appear at the top of the Launcher window. In your System Folder, in the Launcher Items folder, are *sub*folders. The name of each subfolder is preceded by a bullet (•). *Any* folder name bulleted this way shows up in the Launcher window itself as a big button name — and the folder's contents "page" appears when you click the folder's name. Figure 4-29 should make this relationship clear.

Add as many topic buttons (bulleted folders) as you want; the Launcher window will display up to eight of them — the ones that come alphabetically first. (You create the bullet symbol by pressing Option-8.) You can even resize or reshape the Launcher window, and the topic buttons, like Silly Putty, will stretch and reconfigure — becoming stacked vertically, for example — to accommodate your nutty design impulses.

Strange
But True

Especially cool: drag an icon, not into the Launcher window, but directly onto one of its topic buttons to install that icon onto the corresponding Launcher "page."

Easy-install, easy-remove icons

Mac Basics

Ever since System 7.5.1, installing a new button onto the Launcher has been pitifully easy: simply drag an icon onto the Launcher window. That's it — it jumps alphabetically into place.

Removing a button is equally simple: Just Option-drag it to the Trash. Or, if you'd like an alias of it, Option-drag it to your Desktop or into another window.

Better still, why not combine this trick with the previous one? That's right: Option-drag an already installed Launcher icon to a *different* topic button. Presto — you've just reassigned that Launcher icon to a different page!

Change the icon-button size
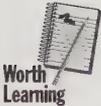
Worth Learning

The Launcher includes a little-known feature: a choice of button sizes! Press the ⌘ key and hold down the mouse button inside the Launcher window. You get a pop-up menu listing three icon-button sizes, as shown in Figure 4-27. The smallest size is particularly useful and makes the Launcher look a lot less kid-oriented.

Quick access to Launcher Items

As you customize your Launcher setup, you may find it an increasing hassle to burrow your way into the System Folder, into the Launcher Items folder, and from there into your individual topic folders.

Speed Tip

Fortunately, there's a speedy shortcut: *Option-click* any topic button. (As you press Option, your cursor turns into a tiny folder to let you know that you're doing the right thing.) You'll be teleported directly into that topic folder within Launcher Items.

Change the Applications topic button

You may have discovered that there's no bulleted folder for the first topic button, called Applications. Any icon that's *loose* in the Launcher Items folder appears on the Applications screen of Launcher-window icons.

You can eliminate the Applications topic button, and its corresponding color-coded page, easily enough: Just put *all* icons into bulleted folders of your own (in the Launcher Items folder). If there are no loose icons, the Applications button won't appear.

(You *can* change the Applications button's name, by the way, if you're so inclined. Launch ResEdit, as described in Chapter 21. Open the Launcher control panel inside your System Folder. Double-click the icon called STR#. In the list of numbers, double-click –4033. Scroll down until you see the item called Applications. Change this word to whatever you wish your programs folder to be called.)

Interior-decorate the Launcher

You're not stuck with nine-point Geneva type and boring background patterns in your Launcher escapades. See Chapter 21 for instructions on changing these elements using ResEdit.

Roll credits

Hold down ⌘ and Option-click over the gray area of the Launcher window (the thin margins around the folder buttons) to see the secret About box.

Location Manager

This clever but complex program was originally designed for PowerBooks. It was inspired by a breakthrough concept: that laptops are likely to be *moved around*. Using this control panel (and its corresponding Control Strip module), you can change a slew of parameters — the time zone, local Internet access phone number, networking method, speaker volume, and so on — with a single click of the mouse.

(OS 8)
The idea of switching easily from one set of settings to another was such a hit that, starting in Mac OS 8.1, the Location Manager became available for desktop Macs, too. OK, you probably won't be needing to change the time zone or Internet phone number much on your desktop Mac. However, the network-switching features of the Location Manager are *quite* useful on a desktop Mac. You might want, for example, to switch instantly from America Online 3.0 to an Internet account — without having to restart; switch from Ethernet to direct modem dialing; turn AppleTalk *completely* off without getting the "port is in use" message (see Chapter 36 for more on this anomaly); and so on. In the following discussion, we'll assume you're using a PowerBook, but keep in mind that some of these instant-switching features are equally useful on stationary Macs.

The key to using Location Manager is understanding its snapshot premise. That is, you're supposed to get all the various control panel settings the way you want them — and *then* open the Location Manager control panel, which captures the current settings for later.

Having opened Location Manager (see Figure 4-30), start by choosing New Location. Name it for one of the places you plan to be (or one of the network configurations you'll be using). Eventually, of course, you'll want to create *two or more* such "locations" — after all, if you're never going to switch, what's the point of this exercise? The following steps take you through setting up *one* such location, which we'll call NY Office.
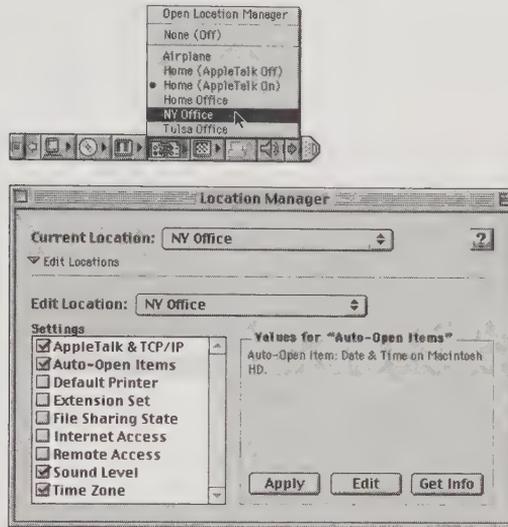
Figure 4-30: With the flick of a Control Strip tile (top), you can change a slew of settings at once on your Mac, thanks to the Location Manager (bottom). The older Location Manager control panel is similar, but instead of turning on checkboxes, as you do in 2.0, you double-click items to "slide" them into a second list on the right side of the window.

Now choose which settings you want to capture. Be warned, however: some of the settings *can't* be captured until you've gone through some careful preparation. (Note that the names and quantity of these options are slightly different in versions 1 and 2 of Location Manager.) Here are the settings you can make:

- **Networking or AppleTalk & TCP:** The following instructions (which require Open Transport, described in Chapter 35) may seem ridiculously convoluted, but trust us: you'll go through it only once, and the payoff is worth it.

  Open your AppleTalk control panel. From the File menu, choose Configurations. If you're like most people, your current setup is named Default — but Location Manager refuses to honor configurations called Default, and forces you to come up with a more distinctive name. Click Duplicate, therefore, and name your configuration (such as "Ethernet connection"). Click Make Active; on the main AppleTalk panel, make sure the Connect Via pop-up menu specifies the kind of network you want to connect to: Printer Port, Infrared, Ethernet, PC card (for PowerBooks), or whatever. Close the control panel, saving your changes.

  Now open the TCP/IP control panel and repeat the steps: choose Configurations, click Duplicate, name your setup (such as "EarthLink account"), and click Make Active. On the main panel, set up the Connect Via and Configure pop-up menus. (As you'll learn in Chapter 35, the terminology used in this dialog box is pretty much hopeless to anyone but

Internet geeks and network gurus; consult one of them for advice. On the other hand, if you're just setting this up for Location Manager's benefit, and you already *had* a working Internet or network connection, you don't need to change anything.) Close the control panel and save your changes.

Now, in the Location Manager control panel, select "Networking" or "AppleTalk & TCP/IP." Click the Apply button. That's it! Your Ethernet EarthLink network setup has been memorized and associated with the NY Office.

■ **Auto-Open Items:** This feature lets you specify certain programs or files to open automatically when you turn on the computer. Suppose you've created two Locations in this control panel — NY Office and Airplane. You might specify Microsoft Office to launch automatically when you're in the office (and plugged into a power outlet), but ClarisWorks when you're in the air (for battery savings).

To select startup items in this way, click the Auto-Open Items checkbox. The standard Open File dialog box appears; double-click each file or program you'd like to open. When you're finished choosing icons, click Apply.

■ **Default Printer:** If you move between two offices with your PowerBook, this setting can be a great time-saver, sparing you a slog to the Chooser each time you arrive. It requires, however, the Desktop Printing extensions (see Chapter 30).

To make this work, open your Chooser. Select the printer you prefer to use at the NY Office. When you close the Chooser, you'll see an icon for that printer on your desktop (if it wasn't there already). Click the icon once and choose Set Default Printer from the Printing menu.

Now, in the Location Manager control panel, simply turn on the Default Printer option. From now on, your PowerBook will automatically connect to this printer when in the NY Office.

■ **Extensions Manager** or **Extension Set:** Open your Extensions Manager control panel (as described earlier in this chapter). Create and save the set of extensions you'd like to use when you're safely at the NY Office. (You may want to choose a much sparer set for your Airplane "location," of course.)

In Location Manager, turn on the Extension Set option. Whatever set of extensions you last chose in Extensions Manager is now memorized for startups in your NY Office.

If you use Conflict Catcher 8 instead of Extensions Manager, you're still in luck. Not only can you use Location Manager to change Conflict Catcher sets automatically, but you can also do the reverse — a Conflict Catcher set can change your selected Location Manager setting at startup.

■ **File Sharing State:** Open your File Sharing control panel (called Sharing Setup before Mac OS 8). Turn File Sharing on or off as desired. When you choose the File Sharing option in Location Manager, the current status (on or off) will be associated with, of course, your NY Office.

- **Internet Access:** This option duplicates the functions of the "AppleTalk & TCP/IP" settings described a few paragraphs ago and "Remote Access," described next. It's for use only by people who connect to the Internet using Apple's Internet Connection Kit.

- **Remote Access:** There are four control panels involved in establishing an Internet connection: AppleTalk, TCP/IP, Modem, and Remote Access (called PPP before Mac OS 8.5). "AppleTalk & TCP/IP" (described above) handles the first two; this option covers the remaining pair.

  Once again, you must begin by creating and naming a *configuration* in each control panel; follow the steps in "AppleTalk & TCP/IP," above. The beauty of using this option, by the way, is that it lets you store a different Internet access number (as a different configuration in the PPP or Remote Access control panel) for each of your locations.

  Or, if you use Apple Remote Access to dial into another Mac, set up your Remote Access Setup program correctly — and then use this item to memorize its condition.

- **Sound Level:** Wow, is this one easy. Just select it in the Location Manager; your current speaker volume level is instantly memorized.

- **Time Zone:** Another easy one! Open the Date & Time control panel. Click Set Time Zone, and select a city in your time zone. Click OK. When you return to Location Manager and select this setting, your NY Office's time zone is automatically memorized.

You're not required to set all — or even *some* — of these, for each location you create. Plenty of people use only *one* of the settings — the Internet Access one, for example. They merely find it handy to be able to switch four control panels' configurations at once, simply by choosing from the Control Strip (see Figure 4-30).

All right then: you've spent a rainy Saturday hooking up all of these settings. Now the fun begins. Open your Control Strip; from the tile shown in Figure 4-30, switch to a different location. A weird gray message appears, asking you to wait while the Mac scurries around, making control panel changes; when it's over, you're ready to begin your workday.

Location Manager Secrets

The AppleTalk On/Off godsend

Speed Tip

How many times in life do we wish it were easier to turn AppleTalk on or off? Every time we plug our digital camera into the printer port. Every time we take the PowerBook on the road and don't want to lose 30 minutes' worth of battery juice to AppleTalk. Every time we hook up our color inkjet instead of our laser printer.

Location Manger makes doing such things *much* easier than visiting the Chooser —and more reliable, too, as anyone who's ever gotten the Chooser's "can't disable AppleTalk" message can attest. Here's how (note that this process requires Open Transport).

Open your AppleTalk control panel; choose Configurations from the File menu; duplicate the currently selected configuration and name it AppleTalk Off (or something equally memorable). Click Make Active to return to the main control panel.

Now, from the Edit menu, choose User Mode; click Advanced; click OK; click Options; click Inactive; and click OK. Close the control panel and save changes.

Finally, repeat all of these steps—but name this configuration AppleTalk On, and choose Active (instead of Inactive) in the final rush of clicks. Now, when setting up your Location Manager locations, you can use your two new AppleTalk settings as part of an "AppleTalk & TCP/IP" location setting.

As Figure 4-30 illustrates, the result is a handy on/off mechanism that sure beats Chooser-choosing. And as Chapter 36 makes clear, the result is an AppleTalk that's *really* turned off and won't give you the "Port is in use," "Please make AppleTalk inactive," or "Cannot find printer" messages.

Changing at startup

Because a few of the settings governed by Location Manager require restarting the Mac, it sometimes makes sense to change your chosen location at startup. But you won't be offered that opportunity unless you ask for it. Choose Preferences from Location Manager's Edit menu. In the ensuing dialog box, you can specify that you want to be asked for a location change at *every* startup — or only when you hold down a special key. (In version 1.0, the key is the space bar; in 2.0, you can choose any key combo you like.)

More settings, more fun!

The various settings you're allowed to make in Location Manager are actually represented by *modules* sitting in a folder called (can you guess it?) Location Manager Modules. It's in your Extensions folder. You can throw out any of these modules that you never use, and they'll disappear from the Location Manager "control panel."

You can also *add* modules, however, by putting them into this Location Manager Modules folder. Apple plans to develop new modules as time goes on; you'll find them at http://www.powerbook.apple.com.

Roll credits!

With the Location Manager control panel open and the Option key pressed, choose About Location Manager from the   menu. The usual About box (those are dance steps, by the way) — but this time, a scrolling list of inside-jokey credits roll by.

They're worth sitting through — if only for the sound of "Eric's former cat" Tabitha, who meows at the end of the sequence.

Mac OS Easy Open (Macintosh Easy Open)

If there's one thing that frustrates novices and old Mac salts alike, it's seeing that infernal "Application not found" message when you double-click an icon. Apple has made a couple of attempts to rectify the situation: allowing you to drag a file onto a program's icon, for example, or displaying messages that offer to open text, movie, or PICT files in SimpleText. Unfortunately, these solutions assume that you *know* what kinds of programs can read the mysterious icon you're trying to open.

That's why Apple, beginning with System 7.5, gives us Mac OS Easy Open. (In systems before 7.6, it's called *Macintosh* Easy Open. And in Mac OS 8.5, it was merged into the new File Exchange control panel, described earlier in this chapter. With this control panel installed, when you double-click an icon, you don't get an error message — you get a dialog box that lists the programs you own that *can* open the mystery file (see Figure 4-31).
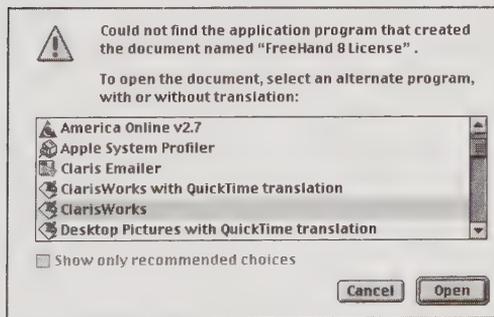
Figure 4-31: Mac OS Easy Open intervenes when the "Application not found" box otherwise would appear.

ANSWER MAN

Desktop under permanent construction

Q: What the heck is going on? My Mac sometimes rebuilds its own Desktop, unbidden. I'm not pressing any keys; I'm not doing anything — except waiting and waiting for it to finish. What's going on?

A: Calm down. You've got Mac OS Easy Open, right?

Q: How'd you know?

A: Mac OS Easy Open's job is to suggest programs to open the mystery document you're double-clicking, right? As a result, it has to know what programs you have. It learns what programs you have whenever you rebuild the Desktop. (See Chapter 2 for details on rebuilding the Desktop file.)

The trouble occurs when you rebuild the Desktop with the *Shift* key down, thus turning off all extensions, *including* Easy Open. The next time you start up, Easy Open realizes that it wasn't around during the most recent Desktop-rebuild, and so its catalog is out of date. It therefore insists on rescanning your disk — by rebuilding the Desktop — to make sure that its index of your programs is current.

Today's MEO control panel offers several checkboxes:

- **Always show dialog box:** Suppose you download a strange graphics file. You double-click it. MEO doesn't know what program the file came from, and so its dialog box appears, listing the graphics programs you *do* have: Photoshop and Color It. You choose Photoshop.

  From now on, whenever you double-click that kind of graphics file, MEO will automatically open it with Photoshop. But if you turn on "Always show dialog box," you'll be offered the list of graphics programs *every* time you double-click a mystery file — even if MEO already knows which program you prefer.

- **Include applications on servers:** Turn on this checkbox if you want MEO to search for available programs (to open the mystery file) not just on your hard drive, but on *other* peoples' hard drives if they're connected via network. As you can imagine, this searching-over-the-network business makes the search take much longer.

- **Auto pick if only 1 choice:** If you double-click a mystery file and you have only *one* program that could open it, this checkbox makes MEO launch that program without even showing you its list dialog box.

- **Translate TEXT documents:** Turn this on if you want MEO to search for a program that can open ordinary text files. If the text file is simply, well, a text file, you've just made the process take longer. If the text file is actually a word processor file from some program you don't own, however, you may appreciate being offered a translation choice.

In past versions, MEO could create a headache if you chose the wrong program to open a mystery file — MEO, trying to do you a favor, would automatically launch that *same* program every time you double-click any *future* document of the same type. The only way to make MEO "unlearn" its association with that wrong program was to delete its preferences file in your Preferences folder.

That's why there's a Delete Preferences button — but the "Always show dialog box" checkbox is a superior method of re-teaching MEO.

Alas, MEO has its drawbacks. One problem is that it requires, at all times, an up-to-date index of every program you own (so that its list of alternative programs will be accurate). That requirement leads to a lot of extra Desktop-rebuilding, as explained in the "Desktop under permanent construction" sidebar. Another, related, problem is the hassle of rebuilding the Desktop when you *want* to; see "The Mac OS Easy Open myth" secret in Chapter 1. As noted there, we think these inconveniences outweigh Easy Open's rare usefulness.

MacLinkPlus Setup

MacLinkPlus, a commercial utility included with System 7.5 through Mac OS 8.1, is designed to open DOS or Windows files when you double-click them, translating them automatically into a Macintosh format. You use this control panel to configure MacLinkPlus's translators.

CD

If you have Mac OS 8.5, you didn't get MacLinkPlus. But don't despair; we've included it with this book! See the appendix for details.

MacTCP

This control panel is the pre-Open Transport component that configures your Mac for connections to the Internet and other networks. If you're not on a network and don't use the Internet, throw this out. See Chapter 25 for more on the Internet. If you're using Open Transport (see Chapter 35), this control panel is replaced and *made invisible* by one called TCP/IP, described later in this chapter.

MacTCP DNR

Strange But True

Talk about weird. According to the Finder, this little item is indeed a "control panel" — and yet it isn't in the Control Panels folder (it's loose in the System Folder) and can't be opened!

DNR stands for "domain name resolver"; this phony control panel contains information required by certain Internet (TCP/IP) programs. In theory, the file should be obsolete in this era of Open Transport. It's still around only to accommodate Internet programs that aren't compatible with Open Transport. If you aren't using Open Transport, and you have an Internet account, don't even bother trying to throw this file away; the next time you sign on, the MacTCP control panel will create it anew.

Map

If you need to know the exact time in Ulan Bator (the capital of Mongolia), or if you're called upon to calculate the mileage from there to your office, the Map control panel is indispensable. Generations of Mac fans have disparaged the Map — but it's probably far more important than you suspect, as we'll discuss shortly. (In Mac OS 8.5 and later, you'll have to hunt through the Apple Extras folder on your hard drive to find the Map.)

Click any spot on the world map, and the Map displays the current time at that locale, along with its precise longitude and latitude (see Figure 4-32). You can scroll around the world by dragging the pointer to the edges of the Map window.
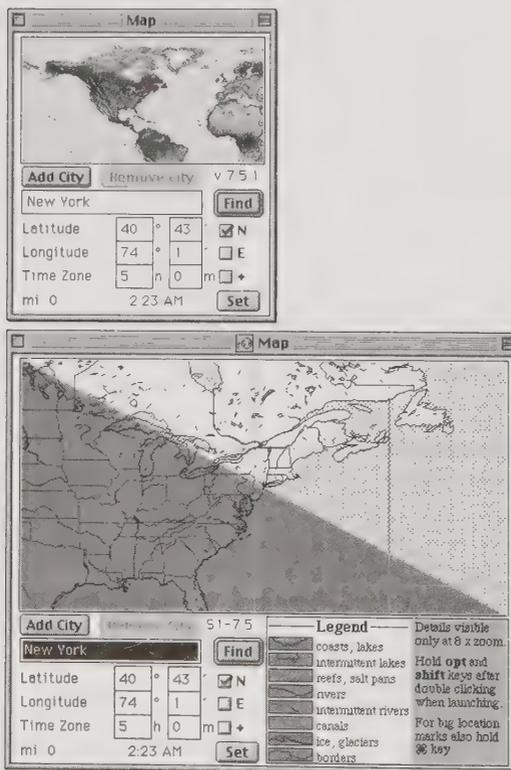
Figure 4-32: Top: What your map looks like. Bottom: What ours looks like, after the installation of Hi-Res Map, a *Mac Secrets* exclusive.

The Find feature can locate specific cities, islands, and other points on the Map; just type the name of the city you want to locate and then click the Find button (or press Return). The Map already knows about most major cities, as well as Mount Everest and the Middle of Nowhere (a spot in the South Atlantic Ocean — try it by typing *MID* and pressing Return).

If you're not sure that a city is listed or don't know how to spell it, type just the first letter or letters and then click Find. The Map jumps to the nearest match.

To make practical use of the Map, you must set your home city, which becomes the reference point from which all distances and times are measured. To do this, locate your city on the Map, using the Find command, and then click the Set button. Your city now becomes mile zero and displays the current time. The Map calculates all distances and time differences based on your home city's location and time.

If your home isn't among the cities listed in the Map, use an atlas to determine the exact latitude and longitude of your home. (Or if you're not fussy, just click the approximate spot.) Use this information to add your city to the map: Type the name of the city, along with its coordinates, and then click Add City.

Map Secrets ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━■

Around the world in 80 Returns

To see all the locations that the Map already knows about, hold down the Option key while repeatedly clicking Find (or pressing Return). This trick cycles through all the cities that the Map is programmed to find by name.

The importance of setting your home town

Here's solid proof that the Map can have a profound impact on your work: A magazine company in Oregon was struggling to keep its important QuarkXPress files up to date. An editor would open a nearly-completed magazine layout — only to get a warning from QuarkXPress that nearly all the imported graphics in the Quark file had been modified and needed updating. Yet the editor knew perfectly well that the graphics had *not* been updated since the file was last saved. Still, not wanting to take chances, the editor would laboriously update each file. An hour later, though, the same thing would happen. It was driving the staff crazy. Why did Quark keep saying the pictures in the files had been modified when they weren't?

Strange
But True

Incredibly, the Map was responsible. One of the designers had unwittingly set his Map's home city to Ouagadougou — the capital of Burkina Faso in West Africa. Even though his clock was set correctly, the Map was telling his Mac that it was really eight hours earlier in Oregon. Therefore, each file he saved was date-stamped with a time that was, by Oregon time, *eight hours ahead* of its actual save time. When the file was opened and saved on *another* Mac set to the correct time zone, Quark became hopelessly confused as to when the files had *really* been modified last. (Fact is, this same Quark problem can arise even when the Mac clocks on a network are out of sync by just an hour or two.) At any rate, simply resetting the Map brought all the Macs on the network back into sync and the problem vanished.

And *that's* why you shouldn't ignore your lowly Map.

Instant intercity distance readout

You can use the Map to quickly ascertain the distance between any two spots on Earth. Suppose that you live in Chicago but need to know the distance between Miami and Budapest. Easy: Type **Miami** in the location field, click Find (or press Return), and then click Set. As far as the Map is concerned, you just changed your home city. Next, type **Budapest** in the location field and press Return. The Map jumps to Budapest, and you'll have your answer: 5,330 miles.

Miles-to-kilometers-to-degrees calculator

The Map control panel contains an undocumented feature for converting miles to kilometers and vice versa. The distance between two map points is displayed in the lower-left corner of the Map window. If the distance is displayed in miles, click *mi*, and that number is instantly converted from miles to kilometers. Click the *km* text and the distance again is converted, this time to degrees.

Interestingly, you can click a third time to see how many *degrees* the selected city is from your home city. (The degrees number is a compass heading relative to your home city, which is considered 360.) Click one last time to convert the figure back to miles.

Map zooming

You can view the map at three levels of magnification: normal size, twice normal size, and four times normal size.

Magnify the map by 200 percent by pressing the Shift key while opening the Map control panel. To do this, you must first double-click the Map icon and *then* press the Shift key (an icon won't open if you hold down the Shift key *while* double-clicking).

To magnify the map by 400 percent, hold down the Option key while opening the control panel. For an even more magnified view, try opening the Map while pressing both the Option *and* Shift keys. (Again, you must press Shift right *after* you double-click.)

Unfortunately, the resulting blown-up map is spectacularly blotchy and distorted. Wouldn't it be nice if the enlargement were every bit as clear as the original — or clearer?

Thanks to the efforts of Map-obsessed Göran Svegle, it shall be so (see Figure 4-32). Install HiRes Map, a *Mac Secrets* exclusive; it's included on the CD-ROM with this book. Instructions are in the appendix.

CD

A better Map

You can replace the uninspiring black-and-white map in the pre-System 7.6 Map control panel with the splendid color world map stored in the Scrapbook. To make the switch, copy the color map from the Scrapbook. Open the Map control

panel, click the map picture, and choose the Paste command. (System 7.6 and later has this color map pre-installed.)

You also can copy the map graphic *from* the Map control panel. Click anywhere on the map, and choose Copy. You now have a neat little world map that you can paste into any other program.

Strange But True

Actually, you can paste any graphic into the Map, although few choices other than a world map make any sense (see Figure 4-33).

Figure 4-33: You can replace the Map with a picture of Neil Diamond — but why?

What time is it in London?

You can find out the difference between any spot in the world and your own time zone. First, click somewhere on the map (or type the city name, such as **Paris**, and click Find). Then click the words *Time Zone*. The Time Differ. box now shows the time difference between the cities. (The tiny + or - symbol at the right indicates whether you're ahead or behind.)

But you don't have to do the addition yourself, of course; the exact time in the other city is shown at the bottom of the window.

Fix that typo!

You can freely edit any cities *you've* added to the Map's database. But the 230 cities already *in* the database are locked. You can't edit their information.

Contest Winner

That bugged Map specialist Göran Svegler, because he discovered that the coordinates for Havana, Cuba, are incorrect! He didn't rest until he devised a way to edit a locked city. Two ways, actually—but one of them requires ResEdit.

The much easier way: Type in the locked city's name and click Find. Add a letter to the city name, making it, for example, "Havana2." Click Add City and then Remove City.

Now *delete* the extra character you added to the city's name. Now Havana is removable, and therefore changeable. Click Remove City; type in the corrected coordinates (23 degrees 0' N, 82 degrees 30' W); and finally, click Add City one more time. The deed is done!

Roll credits!

Click (and hold) on the version number at the right side of the control panel, and the words *v7.x, by Mark Davis* are inserted into the city-name field. Thanks, Mark!

Memory

The Memory control panel (see Figure 4-34) manages several important memory-related functions: the *disk cache, virtual memory, RAM disks, Modern Memory Manager,* and *32-bit addressing.* For explanations of the real-world uses for these functions, see Chapter 9.

TRUE FACT

Rajan's Dilemma

As we've noted, having the correct settings in the Map control panel can make a big difference to the way files are dated on your Mac. But the weirdness doesn't stop there, as free 4th Edition winner Rajan Munshi observes.

I believe I have found a bug in the Map control panel. When the Map control panel is open, the time zone is displayed relative to Greenwich Mean Time (GMT) in England. I am currently in Jackson, MS (U.S. Central Time), which is six hours behind GMT.

However, during Daylight Savings Time, the "Time Zone" should now be *five* hours behind GMT. Fair enough. Yet if you turn on " Daylight Savings Time" in the Date & Time control panel,

absolutely nothing happens in the Map; its display of the current time and the difference from GMT don't change! Oddly enough, if you click the Set button, the times in the Map *will* immediately correct themselves — until the next time you open the Map, whereupon the time and time zone will both be wrong again.

The only way to solve this problem permanently is to avoid the Daylight Savings Time option (in the Date & Time control panel).

Or upgrade to Mac OS 8.5, we might add, which finally makes the Map observe Daylight Savings Time — and even resets your Mac's clock automatically when DST begins or ends.
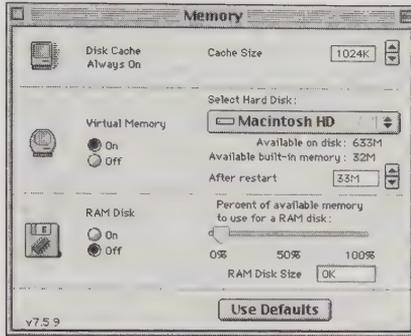
Figure 4-34: The many panels of Memory.

The Memory control panel automatically hides or shows controls, depending on your Mac model. For example, the original Mac LC doesn't work with virtual memory, so no virtual-memory options appear. And only Power Macintosh models (before Mac OS 8) offer the Modern Memory Manager choice — an internal memory-management option that speeds up PowerPC-specialized programs by about 25 percent. (The Off button is there in the rare event of some ancient game program that doesn't work with the Power Mac's new memory scheme.)

Memory Control Panel Secrets

Roll credits!

For this one, you need a Mac that works with virtual memory — and System 7.x.

First, turn on Virtual Memory. Hold down the Option key while clicking the pop-up menu used to choose a hard drive. Instead of a list of available drives, you see a hierarchical menu containing the names of the programmers. The submenus contain the hilarious nicknames of each of the programmers.

Turn off virtual memory at startup

We're not sure how often you'll use this, but here it is: If you press the ⌘ key while your Mac starts up, you'll turn off virtual memory for that computing session.

Monitors

Use the Monitors control panel, if you have it, to change the number of colors your monitor displays; manage multiple-monitor setups; and adjust the *gamma* (overall monitor tone) and resolution of your screen. For more on these topics, see "Monitors & Sound," described next.

Monitor Secrets ———————————————————————■

What's behind the Options button

As described in the sidebar "What's the gamma?" your monitor's *gamma* setting is its overall hue. Most Mac monitors let you choose from among two or three gamma settings, which can have a huge effect on the brightness or muddiness of photographic images.

To view the secret dialog box containing these controls, Option-click the Options button. Only now do you see the list of gamma settings (if your monitor supports them).

No Option key is needed, by the way, when clicking the Options button, if you want to change the *resolution* of your screen — that is, to choose larger or smaller dimensions, thus enlarging or reducing the amount of area that fits on your screen. (See Chapter 11 for details on screen resolution.)

Roll credits!

In the upper-right corner of the control-panel window, click the version number (such as 7.1.3). You see a pop-up list showing the names of the six programmers.

The fun isn't over yet. Keep holding down the mouse button (so that the list stays visible), and press the Option key. The tiny face next to Jim Straus's name sticks out its tongue each time you press the Option key. Press the Option key 11 times; the first and last names in the list begin to rearrange themselves and get replaced with the words *Blue* and *Meanies*. (The Blue Meanies were the System 7 test-and-cleanup SWAT team.)

Modem

Beginning with the dawn of Open Transport (see Chapter 35), Apple created a central place for specifying what kind of modem you have. It's this control panel, whose central feature is a pop-up menu of different modem brands. Other controls let you specify which jack your modem is plugged into

(modem, printer, PC card, and so on); whether or not you want the modem speaker turned on; whether or not you want touch-tone dialing; and so on.

Most people don't notice the menu bar that appears when you open the Modem control panel. Its File menu features the important Configurations command, which lets you create *multiple* modem setups — complete with independent port assignments, speaker volumes, and so on — and switch easily among them. As noted in Chapter 35, you can use the Location Manager Control Strip icon to flip conveniently among different setups, without even opening this control panel.

Modem control panel Secrets ━━━━━━━━━━━━■

Trash modems you don't own

The list of modems you see in the Modem control panel corresponds to the icons in the Modem Scripts folder (which is inside your System folder, inside the Extensions folder). Mac OS 8.x comes with 44 of these mini-preference files, which, for most people, is about 43 too many.

Open the Modem Scripts folder and throw away all of the modem names and brands you don't own. You'll save disk space, make configuring the Modem control panel easier, and sleep well at night. If you ever switch to a different modem, heck, you can always reinstall the scripts.

Add your modem to the list

If you don't see your modem's name listed in the Modem control panel's pop-up menu, don't even think about trying to get online. Choosing the wrong modem type is a chronic cause of difficulty when trying to get onto the Internet. (Choosing a modem name that sounds *similar,* such as Global Village Platinum when what you actually have is a Global Village 56K, isn't good enough.)

Instead, you have two options: Either ask for the necessary modem script from the modem's maker (or investigate the company's Web page, where they've probably posted the necessary scripts), or use Apple's Modem Script Generator program. You can download it from Apple's Web page at www.info.apple.com/swupdates (it's filed under Macintosh, in the Unsupported folder).

■━━━━━━━━━━━━━━━━━━━━━━━━━■

Monitors & Sound

The Monitors & Sound application is the Mac's audio/visual control center. With the help of its required extension, SystemAV, Monitors & Sound lets you change the settings for your monitor, speaker, and microphone. (Monitors & Sound replaces two previous control panels — Monitors and Sound, of course.)

Several buttons at the top of the window let you switch its panels (see Figure 4-35).

Monitors: When you click the Monitors button, you can specify the number of colors your monitor displays (for example, to switch from color to grayscale, or 256 colors to Thousands). The range of options depends on your Mac's video capability; the more video RAM (or *VRAM*) you have installed, the more colors your Mac can display. (Details on VRAM appear in Chapter 11.) The long rectangle at the bottom of the control panel displays the full spectrum of colors you selected.
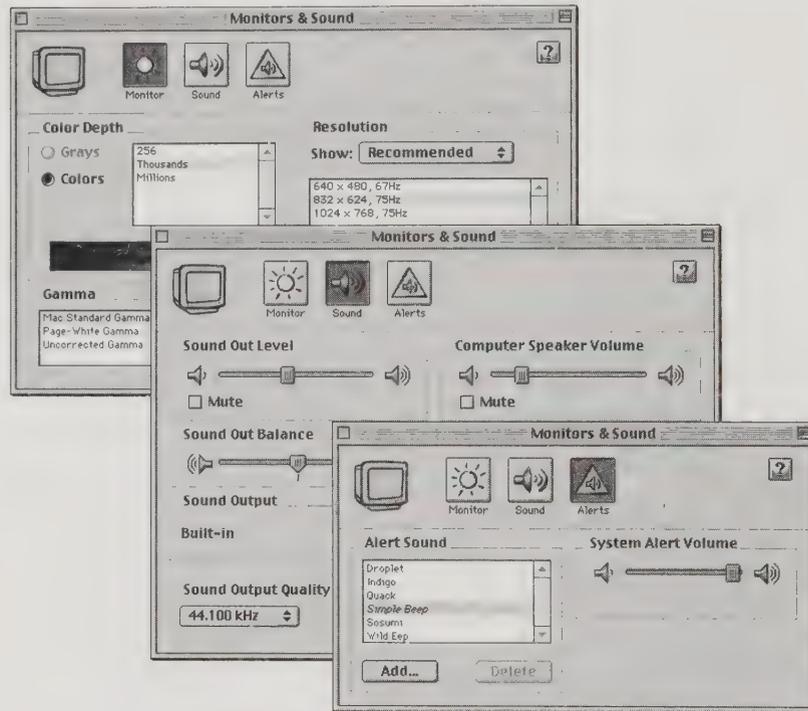
Figure 4-35: The three main Monitors & Sound panels. Your options may vary.

Why not always display the maximum number of colors possible? As a general rule, the lower the color setting in the Monitors control panel (16 colors, 256, and so on), the faster your screen gets repainted. On the other hand, the slowdown is imperceptible on modern Power Macs; maybe that's why they *can't* be set to black-and-white. (There are other ways to switch your color setting without opening Monitors & Sound, by the way. You can save time, effort, and RAM by using the Control Strip, described earlier in this chapter.)

If you're lucky enough to own a *multisync* monitor (one whose image can be enlarged or reduced), the Resolution panel is one way to switch from one zoom setting ("resolution") to another. (Once again, however, it's faster to use the Control Strip.)

You also use the Monitors control panel to set up multiple-monitor configurations when more than one monitor is attached to your Mac. Chapter 11's juicy exploration of multiple-monitors secrets includes instructions for specifying which monitor should be the "main" one, how to figure out which monitor is which, and more.

Sound: The options on the Monitors & Sound application's Sound panel differ according to your Mac model and your system version. (See Chapter 23 for much more on sound.) Most people, however, are offered sliders such as:

- **Sound Out Level** and **Sound Out Balance:** These sliders control the volume and right-to-left stereo balance of your external speakers, if any.

- **Computer Speaker Volume:** This is the one you'll probably use most often: the volume of your Mac's built-in speaker.

- **Computer Speaker Balance:** If you have *stereo* built-in speakers, such as those built into the AppleVision monitors, this slider controls the right-to-left balance between them.

- **Sound Output:** This pop-up menu lets you direct the sound coming out of your Mac—to external speakers (if any), the built-in speaker, and so on.

- **Sound Recording Input**: Choose, from this pop-up menu, what sound source you want to record (*when* you record; see Chapter 23). Your choices depend on the equipment your Mac has, but the list may include Internal Mic (the built-in microphone on PowerBooks, for example); Line In (the microphone jack on the back of your Mac); Expansion Bay—PC Card (the card slot on PowerBooks, in the event somebody invents a PC card that contains a microphone); Internal CD (you can record from, or listen to, music CDs); Zoom Video (for PowerBooks 3400 and later with a Zoom Video PC card, as described in Chapter 14); and so on.

- **Listen:** This checkbox, known in the older Sound control panel as Playthrough, lets you decide whether or not you want the incoming sound passed through the Mac and played through its speakers. You'd definitely want this turned on if you're trying to listen to a music CD. You'd probably want this off if you're trying to record with your Mac microphone (to avoid feedback). See Chapter 23 for more on recording sounds.

(OS 8.5) (Mac OS 8.1 fans may have been alarmed that this checkbox is no longer available; the "playthrough" option is *always* on. Unless, of course, you install the Control Strip module called Sound Input Strip, available from www.csun.edu/~hbcsc224/SOFTWARE.HTML, and included with Mac OS 8.5 and later.)

■ **Sound Output Quality:** This pop-up menu lets you choose the quality of sound playback; higher numbers are better quality. Actually, we can't think of any reason not to leave this control at its highest setting.

Alerts: This panel of the Monitors & Sound program lets you choose a sound you'd like your Mac to use as its *error beep* — the quack, beep, or droplet sound it makes when you're clicking somewhere you shouldn't be, for example.

To play a sound, click its name in the list. Whichever sound is selected when you close the control panel becomes the standard alert sound. That's an important fact to remember if you have long sounds in your arsenal, which are utterly annoying as error beeps; the Mac is incapacitated until the sound finishes playing.

Note that this control, too, has a volume slider; it lets you set a volume level for your error beeps *independently* from the other Mac's sounds (which are set using the Computer Speaker Volume, described earlier). In other words, you can have your games playing full blast, while not embarrassing yourself when the Mac notifies your coworkers that you've just made a mistake.

In recent versions of Monitors & Sound, the list of Alert Sounds also offers Add and Delete buttons. If your Mac has a microphone, in other words, you can record new error beeps of your own.

To do so, click Add, which opens a panel with tape recorder-like controls. Click Record to begin recording your sound. Be ready to click Stop promptly when you finish, so that you don't record a block of dead air at the end of your sound. To save what you recorded, click Save and assign the sound a name. It now appears in your list of available alert sounds. (To remove a sound, click its name and then click Delete.) See Chapter 23 to find out what else you can do with your recorded sounds.

MACINTOSH SECRET

What's the gamma?

You make subtle adjustments to the color balance on your monitor by using the Gamma controls at the bottom of the Monitors & Sound window. (If you have the older Monitors control panel, Option-click the Options button to see these controls.)

Apple monitors are manufactured by Sony. Apple found the overall image a little bit dim, however, and decided to adjust the gamma settings to create a brighter, whiter picture. Apple calls its preferred setting Standard Gamma. *Uncorrected gamma,* on the other hand, is the original, unmodified Sony Trinitron setting. (Some Apple monitors offer additional gamma settings.)

The Gamma selection you use can have a huge effect on photos and other graphics; if you edit your images with your monitor set to Standard Gamma, you'll cry out at the dismal, dark, muddy image that results when you print your photos or post them on the Web. Work with photos with your monitor set to Uncorrected Gamma. (Better yet, use a custom gamma setting set just for your monitor. Use Photoshop's Monitor Setup command, in the File menu's Preferences submenu, to set this up.)

If your Monitors & Sound control panel *doesn't* have an Add button, you must use the SimpleSound desk accessory (described in Chapter 3) to record new sounds. (In their zeal to create the original version of Monitors & Sound, Apple's programmers left out the ability to add new sounds — a feature the older Sound control panel had had for years.)

Color: New in Mac OS 8.5, this button (and corresponding panel) offers a simple list of monitors. They correspond to the list of ColorSync profiles in your System Folder (which you should feel free to clean out, discarding the icons for all monitors you don't actually use). Its purpose is to tell the Mac what kind of monitor you're using for accurate color matching using ColorSync, described earlier in this chapter. (The iMac's additional Geometry panel can enlarge or move the screen image.)

Mouse

This control panel provides access to two vital mouse controls: tracking and double-click speed (see Figure 4-36).
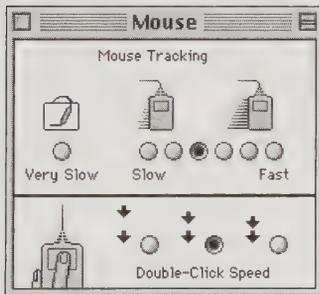
Figure 4-36: Fine-tune your mouse with the Mouse control panel. If you have a PowerBook and version 7.2 or later of this panel, you also have an option for thickening your cursor.

Mouse tracking is the ratio between the physical movement of the mouse on your desk and the movement of the pointer on your monitor. The higher the setting, the less you have to slide the mouse to move the pointer. In other words, at the fastest of the seven available settings, a tiny one-inch movement of the mouse on your desk may move the cursor *three* inches across the screen — or even more. The exaggeration of the cursor's movement is associated with how *fast* you move the mouse.

Even at the fastest tracking setting, however, when you move the mouse very slowly, the cursor on the screen moves exactly that much — one inch per inch of desk space. (That makes life easier when you're doing fine editing in a graphics program.) Yet, if you move the mouse that same inch very quickly, the cursor on the screen may jump most of the way across your monitor.

(Your cheerful authors once were privy to a thick Apple document — a bound dissertation on mouse-acceleration research, believe it or not — in which the pros and cons of various cursor-speed logarithmic scales were discussed and tested at length.)

The higher settings are best for most applications. You're less likely to run out of mouse-pad (and desk space), and you can zip the pointer from one end of the monitor to the other with the flick of a wrist. We've heard it argued that the slower settings are good for graphics work, because a slow-moving pointer provides better control. Yet, as we said, even at the Fast setting, a slow-moving mouse gives you a slow-moving cursor. (You can make the mouse even faster using ResEdit; see Chapter 21.)

How does the Mac know the difference between a double-click and two single clicks? Using the Mouse control panel's Double-Click Speed setting, you tell the Mac how fast the two clicks must occur to qualify as a double-click. When adjusting this setting, watch the little picture of the mouse. The mouse button flashes to indicate the new minimum double-click rate.

Strange But True

In Mac OS 8 and later, this setting affects, of all things, the *menu-drop hold-down delay* (for want of a better term). It determines the *maximum* amount of time you can hold your cursor down on a menu title and still make the menu drop down when you release. In other words, if you click quickly, the menu drops down; if you keep the button pressed for a period longer than this double-click speed setting, as though you're just *reading* the menu instead of using it, the menu snaps back up when you let go of the button.

Network

With the dawn of Open Transport (see Chapter 35), this control panel is no more, having been replaced by the more attractive AppleTalk control panel.

The idea, however, is the same. The Mac, in its wondrous multilingual way, can talk to several different kinds of networks. It can talk to LocalTalk (the built-in networking system). It can talk to the faster, more expensive Ethernet or Token Ring. It can beam information from PowerBook to PowerBook. The Mac even can communicate with such a thing as a *remote* network, which is what you become when you use Apple Remote Access to dial in. (See Chapter 35 for details on networks.)

You must use this control panel to direct the Mac's attention to the correct kind of network. For example, if your Mac is hooked up to a laser printer by Ethernet, and you now want to connect your PowerBook 180 (which doesn't have Ethernet) to transfer some files, you'll have to switch the Mac to LocalTalk by opening Network and clicking the corresponding icon.

Numbers

This control panel determines where the commas and periods appear in big numbers. (In France, for example, periods are used instead of commas to separate the thousands, as in "you owe me a grand—yeah, 1.000 bucks.") Use the little pop-up menus to change the punctuation to serve as the decimal point and the thousands separator (see Figure 4-37), or simply type the punctuation mark in the box. The right side of the control panel controls the way money amounts are displayed (such as what currency symbol appears).
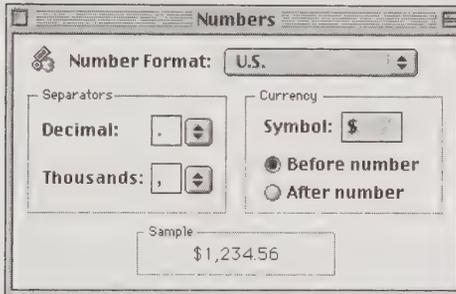
Figure 4-37: The Numbers control panel makes your digits world-ready.

Changing the Separators affects numbers in the Finder; a file that says "1,233K" will say "1.233K" after you restart the Mac. The only other place where the Numbers setting has any effect is in your spreadsheet programs. For example, in Excel, even if you *type* "3.14159," what appears in the cell is "3,14159"—with a comma. Similarly, if you apply the Currency number format to some numbers in Excel, the punctuation (and even currency unit, such as ¥ or £) changes to your Numbers control panel's setting.

In any case, you probably can see where we're headed with this: After you check out this control panel, throw it away.

Password Security

This control panel is a terrific idea. It protects PowerBooks from unauthorized snooping by requiring a password each time you turn on (or, optionally, wake up) the laptop.

The good news: even pressing the Shift key during startup doesn't prevent this control panel from requesting the password. Starting up from another disk, such as Disk Tools, won't work either. Moreover, when you type your password, you see only bullets (•••••) appearing in the Password blank, so that the guy in the next airplane seat can't learn your password by looking over your shoulder.

In other words, if you forget your password, you're out of luck. Your only option is to take your PowerBook, complete with original purchase receipt, to an authorized Apple service center, where they have the special tools needed to bypass the security. (The 800-SOS-APPL staff can't help you here.)

Before you call, however, test your Password control panel to see if it has the most amusing Apple bug of all time. Instead of typing the correct password to get in, try typing *the bullets themselves* (•••••) by pressing Option-8 several times — in several incarnations of this control panel, a string of bullets was accepted as the correct password!

PC Exchange

See "File Exchange," earlier in this chapter.

PC Setup

This control panel is strictly for Macs with DOS Compatibility cards installed, such as those with the words "/DOS Compatible" in the model name. It's designed to let you map your Mac's actual modem and printer ports to COM ports on your "virtual PC," and to let you specify a "virtual drive" for your DOS partition.

PC Setup Secrets

Roll credits!

Turn on Balloon Help and point to the control panel's version number. Your reward: "This is the version number. Nothing more, nothing less." How helpful!

The phony DOS prompt

Contest Winner

Free book winner Dan Vanderkam unearthed this bit of silliness (which you can try out even if you don't actually have a DOS card installed): ⌘-click the version number in the PC Setup control panel. The panel goes black... and is replaced by — a DOS prompt, complete with bootup noises! (To be perfectly accurate, it's called RP-DOS — a very obscure version, we're guessing.)

It's fully functional (if you know DOS, and we hope you don't). At the C:\> prompt, for example, you can type *help* to see a list of all available DOS commands. You can also access folders showing the names of the programmers and their roles (type *cd* to see a list of these folders, or *cd* to move backward out of them).

Performa

This control panel existed only during the three years when Performas and regular Macs used different system software. It was responsible for adding the three "Performa features": a self-hiding desktop, a Documents folder, and System Folder protection (see "General Controls" in this chapter).

Pointer Mode

Because of some mysterious bug in System 7.5.3/7.5.5 , the cursor itself isn't captured in the Picture 1 file you get when, on 7200, 7300, 7600, and 8600 models, you press ⌘-Shift-3 (or make QuickTime movies of screen activity with a program like CameraMan). This control panel puts the cursor back into the picture.

You know what? It's harder to make the "Macintosh is superior" argument at cocktail parties when Apple has to come up with hacks like this one.

Power Macintosh Card

Apple offered two ways to turn a standard Mac into a Power Macintosh: Install a small PDS circuit board, or get a complete motherboard replacement. The big advantage of the smaller upgrade card was that you could *turn it off,* restoring your Mac to its pre-Power Mac state. You might want to do that if, for example, you have a Quadra 800 and want to run Excel 4.0 (which, as a non-"PowerPC native" program, runs *faster* on the Quadra than on the Power Macintosh chip).

This control panel is a simple on/off switch for the upgrade card. (You must shut down completely after switching the card on or off.)

This control panel, by the way, contains great hidden credits. Open the control panel while pressing the Option key: You get a picture of the programmers. Now, if you turn on Balloon Help, you can point to each person's mouth to get an introduction, and a witty remark, from each. ("Hi, I'm Erica. Do you want to buy any Girl Scout cookies?")

PowerBook

The PowerBook control panel's purpose in life is to save battery power at the expense of speed. (It's for pre-1998 PowerBooks. On today's laptops, the revamped Energy Saver control panel assumes the PowerBook control panel's functions; see "Energy Saver 2.0" earlier in this chapter.)

When you drag the little switch (see Figure 4-38) into the Custom position, the dialog box expands to display three individual controls: System (how quickly the Mac goes to sleep after you stop using it), Screen Dims (how quickly the backlighting turns off), and Hard Disk Spins Down (how quickly the internal hard drive stops spinning). The farther to the left you place these sliders, the more battery power you'll save — and the more irritating it will be to try to get real work done.
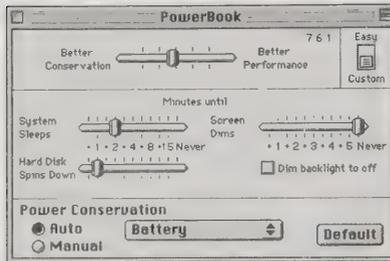
Figure 4-38: The PowerBook control panel solves the problem of your PowerBook going to sleep at inconvenient times. Solving the same problem for your spouse is up to you.

Handy feature: you can save one set of settings (quick-to-sleep) for battery use and another (maximum speed) for when the Mac is plugged in. Choose options from the pop-up menu at the bottom of the dialog box as appropriate.

PowerBook Display

On many PowerBook models, you can plug an external monitor or projector into the video port, and your audience can watch the monitor while you watch your PowerBook screen. This control panel, included with PowerBooks in the 160, 180, Duo, and 500 lines, simply allows you to turn *mirroring* on or off (although using the Control Strip is much more convenient). When your two monitors are mirrored, the same image appears on both screens; you and your audience see the same thing. This explains why the image on the PowerBook 5300ce's extra-large 800 by 600-pixel screen gets *smaller* when mirroring is on (a big black border appears) — the external monitor is always 640 by 480 pixels, maximum. Conversely, that's why the image on the *external monitor* gets smaller when connected to, say, a PowerBook 180 — because those older PowerBook screens are 640 by 400, so the external monitor's image seems to be foreshortened. In both cases, the images match exactly.

When mirroring is off, though, you have two independent monitors. Your audience can be watching slides on the external screen while you're privately reading your notes on the PowerBook screen. It's pretty great. (On modern PowerBooks, such as the 2400, 3400, and G3 lines, mirroring *can't* be turned off. The external monitor always shows the same thing as the built-in PowerBook screen.)

MACINTOSH SECRET

Slow down, save juice

On some PowerBooks (such as 68030-based models), two checkboxes eke out a few more dribbles of battery power by allowing your Mac's processor chip to rest between bursts of activity ("Allow processor cycling") or by slowing it ("Reduced processor speed").

If your PowerBook uses an '040 chip or a PowerPC 603 chip (see Chapters 13 and 14), you don't have a "Reduced processor speed" option because your mile-a-minute chip can't slow down, as '030 chips can.

You *do* have processor cycling, though — it's just hidden. To access it, flip the control panel's upper-right switch to the Easy position (if it's not already in that position). Then, while pressing Option, slide the switch to Custom. When the panel opens next time, you'll see the processor-cycling checkbox, awaiting your command.

PowerBook SCSI Disk Mode

When designing 1998's PowerBook models, Apple did away with the PowerBook Setup control panel (described next). Apple tucked the Automatic Wake-Up feature into the Energy Saver control panel, where it seemed to fit better. But that left one PowerBook feature flapping around without a control panel to call home: the one that lets you choose a SCSI ID for your PowerBook when using it in SCSI Disk Mode (see Chapter 14).

The PowerBook SCSI Disk Mode control panel is the result: a special program developed expressly for that purpose.

PowerBook Setup

This panel contains SCSI Disk Mode settings for more flexibility when you're using SCSI Disk Mode (see Chapter 14) and Automatic Wake-Up (see Figure 4-39). There's not a word about this Wake-Up thing in the PowerBook manual, so we're not exactly sure what it's for. We'll just murmur something about letting this feature wake the PowerBook at a specified time in the middle of the night to receive a fax from Japan, and leave it at that.
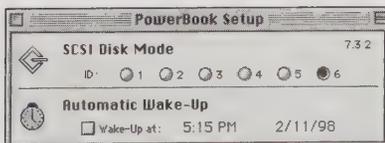
Figure 4-39: PowerBook Setup, where Apple stashed two miscellaneous settings.

PowerTalk Setup

PowerTalk, an optional feature of System 7.5 through 7.6, is described more fully in Chapter 35. This control panel is the master on/off switch.

PPP

See "Remote Access," later in this chapter.

QuickTime Settings

You can read all about QuickTime itself in the "Extensions" section to follow. For now, suffice it to say that, beginning with QuickTime 2.5, QuickTime has a front end — this application. There are various "pages" of settings you can make here, which you can select from the pop-up menu. As of QuickTime 3, these panels include:

- **AutoPlay:** These options govern whether or not CDs begin playing immediately upon insertion into your CD-ROM drive. (Works well with music CD's; actual CD-ROMs, however, don't auto-play unless they've been specifically programmed to do so. The CD-ROM AutoPlay option is worth leaving turned off anyway, since it leaves you vulnerable to the AutoStart virus described in Chapter 22.)

- **Connection Speed:** One of QuickTime 3's most useful features is its ability to show you digital movies embedded right in certain Web pages. For better quality, choose the kind of Internet connection you have on this panel. (If you have a 56K modem, don't leave the default 28.8K setting!)

- **Media Keys:** In theory, someday you'll be able to unlock special QuickTime features or files by paying for a password. This is where you'll enter the password.

- **Music:** QuickTime comes with a built-in set of amazing-sounding musical instruments. Unfortunately, they're not easy to access unless you own such MIDI music software as Performer, Finale, or Vision. Still, if you have Mac OS 8.5, open Mac OS Help, read about QuickTime, and click the "Play an audio QuickTime movie for me" option.

  Again in theory, someday you'll be able to install additional sets of instrument sounds; this is where you'll choose which set you want.

- **QuickTime Exchange:** This panel offers a single checkbox that's well worth leaving turned on — it means that you'll be able to open Windows file formats, such as AVI (movies), AIFF and WAV (sound files), and BMP (graphics) files using any QuickTime-compatible program (such as MoviePlayer).

Remote Access

(OS 8.5) Mac OS 8.5 introduced this control panel's name, but not its function; in previous OS versions, it was called the PPP control panel.

In any case, this control panel (part of the Open Transport software suite) is crucial for anyone hoping to connect to the Internet. It's where you enter your name, password, and local phone number for dialing the Net. By choosing File ➪ Configurations, in fact, you can create and switch among *multiple* connection setups — one for each city you visit with your PowerBook, for example. (See "Location Manager," earlier in this chapter, to find out how you can then switch among these different Internet configurations by choosing from a pop-up menu on your Control Strip.)

For more on using this control panel to set up an Internet account, see Chapter 25.

Screen

This little panel works only on specific models with built-in color monitors (such as the LC 500 series, Color Classic, and Mac TV). These monitors have no knobs to adjust. Therefore, you use this control panel to tweak the brightness, contrast, and automatic dimming. If you have any other model, toss this item.

Sharing Setup

The Sharing Setup control panel lets you assign your Mac a unique network name and to identify yourself as its owner (and, therefore, the one who determines which items on your Mac are shared and which aren't). Mostly, however, you use this control panel to turn File Sharing on and off in systems before Mac OS 8. (The Mac OS 8 control panel called File Sharing replaces this one.) For details on File Sharing, networking, and this control panel, see Chapter 35.

Sound

With the Sound control panel (see Figure 4-40), you can change your Mac's alert sound, add sounds to and delete sounds from its repertoire, and adjust the overall volume of your Mac speaker. You also can record and play from your Mac's CD-ROM drive, if you have one.

On modern Macs, these features have been moved to the newer Monitors & Sound control panel, described earlier in this chapter. However, most Macs still come with the Sound control panel — tucked away in your Apple Extras folder.
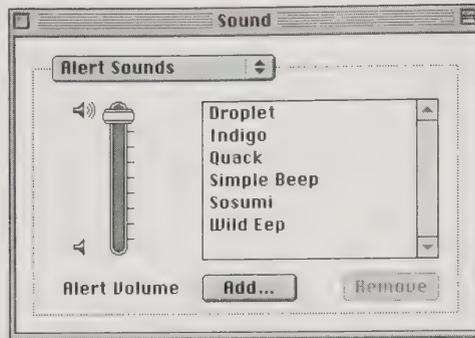
Figure 4-40: The Sound control panel (retired).

The standard Sound control panel takes a multiple-panel approach. When the pop-up menu is set to Alert Sounds (the *only* setting for the original Sound control panel), you see the Mac's small set of alert sounds: a quack, the Wild Eep, a droplet, and so on. To play a sound (and select it as your error beep), click its name in the list.

You can record a new beep of your own, up to 10 seconds long, by clicking Add. (See "Monitors & Sound" earlier in this chapter for additional tips, and see Chapter 3 to realize that the SimpleSound desk accessory is far better for recording sounds.)

And to remove a sound, click its name and then do one of the following:

- Click Remove, and confirm the deletion in the next dialog box. (You never can remove the Simple Beep.)

- Choose Cut from the Edit menu, or press ⌘-X. If you use this method, you don't get the warning dialog box. (After you cut the sound, you can paste it into your Scrapbook for long-term storage.)

- Press the Clear key on the numeric keypad.

Sound Control Panel Secrets ─────────────────■

How to rename a sound

You may think that there's no way to rename a sound after you record it. Not so — here's how.

In the Sound control panel, select the sound that you want to rename. Remove it from the list, using the Cut command (Edit menu). Next, use the Paste command (or press ⌘-V) to paste the sound *back* into your list. When you do so, you're asked to give the sound a name. Type a new name, and click OK.

Roll credits!

Press Option as you make a selection from the Sound pop-up menu. You're treated to an utterance by a very drugged-out programmer — or somebody acting like one — and a quote from Jung.

Sound & Displays

For a brief, unhappy moment, Apple computer released this horribly confusing control panel as a replacement for what had been *two* control panels: Monitors and Sound. Only the first-release 7200, 7500, and 8500 Power Mac models carried this control panel.

The interface has four panes that correspond to video (input and output) and sound (input and output). You have to double-click an item in one of the four directories to open a window containing the options you actually want to change. For example, if you double-click the Display field, you get what looks like the older Monitors control panel. To change your error beep, you click the System Sound button; another window opens, containing what used to be in the Sound control panel.

TRUE FACT

Why it's called Sosumi

Ever wonder about the names of the sounds that come with System 7? For the most part, they're onomatopoetic, spelled like they sound: "Wild Eep," "Quack," and so on. But what about that staccato, E-flat, diminished triad called "Sosumi"?

Early in Apple's career as a computer-making superstar, there was a little legal trouble. (Apple's *always* in legal trouble somewhere in the world.) And that trouble was with, believe it or not, the Beatles. The Beatles' private record label was called Apple Records. The Beatles' lawyers claimed that Apple, in making a computer with sound capabilities, was trying to get into the recording industry, causing confusion in consumers' minds. After all, these two companies had the same names and were doing the same things, right?

So, Apple sighed and promised Apple Records, in writing, that it would never get into the recording industry. Apple Records backed off, and Macintosh went forth into the world.

A couple of years ago, however, Apple started including a microphone with most Mac models. And guess what you're supposed to do with that mike? Yup — *make recordings!* It certainly would take a hypersensitive record company to interpret giving away a free microphone as "entering the recording industry." But you never know. A wily Apple engineer, recognizing the potential litigation, gave the alert sound a name that serves as a subtle tribute to Apple Records: *Sosumi!*

Speech

This thoroughly enjoyable control panel, shown in Figure 4-41, lets your Mac *read out loud.* It's the command center for the Mac's text-to-speech feature, in which the Mac speaks whatever you've typed into SimpleText (or other compatible programs). See Chapter 23 for the full Speech scoop.
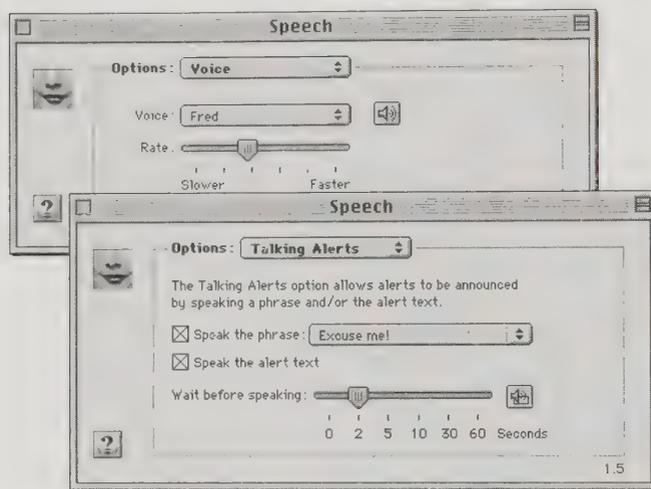
Figure 4-41: This control panel helps talking Macs (such as Power Macs) talk more naturally. In System 7.6 and later, it also can make the Mac speak error messages out loud to you, complete with an attention-getting phrase like "Oops!"

Meanwhile, this control panel lets you choose a default voice and rate of speaking. Best of all, if you click the speaker icon, you hear each voice tested, saying something hilariously in character. For example, the Good News voice sings, to the tune of "Pomp and Circumstance," "Congratulations! You've just won the sweepstakes, and you don't have to pay income tax again." Zarvox says, in its alien monotone, "That looks like a peaceful planet..." And Deranged says, voice shaking, "I-I need to go on a *really* long va-a-cation..."

Sometimes we think it must be really fun to work at Apple.

Speech Setup

You need this control panel only if you have an AV Mac or a Power Mac and you want to talk to it — or, rather, talk to it and have it *respond.* We're referring, of course, to Apple's PlainTalk speech recognition feature, discussed in detail (along with this control panel) in Chapter 23.

Oh, yeah — there's a hidden credit in here. Turn on Balloon Help, and point to the version number. Wowww.

Startup Disk

Startup Disk tells your Mac which disk to use as the System disk at the next startup. Interestingly, even disks without working System Folders appear in the control panel (see Figure 4-42).
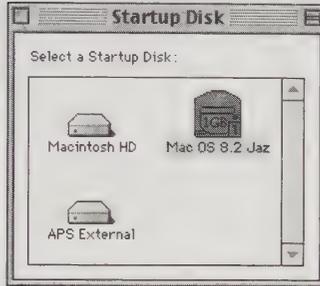
Figure 4-42: Pick a disk to get things started with the Startup Disk control panel.

If you have more than one hard drive, or if you have a hard drive and a cartridge system (Zip or SyQuest, for example), it's sometimes handy to have two system versions available — one System Folder on each drive. You use this control panel, in this case, to specify which System you want to be in control the next time the Mac starts. Beginning with System 7.5.3, Startup Disk can even distinguish among different *partitions* of a disk — provided they were formatted with System 7.5.3's Apple hard drive formatting software; see Chapter 8.

If you open this control panel and click in the blank white area *around* your disk icons, so that no icon is highlighted, the Mac will start up using the disk with the highest SCSI address number (see Chapter 33).

If you have only one hard drive, and never plan to get a Zip drive (or equivalent), you can safely pull this one out of your System Folder. And if you *regularly* switch startup drives, consider getting Conflict Catcher 8 (see Chapter 22), which lets you choose startup disks — or even different System Folders — from a handy menu, which saves several steps.

TCP/IP

This control panel lets your Mac connect to the Internet or other *TCP/IP networks.* It's where you store the strings of *DNS numbers* that identify your Internet access company, such as 207.155.184.72. As with the other control panels that make up the Open Transport suite, you can also choose File ⇨ Configurations to create and switch among *multiple* sets of such information. See Chapter 35 for details on Open Transport.

MACINTOSH SECRET

Switch from Internet to AOL without restarting

The TCP/IP control panel, of all things, is the solution to the frustration of America Online 3.0 users who also have an Internet account. These poor souls have traditionally been forced to use only one service at a time. To use your Internet account after having used America Online, for example, you're generally forced to launch America Online; open its Preferences dialog box; click AOL Link; indicate that you'd like to switch back to your ISP (Internet service provider) account; and then restart the Mac. If you ask us, life's just too doggone short. (AOL 4.0 is much improved in this regard.)

Fortunately, our method is much simpler. After you've confirmed that both methods of reaching cyberspace are working properly on your Mac, open the TCP/IP control panel. By choosing File ⇨ Configurations and double-clicking either "AOL Link" (for America Online) or "Mindspring" (or whatever the name of your ISP configuration is), you can switch between them without having to restart the Mac or launch the AOL program. (Adding those two setups to the Location Manager tile of your Control Strip makes switching even easier; see "Location Manager," earlier in this chapter.)

Text

This control panel, introduced in System 7.5, works in conjunction with WorldScript foreign-language systems. It allows you to specify (if you've purchased any foreign-language kits) which kind of writing system (Roman, Kanji, and so on) to use, and in which direction text should proceed across the page. We guess that this is a good one to throw away.

Token Ring

Another obscure one, useful only if you are that rare individual whose company has a Token Ring network.

Trackpad

This control panel (see Figure 4-43) is, of course, useful only on PowerBooks that have a touch pad (instead of a trackball, as found on early PowerBooks). The Trackpad panel's top two controls are exactly the same as those in the Mouse control panel (see "Mouse" earlier in this chapter).

So why keep Trackpad *and* Mouse? Because you may want to use your PowerBook at home with a real mouse plugged into it, and yet use the trackpad when you're on the plane. By giving you two separate control panels, Apple makes it easy to set up separate degrees of responsiveness for each device.
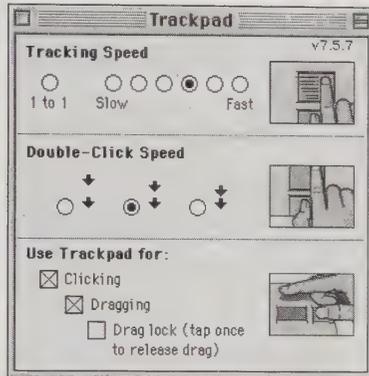
Figure 4-43: The Trackpad allows you to set up independent drag and click sensitivity for your PowerBook.

If you're lucky enough to own a 1996-or-later PowerBook model, your Trackpad control panel offers a third set of settings. Whereas other PowerBooks' trackpads let you only *move* the cursor (you use the separate thumb button for clicking and dragging), these newer models let you do your clicking and dragging directly on the pad itself. Because the techniques take some getting used to, these features are turned off when you first buy the machine. Here in the Trackpad control panel, you can turn them on — and see a quick animated demonstration of how you're supposed to work them. Details on these techniques in Chapter 14.

Users & Groups

You use the Users & Groups control panel to determine which network users (or groups of users) have access to the shared items on your Mac, and the degree of access each user is granted. Look for full details in Chapter 35.

Video

The control panel for AppleVision 14-inch monitors; obsolete in System 7.5.

Views

The Views control panel (see Figure 4-44) can change the font for all text in Finder windows. It also allows you to specify the information included in list views. (This control panel exited the earth with the debut of Mac OS 8; its functions were moved into the Edit menu's Preferences command and — in the case of list views — individual View Options commands for every window on your Mac. See Chapter 1.)

In the Icon Views portion of the control panel, you can specify how you want icons to be displayed: along a straight or a staggered invisible grid. Select the "Always snap to grid" checkbox if you want icons to snap in line with an invisible grid when you drag them in Finder windows. (As mentioned in Chapter 1, you can always override the setting you make here — press the ⌘ key as you drag the icon.)
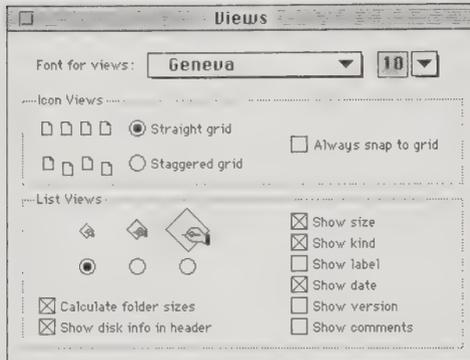
Figure 4-44: The Views control panel.

You choose the font from the pop-up menu near the top of the control panel. Smaller fonts work best, but you can choose any size up to 36 points. Although the pop-up menu lists only fonts up to 24 points, you can type larger point sizes directly in the size box. (*Hint:* select a font that's built into the Mac, such as Geneva, Chicago, or Monaco; ATM-ready fonts take the Mac longer to display.)

For list views, you also can specify the size of the icons that are displayed next to each file's name. The largest of these views produces icons as big as the full-size icons.

The checkboxes in the bottom portion of the control panel allow you to select the information you want to see in list views, exactly as described in Chapter 1 under "The Edit menu." List views look much better if you eliminate categories that you don't use.

There are two other list-view options to consider. Check "Calculate folder sizes" if you want list views to include the size (in kilobytes) of folders as well as files. (If this option isn't selected, you simply see a dash for each folder's size in a Finder window.) Do so only temporarily, however; when "Calculate folder sizes" is on, your Mac becomes sporadically sluggish as it attempts to add up the sizes of all your files in the background. (This problem went away in Mac OS 8, where you can turn on "Calculate folder sizes" only for specific windows.)

Check "Show disk info in header" if you want the amounts of available and used disk space to be displayed at the top of each Finder window — a useful indicator.

ANSWER MAN

The sedated hard-disk window syndrome

Q: I've got a bizarre problem. When I double-click my hard disk icon — wow, it takes forever to open into a window...like two whole minutes. What's going on?

A: You've fallen victim to a unique circumstance: You're viewing your hard drive's contents in size order (you chose, from the View menu in the Finder, "by Size"); and you turned on "Calculate folder sizes" in the Views control panel.

You see, to display your hard disk contents in a list sorted by size, largest first, the Mac has to calculate the sizes of all the folders in it *before* it

can open the window. That's what causes the delay.

If you were to turn "Calculate folder sizes" off, you wouldn't experience the delay, but all the folders would appear clumped at the bottom of your hard disk window, not sorted by size.

Likewise, if you choose any other sorting method from the View menu — by Name, for example — you wouldn't experience such a slowdown. And if you'd upgrade to Mac OS 8, which *has* no global window settings (each window has its own settings), you'd also avoid this strange little glitch.

Web Sharing

OS 8 This control panel, which debuted in Mac OS 8, brings a peculiar new feature to the Mac: the ability to make a folder full of HTML (Web-page) documents available to anyone on your company's TCP/IP network. Think of the File Sharing feature (described at length in Chapter 35), and you'll have the idea.

The name of this feature implies that you can share files over the *entire Internet,* but in fact, that's not the point. (For one thing, your Mac would have to remain connected to the Internet 24 hours a day; for another, Apple doesn't recommend using Web Sharing over a modem, for speed reasons.) Web Sharing is actually for use on *intranets* — networks contained within companies.

Anyway, put any HTML documents you'd like to publish into your Web Pages folder (or click the Select button in the Web Sharing control panel to choose the folder you'd like to make public). Use the lower Select button to indicate which HTML document you want to be your *home page* — the first page visitors see when they sign onto your Mac's shared folder. Then click the Start button to turn on Web sharing. (If you're not already connected to an office network that runs the TCP/IP protocol, you'll get nothing but an error message.)

Once things are up and running, use the Edit ⇨ Copy My Address command to copy your Web folder's intranet address, which you can now paste into an e-mail and distribute to anyone on the network. If your company is the kind of place where this feature can be useful, you're in for a pleasant ride; the Web Sharing feature makes it incredibly easy to share files, post updates, auto-compress files, and so on. Read the HTML documents in the Web Pages folder itself for much more detail.

WindowShade

WindowShade, a control panel in System 7.5 through 7.6.1, lets you collapse any open window into nothing but a title bar, as shown in Figure 4-45. (In Mac OS 8.x, this feature is built into the Appearance control panel, as described earlier in this chapter.)
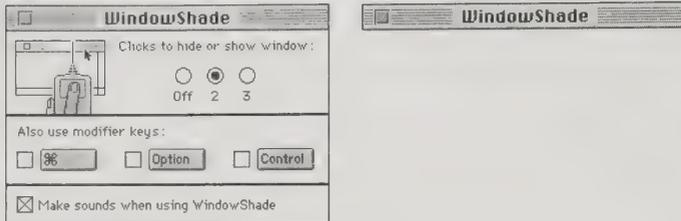
Figure 4-43: A before-and-after example, showing the WindowShade window itself in its normal and collapsed states.

To take this anticlutter step, double-click the title bar of the window. With a neat little *whoosh,* the main portion of the window disappears, leaving only the title bar floating on the screen. (Note, however, that both the whooshing and the collapsing features default to being *off* when you first install your system software. You must open this control panel and switch them on first.)

Unfortunately, some programs have their own ideas of what a title-bar double-click means (in Excel and Word before version 98, it means "expand this window to fill the monitor"). Therefore, WindowShade allows you to change the number of clicks required to collapse a window. You can even specify that you must hold down a key (such as Option or Ctrl) while clicking for the collapsing to work.

There's only one secret here — a very small one. To see the hidden credit, click the picture of the mouse button in the control-panel window.

Extensions One by One

An *extension* a system-software add-on that blesses your Mac with some new feature or another. They're background programs that load into memory when you turn on the Mac and stay there until you turn it off, like control panels without a panel (with no settings for you to change).

To confuse the issue, however, extensions aren't the only things you'll find in your Extensions folder. You'll also find *drivers*, for one thing — those essential software tidbits that teach your Mac to communicate with some external appliance, such as a printer or a modem. The Extensions folder may also contain translators, modem files, printer drivers, bug-fix patches, and so on.

Mac Basics

Extensions generally reside in your Extensions folder, although they can also be loose in your System Folder (or even in the Control Panels folder). Extensions are notable — and confusing to beginners — because they exist purely for the benefit and reference of the *computer*, not you. That is, if you double-click an extension, you just get an error message; the extension has no controls that you, the user, are meant to play with. Just put extensions in the Extensions folder and forget them.

Apple has, fortunately, been cleaning up its extensions act. Printer files, modem files, Location Manager modules, AppleScript add-ons, speech voice files, and other supplementary items are now in their own sub-folders (such as Printer Descriptions and Modem Descriptions) instead of cluttering up the Extensions folder.

But don't stop now, Apple! Put those 35 "communications tools" and "Chooser drivers" into one folder each! Put the six CD-ROM drivers, eleven Open Transport files, and 384 Microsoft Office libraries into a folder by themselves! Let's see some organization in the next system rev, OK?

All about shared libraries

In recent years, the population of *shared libraries* in your Extensions folder has risen dramatically, too — chunks of computer instructions that don't necessarily do anything at startup, but instead are called into memory by your various programs when needed. The idea is to create shared libraries out of code that more than one program may need, thus saving disk space, RAM, and programming time overall. Apple and Microsoft are among the most aggressive creators of shared libraries.

Shared libraries don't drop *out* of your RAM when you quit the program that originally summoned them, either; many Mac fans, watching in quiet horror as their available RAM slowly diminishes throughout the day, think that something's severely wrong with their Macs. See "Memory leaks — and shared libraries" in Chapter 9 for details.
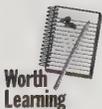
Worth Learning

There's one other funny aspect of shared libraries worth knowing about, too. In many cases, the code that was once called a Lib or Library has subsequently been incorporated into another extension. Yet internally, your applications still look for — and usually find — the "Lib" or "Library" file they require. But if they don't, you may get an error message asking for some file in your Extensions folder you've never even heard of. Graphic Converter, for example, may complain that it "Can't find QuickTimeLib" — but what it *really* can't find is the extension called QuickTime PowerPlug. Similarly, "Can't find SpeechLib" means your Speech Manger *extension* is missing; "Can't find SoundLib" means your Sound Manager extension is missing; and "Can't find OLEWhateverLib" means you need to reinstall Word 6.

P.S. — We hope, now that you've been educated, you never again look at the file called OpenTransportLib and pronounce it "Open Transport Libb," as in "Women's Lib." It's "lybe," short for *library*.

MACINTOSH SECRET

The bug-fix collection

So many Apple extensions have been bug fixes and patches for specific issues on specific models that we could dedicate a 1,200-page *Mac Secrets* supplement just to covering them. For now, we'll just provide the following list, assure you that they're of interest only if your model number is part of the extension's name, confess that most of these were made obsolete by Mac OS 8 anyway, and direct you to Apple's Tech Info Library (described in Chapter 36) or the 4th Edition of this very book (available on the CD that accompanies this one) if you really want the details.

!PowerAV Update

!TYC (for Power Mac AV models)

040 VM Update (for 575 and 630 models)

54xx/64xx L2 Cache Reset

54xx/64xx Update

5500/6500 ATA Update

5500/6500 L2 Cache Disable

5500/6500 Video Input Update

5xxx/6xxx Floppy Fix

630 SCSI Update

6360/64xx/54xx Update

7.5.2 Printing Fix

7200 Graphics Acceleration

7200 Graphics Driver

950 Color Addition

9600 Graphics Accelerator

Audio Volume Extension

AudioTuneUp

AudioVision Extension

AV Serial Extension

AV/PPC Serial Extension

Basic Color Monitor

CFM Update

Color Classic Update

DAL

Display Enabler

Drive Firmware Update Extension

Duo Battery Patch

EM (Express Modem) Sound Update

ENET Compatibility

External CD Sound

Fax Terminal 7.5 Compatibility

Finder Update

Hardware System Updates

Indeo Video, Intel Raw Video

Intelligent Battery Update

Internal Modem Sound

N-Up Printing

PB (PowerBook) 1400 PMU Update

PowerBook (1400) VM Tuner

PowerBook 1400 ATA Flash Extension

PowerBook 1400 Floppy Update

PowerBook 1400 PMU Updater

PowerBook 150 Update

PowerBook 3400

PowerPC Finder Update

Processor Info Extension
    (for 5200, 5300, and 6200 series)

Record Button Extension

Sound Input Amplification

Startup Tuner

Type III Battery

The extensions themselves

A/ROSE

Although the name may smell as sweet, A/ROSE by its other name is Apple Real-time Operating System Extension. This extension is required only for certain old Apple NuBus networking cards: Apple's short Ethernet card, Token Ring 4.16 NB card, Serial NB card, and Coax/TwinAx NB card. See Chapter 35 for details on networking.

3Com Impact Analog 14.4, Apple/GV 56K...

As described under "Modem," earlier in this chapter, an increasing number of today's telecommunications programs rely on a software structure called Apple's *Communications Toolbox* (CT), which is described in Chapter 24. One of the convenient features of CT-aware programs is that you can select your modem's model, by name, from a pop-up list instead of having to enter its technical parameters (in a Setup dialog box, for example). In the pre-Open Transport Extensions folder, you may find, therefore, hundreds of icons that correspond to individual modem brands. Throw away all these modem-specific documents except the one that you own. (Other examples of these CT modem documents: anything beginning with the words *Zoom, Prometheus, Hayes, Global Village, Practical Peripherals*, and so on.)

Fortunately, thanks to Open Transport (see Chapter 35), these modem scripts are, these days, filed away into a Modem Scripts folder. You should *still* throw away the ones you don't need, however.

About Apple Guide

See "Apple Guide (and related files)."

AMMS MPEG Decoder

The extension (the driver) for the Apple MPEG Media System Card, which lets certain Mac models create high-quality, specially compressed QuickTime movies.

AOL Link

Provided with America Online 3.0 and later, this little doodad is responsible for one of AOL's greatest features: the ability to use your choice of Web browser, such as Netscape Navigator or Microsoft Internet Explorer, while connected to America Online. (See Chapter 26 for details on this trick.) If you connect to America Online via an Internet account (also as described in Chapter 26), on the other hand, you don't need this baby.

Appearance Extension

OS 8

The single most important extension of all. A Mac OS 8 or 8.1 machine can't even start up without this one. Its job is to communicate with the Appearance

control panel as to what your Mac's interface should look like (as determined by you, in the Appearance control panel). (Unnecessary in Mac OS 8.5 and later.)

Apple Built-In Ethernet or Apple Enet

Lets your Mac connect to Ethernet networks. See "Open Transport (and related files)."

Apple CD/DVD Driver or Apple CD-ROM (and related files)

This extension's name changed in Mac OS 8.5 (and late versions of Mac OS 8.1) to reflect the fact that some Macs come with *DVD-ROM* drives (see Chapter 32) instead of CD-ROMs.

Whatever it's called, this extension is the cornerstone of Apple's sprawling constellation of CD-ROM extensions. It's the *driver* that permits your Mac to talk to any Apple CD-ROM drive, internal or external. (See Chapter 32 for more on CD-ROMs.)

The Apple CD-ROM suite also includes a special translator extension called **Foreign File Access.** It lets your Mac play non-Mac CDs, such as PhotoCD, music-only, and DOS-format discs, provided that you have the proper translation extension installed. Your Mac comes with four such foreign-file translators: **Apple Photo Access** (lets your Mac read Kodak PhotoCD discs); **Audio CD Access** (lets your Mac play regular, non-computer *music* compact discs); **High Sierra File Access** (lets your Mac use non-Mac CD-ROMs, such as those designed for PCs); and **ISO 9660 File Access** (lets your Mac read another format of non-Mac CD-ROM discs). You can trash any of these four extensions if you never plan to use discs of the corresponding type.

Apple DVD-ROM

In systems before Mac OS 8.5, this is the driver necessary to run DVD-ROM drives (see Chapter 32). Unnecessary if (a) you don't have a DVD drive or (b) you have the Apple CD/DVD Driver, described in the previous entry.

Apple Color SW Pro CMM

See "LaserWriter (and related files)," later in this chapter.

Apple Ethernet (LC, NB, or CS)

Exclusively for Mac LC's or other Macs with NuBus or Com slots; accommodates Apple's Ethernet expansion card. See Chapter 35 for more on Ethernet.

CASE HISTORY

That's 800-SOS-APPL

An actual transcript from Apple's Assistance Center, based in Austin, TX, which you can reach by dialing 800-SOS-APPL.

Caller: Let's say, just hypothetically, that I wanted to buy a new computer case from you. Could I do that?

Tech: Just the case? No internal components?

Caller: Yeah. Just the plastics.

Tech: Well, it depends. What kind of computer?

Caller: Well, let's say, hypothetically, Quadra 630.

Tech: Exactly what parts are we talking about?

Caller: Well, let's say, hypothetically, the sides and the top.

Tech: Did this hypothetical machine come without plastic?

Caller: No, this would be in the event of, well, let's say, on the off chance that a small child painted the top and sides of the computer.

Tech: Did this hypothetical child use watercolors?

Caller: Would it be covered under warranty if she didn't?

Tech: Hypothetically, no. You could always buy more paint and paint a more pleasing design over it, though.

Apple Guide (and related files)

Balloon Help, introduced in System 7, was supposed to change the world and put book authors like us out of business. Yet few people use Balloon Help. It's slow; it doesn't work in many programs; and perhaps above all, it doesn't show you what to do *next* if you're trying to accomplish something specific.

Enter Apple Guide, introduced in System 7.5. When you choose this command from the Help/Guide/question-mark menu, you get on-screen index cards that walk you through specific tasks, one step at a time. See Chapter 2 for details. This file is the master switch for the Apple Guide feature.

In order to provide information about a certain program, Apple Guide must see a Guide document — which stores all the text and graphics for the help screens. The Finder, Quicken, BBEdit, WordPerfect, and SimpleText are among the programs that come with Guide documents.

Apple itself has developed dozens of different Guide documents. Among those you may find in your Extensions folder are: **About Apple Guide** (gives information about Apple Guide itself); **Shortcuts** (keyboard shortcut summary); **Macintosh** or **Apple Guide** (contains instructions for basic Finder, printing, and control panel functions); **PowerBook Guide Additions** (laptop-related instructions); **Speech Guide Additions** (info on using speech-recognition features of Power Macs and AV models); and **Video Guide Additions** (about using video features of AV models).

(OS 8.5) Incidentally, don't trash Apple Guide just because you've discovered Mac OS 8.5's vastly improved help system. The extension called Apple Guide is still required for the new, Web-like help system to function.

Apple IX3D Graphics Accelerator (and related files)

Power Macs of the 1997/1998 era included an accelerated graphics card. These files, which include Apple IX3D Video Memory Manager and Apple IX3D RAVE Engine, are the required software.

Apple Modem Tool (and related files)

It may seem a distressing waste to find, in your Extensions folder, a vast array of seemingly useless files named things like **Apple Modem Tool, AppleTalk ADSP Tool, MP Telnet Tool, Serial Tool, Link Tool Manager,** and **Modem LinkTool Personal.** In fact, these "connection tools," as the Finder calls them, make life a lot easier; they ensure that whenever you install a new modem program — America Online, Netscape Navigator, Remote Access, whatever — you'll encounter the exact same screen when you set up the software (see Chapter 24). Whether you realize it or not, you're face to face with the **Communications Toolbox,** a standard set of software-meets-modem tools that make it easy for programmers to create these Setup dialog boxes. (Also part of the Comm Toolbox: about 4,000 "File Transfer Tools" (that let your Mac send and receive files according to certain protocols) such as **XModem, Kermit,** and **ZModem,** and "Terminal Tools" that let your Mac communicate with certain other computers, such as **TTY** and **VT102.**

Apple Photo Access

See "Apple CD-ROM (and related files)."

Apple QD3D HW Driver

See "QuickDraw 3D (and related files)."

AppleScript (and related files)

This extension, provided with System 7.5 and later, is — as programming languages go — a fairly easy system for "scripting" your Mac (making macros to perform repetitive tasks). For details on AppleScript, see Chapter 22.

AppleScript is the extension itself. Accompanying it in your System Folder may be such files as **AppleScript Lib** (for Power Macs only; a *shared library* that translates between versions of AppleScript that aren't PowerPC-native, and programs that are); **Finder Scripting Extension** (gives the Find File program its special drag-and-drop features, as described in the previous chapter; built into Mac OS 8 and later); **InLineFilter** (lets you control your Mac by voice command on certain Macs, which, behind the scenes, relies on AppleScript); and **Scripting Additions** (a folder of modules that provide additional features to the AppleScript language). See "Automated Tasks" in Chapter 3 for some examples of AppleScript in action.

AppleShare (and related files)

The AppleShare extension teaches your Mac how to make its disks available to other Macs over a network. Details in Chapter 35.

To accomplish all of this, your Mac comes with another typical Apple rat's nest of extensions and control panels. They include **File Sharing** or **Sharing Setup, Users & Groups,** the **File Sharing Extension** and **File Sharing Library**, and **File Sharing Monitor** (all described earlier in this chapter).

Of course, you can't share files unless you've set up a network in the first place. If you're using Open Transport (see Chapter 35), you need the **AppleTalk** and **TCP/IP** control panels. If you're not, you've got **MacTCP** and **Network** control panels instead (and the **Network** extension). Also part of this collection are the individual network-type extensions, which let your Mac speak to various *kinds* of networks: **EtherTalk Phase 2, Mac TCP Token Ring, TokenTalk Phase 2** (for the Token Ring card), and **TokenTalk Prep** (the driver).

If you're not on a network, don't go online, and have no desire to transfer files between two Macs, you can safely trash *all* of this stuff.

AppleVision

The driver that lets the Mac communicate with AppleVision monitors.

Application Switcher

OS 8.5

This extension is responsible for the Amazing Tear-Off Applications Palette of Mac OS 8.5 and later, as described in Chapter 2. It also lets you switch from one open program to the next by pressing ⌘-Tab. Try it — you'll love it!

Assistant Toolbox

This extension is only for PowerBooks; it came with System 7.5 through 7.5.5, but is built into 7.6 and later. Assistant Toolbox offers a random collection of useful portable-computing features, such as:

- As you'll discover in Chapter 9, a RAM disk's contents are perfectly safe unless you shut the machine down. Enter Assistant Toolbox, which can *copy* your RAM disk contents back to the hard drive when you shut down — and re-establish the RAM disk, with contents, the next time you start up again.

Worth Learning

- Assistant Toolbox also lets you control certain functions from the keyboard: ⌘-Shift-zero puts your laptop to sleep, and ⌘-Shift-*Control*-zero makes your hard drive stop spinning.

- In deference to those who use their PowerBooks on the plane or in the cab, Assistant Toolbox adds *deferred printing* and *deferred e-mail sending* features — your printouts and e-mails are held in limbo until you reconnect to a network, whereupon they're sent automatically.

■ Finally, as per its name, this extension works with the PowerBook File Assistant file-syncing program, provided with System 7.5 and later. File Assistant's purpose is to keep the contents of certain folders — one set on your PowerBook and a corresponding set on your desktop Mac — identical, no matter which set you have updated in your travels.

At Ease Startup

See "At Ease Setup" earlier in this chapter.

ATI 3D Accelerator (and related files)

The software that drives certain ATI graphics boards (included with many Power Macs) also includes the extensions called **ATI Video Accelerator, ATI Driver Update, ATI Graphics Accelerator,** and **ATI Video Memory Manager.**

Audio CD Access

See "Apple CD/DVD Driver, Apple CD-ROM (and related files)."

Caps Lock

The traditional typewriter's Caps Lock key doesn't merely lock you into ALL-CAPITALS typing; the key *itself* locks in a depressed position until you press it a second time to release it.

But PowerBook keyboards' Caps Lock keys don't stay down. And on the PowerBook 100 through 180c, there's not even a light to signal you that you're about to start typing in caps. For this reason, Apple created the Caps Lock extension. When your Caps Lock key is "engaged," this extension draws a fat, hollow arrow symbol at the upper-right end of your menu bar.

CFM-68K Runtime Enabler

Figuring out the *name* of this thing is hard enough — now try figuring out whether or not you need it: This extension is for non-Power Macs (but not on the Mac Plus or earlier models). It requires System 7.1 or later, but is unnecessary in Mac OS 8. You must have 32-Bit Addressing turned on in your Memory control panel. But don't install versions of this extension before 4.0, or you risk "crashing and data loss," says Apple. Yikes.

This innocent-looking doodad is installed by the latest LaserWriter, Desktop Printing, OpenDoc, and America Online software, among other programs. Its purpose is to let non-PowerPC Macs use *shared libraries*, just as Power Macs do (see Chapter 9 for more on shared libraries), thus saving the programmers of PowerPC-native software the hassle of duplicating their efforts for non-PowerPC Macs.

Clipping Extension

This little guy lets you drag a selected picture, sound, or paragraph out of a program and onto your Desktop, where it turns into a Clipping file (using System 7.5's Drag and Drop — see Chapter 1 for details). Without this

extension, you can still drag text, sounds, and graphics between Drag-and-Drop — savvy programs — you just can't drag them back and forth to your Desktop. (Unnecessary in Mac OS 8 and later.)

Color Picker

The Color Picker is that dialog box that shows a big color wheel, allowing you to choose a particular color. It appears, for example, when you're in the Preferences dialog box (Mac OS 8 and later) or the Labels control panel (previous systems) and you click a label color to change it.

This extension adds a More Choices button to that dialog box, allowing you to choose from between two technical color-representation schemes: HSL (for Hue, Saturation, Luminosity) and RGB (for Red, Green, Blue). In Mac OS 8 and 8.1, it also adds the amazing Crayon Picker, complete with its arsenal of secret Easter eggs (see Chapter 2).

Color SW 2000 Series CMM

ColorSync software for color StyleWriter 2400. See "ColorSync System Profile," earlier in this chapter. (SW = StyleWriter, CMM = Color-Matching Module.)

ColorSync or ColorSync Extension

This extension is the actual guts of ColorSync, Apple's color-matching system (see "ColorSync or ColorSync System Profile," earlier in this chapter). If you don't have ColorSync Profiles in your System Folder for each scanner, monitor, and color printer you plan to use, you may as well toss this.

Contextual Menu Enabler, Contextual Menu Extension

These innocent-looking files are responsible for the glorious Control-key menu feature of Mac OS 8 and later. (See Chapter 2 for details.)

Control Strip Extension

Control Strip *Extension?* Don't you distinctly remember reading about the Control Strip in the *Control Panels* section of this chapter?

True enough. But starting in Mac OS 8.5, the Control Strip has far greater powers, such as letting you drag-and-drop new modules directly onto the strip — hence this extension, which permits the Control Strip to be "on the alert" for such modifications.

Default Calibrator

Beginning in Mac OS 8.5, Apple monitors are even better suited to professional graphics people; now these monitors can be *calibrated* (set to exactly correct color settings, neatly compensating for heat, temperature, ambient light, manufacturing variances, and so on) using Mac OS 8.5's DigitalColor Meter program. This extension adjusts your monitor at startup to ensure that it's colorifically perfect.

Demo click&drag (and related files)

Only PowerBooks come with these three files, which are, believe it or not, QuickTime movies. You *can* open and play them like normal QuickTime movies (see Chapter 23), but they're not what you'd call Spielberg material. Instead, they're designed to be used exclusively by, of all things, the Apple Guide system.

Want to watch these fine animated films? Choose Help or Mac OS Guide from your Help menu in the Finder; click Index; select the letter T; click Trackpad; double-click "How do I use my PowerBook trackpad?"; select "learn how to use the trackpad to click and drag"; follow along with the first few screens of instructions; and, when prompted, double-click the big gray box to see the movies.

Desktop Printer Spooler (and related files)

If you're the proud owner (or user) of *more than one printer,* desktop printing, as you'll find out in Chapter 30, is actually a handy concept. It means that you don't have to go to the Chooser every time you want to switch from one to another. Instead, Desktop printing puts an icon onto your Desktop—one for each printer (or fax modem). This way, you can simply drag your document icons onto the different printer icons to specify which printer you want to use for each.

You can install this new technology by using the Custom Install option of System 7.5.3; it's part of the LaserWriter 8 software. You may also find, in your Extensions folder, **Desktop PrintMonitor, Desktop Printer Menu,** and **Desktop Printer Extension** (although this last has been incorporated into Mac OS 8). The whole affair is charmingly described in Chapter 30.

DNSPlugin

(OS 8.5) Apple helpfully describes this little doodad, which first appeared in Mac OS 8.5, as an extension that "allows your computer to receive listings of network objects from DNS directory services."

In fact, the DNSPlugin (and its sister, the **SLPPlugin**) are part of a new Apple technology called NSL (network service location). This underlying technology lets software companies write into their programs an Internet-resource browsing feature, such that you can view and select the various machines on your corporate network, just as you can over an AppleTalk network today. Unfortunately, at this writing, no software takes advantage of this high-end feature; unless you have a system administrator who directs you otherwise, we recommend disabling these extensions.

Drag and Drop

For System 7.1 variants only. Gives you the Macintosh Drag & Drop feature described in Chapter 1; unnecessary in System 7.5 or later.

EM Extension

This extension is a component of Extensions Manager (see "Extensions Manager," earlier in this chapter). As a control panel, Extensions Manager actually loads *after* the very extensions it's supposed to manage. Therefore, you also have this extension, which loads *before* all other extensions. It gives you the chance, by pressing the space bar during startup, to bring up the Extensions Manager control-panel screen, so that you can choose which extensions you want to load.

Energy Saver extension

Does the actual starting up and shutting down you've specified in the Energy Saver control panel (see "Energy Saver 2.0 (and related files)," earlier in this chapter).

Ethernet (Built-In)

See "Open Transport (and related files)," later in this chapter.

EtherTalk Phase 2, EtherTalkPrep

See "AppleShare (and related files)," earlier in this chapter.

Fax Extension

See "GeoPort Extension (and related files)," later in this chapter.

FBC Indexing Scheduler

This extension is responsible for the auto-pilot indexing feature of Mac OS 8.5's Find By Content (FBC) tab, described in Chapter 3. In other words, this is the monitor that watches the clock until midnight (or whatever time you've specified), at which time the Mac *indexes* your hard drives (makes an updated catalog of their contents for quicker searching).

File Sharing Extension, File Sharing Library

See "AppleShare (and related files)," earlier in this chapter.

File Sync Extension

This extension is required for the File Synchronizaton control panel, described earlier in this chapter.

Find, FindByContent

To make the awesome new Find command (which debuted in Mac OS 8.5) work, the FindByContent extension requires the data, and the Find by Content Indexing program, stored in the Find folder. (Indexing is the process of analyzing and cataloging all the text on your hard drive, as described in Chapter 3.)

Find File Extension

This extension simply launches the Find File program (of System 7.5 through 7.6.1) when you choose Find File (or press ⌘-F). If it weren't for this little guy, you'd get the *old* Find box instead. And even without this extension, you can still call up the *new* Find File — by choosing its name from your menu.

Finder Scripting Extension

See "AppleScript (and related files)," earlier in this chapter. Actually, this AppleScript component is more important than most — it lets you drag things into and out of the Find File program, as described in Chapter 3. It's unnecessary in Mac OS 8.5 and later.

Folder Actions

This extension lets AppleScript monitor your folders, in case you've created an AppleScript that you want triggered whenever somebody opens or drops something into a folder. For details on AppleScript, see Chapter 22.

Foreign File Access

See "Apple CD-ROM (and related files)," earlier in this chapter.

GeoPort Extension (and related files)

This extension is the driver for a GeoPort Telecom Adapter, a $100 fax/modem simulator once sold by Apple for Power Mac or AV-model Macs. See Chapter 24 for details.

You'll find other files in your System Folder, too, all pertaining to your GeoPort, such as the **Fax Extension** (lets you send and receive faxes with the GeoPort Adapter); the **Express Modem** control panel (described earlier), **Fax Terminal 7.5 Compatibility** (lets your GeoPort software work with System 7.5); and, in some cases, anything with the word **MegaPhone** in it (another set of extensions and control panels that lets your Mac act as a telephone answering machine).

CASE HISTORY

The Upgrade paradox

An actual transcript of a call to a Macintosh software company.

Tech: Hello, Tech Support.

Caller: Yeah, I've got version 3.1 of your program and it won't run on my Macintosh 7500.

Tech: Yes, sir, that's right. 3.1 is not compatible with the new PCI Power Macs. You need version 5.0 or later.

Caller: Yeah, well, I've got that version 5, too. Works fine.

Tech: That's great, sir. So you have the upgrade, then. So what's the problem?

Caller: Well, I just want to know when you're gonna make the 3.1 version run on Power Mac. We've been using the 3.1 version years more than the 5.0, and we like it just fine.

Global Guide Files

This folder, which debuted in System 7.6, is a refreshing effort by Apple to consolidate its Extensions folder junk. It's a central location for your Apple Guide files; see "Apple Guide (and related files)," earlier in this chapter.

Graphics Accelerator

This one is another file exclusively for PCI Macs Power Macs that have an ATI video-acceleration PCI card installed. This is the software your Mac needs to give you that video speed boost.

High Sierra File Access

See "Apple CD-ROM (and related files)," earlier in this chapter.

ICeTEe

If you use the Internet, this little gizmo is worth having. It's installed by Internet Config, a free Internet utility that comes with the Mac (before Mac OS 8.5's Internet control panel replaced it). This particular extension adds to *all* your programs the ability to ⌘-click any Web-page address, wherever it shows up — to open that Web page in your chosen Web browser. Similarly, you can ⌘-click an e-mail address to open a new, blank, pre-addressed e-mail in your favorite e-mail program. (The name comes from the initials of Internet Config and TextEdit, the Mac's built-in text-processing routines.)

If a ⌘-click doesn't work, by the way, try enclosing the Internet address exactly (no brackets or other extraneous characters). And if *that* doesn't work, your program may not use TextEdit behind the scenes. You're out of luck.

Indeo Video, Intel Raw Video

If you use Microsoft Internet Explorer, these extensions got dumped into your System folder. They let your Mac see QuickTime movies (which, presumably, you find on the Web) that have been prepared in Windows format (AVI).

Installer Cleanup

This extension, if you can glimpse it at all, appears just after you install new Apple software. During the startup immediately following a software installation, Installer Cleanup takes care of a few technical loose ends — and then deletes itself!

Internet Access

If you have Mac OS 8/8.1 or the Apple Internet Connection Kit, you need this shared library to dial into the Internet.

Internet Config Extension

This isn't Apple's software, although Apple provides it with Mac OS 8 and later. It's the System Folder representative of Internet Config (or Mac OS 8.5's Internet control panel).

Internet Config and the Internet control panel let you type in all your Internet setup information (e-mail address, SMTP codes, and other stuff described in Chapter 25) *once* — so that you won't have to re-enter all of that information over and over again into each of your other Internet programs. (See "Internet" earlier in this chapter for details.)

Iomega Driver

In theory, you have this extension only if you have a Zip or Jaz drive; it's the *driver* software that lets your Mac talk to such a drive.

IrDALib, IrLanScannerPPC

See "IR Talk (and related files)," next.

IR Talk (and related files)

Every PowerBook since the 500 series, plus the iMac or any desktop Mac with a Netopia AirDock, has an infrared transmitter/receiver. It looks like a little red plastic taillight, and it permits wire-free networking between similarly equipped machines. This extension, which in later system versions takes the form of **IrDALib** and **IRLanScannerPPC,** makes it all possible. See Chapters 14 and 35 for details.

ISO 9660 File Access

See "Apple CD/DVD Driver, Apple CD-ROM (and related files)."

jgdw.ppc

We know that this is an extension. We know it's installed by Microsoft Internet Explorer. We haven't the faintest idea what it does. Something to do with Java, no doubt.

Kodak Precision CP1 (and related files)

This extension isn't part of the standard Apple software per se, but it's dumped into your System folder during the installation of so many digital cameras, scanners, and graphics programs that it's practically universal. CP stands for *color palette;* these extensions, ColorSync-like, help maintain color consistency among different color gadgets. Also includes **Kodak Precision CP2** and **Kodak Precision ProfileAPI**.

LaserWriter (and related files)

These extensions are *printer drivers* — they teach your Mac to communicate with specific printer models. Obviously, you need only the one (or ones) that matches your printer (or printers). Without the driver, you can't print. Throw all the others away. Other printer drivers that probably got dumped into your Extensions folder are various **StyleWriter, LaserWriter Select, ImageWriter** drivers, and so on.

LocalTalk PCI

This extension was inspired by a praiseworthy notion: to make LocalTalk, the networking software used by many a LaserWriter and Mac (see Chapter 35), PowerPC-native (that is, faster on Power Macs).

(The initial, Mac OS 8.1 version of LocalTalk PCI, alas, had a small problem — on many machines, it made the Mac unable to "see" the laser printer *at all*. Version 1.1 and later solve the problem.)

Location Manager Extension, Location Manager Modules

Location Manager, described earlier in this chapter, is the clever PowerBook control panel that, with the flick of a menu command, switches numerous parameters that may change when you travel from place to place: your default printer, extension set, speaker volume, local time, and so on. This extension makes it work, and the Modules folder stores the individual extensions that control, understand, and switch those parameters.

Macintalk (2, 3, or Pro)

Included with System 7.5 and later: lets your Mac *speak text* you've typed into SimpleText. Requires the Speech Manager control panel and the **Voices** folder in your Extensions folder, too. See Chapter 23 for details.

Macintalk 2 is for 68020 Macs and Macs running System 6; Macintalk 3 is for 68030, 68040, and PowerPC Macs; and Macintalk Pro requires a 68040 or PowerPC chip.

Macintosh Guide

See "Apple Guide (and related files)," earlier in this chapter.

MacLinkPlus for Easy Open

File-format translators; see "Mac OS Easy Open (Macintosh Easy Open)," earlier in this chapter.

MacTCP DNR

See "AppleShare (and related files)," earlier in this chapter.

MacTCP Token Ring

See "AppleShare (and related files)," earlier in this chapter.

Modem Scripts

See "Modem," earlier in this chapter.

Mount IDE Drive

For Macs with IDE-style hard drives only (such as most PowerBooks and 630-series machines), this extension is designed to *mount* (bring onto the screen) your internal hard drive's icon if you're starting up from some *other* disk.

MRJ Libraries

This folder (which stands for Macintosh Runtime for Java) contains the software necessary for your Mac to run Java instructions (see Chapter 25).

Multiprocessing

A folder containing *shared libraries* (see Chapter 9) in System 7.6 and later. On the one hand, this software is required only by Macs that have multiple processors. On the other hand, Apple claims that more and more programs will require these files, even on single-processor Macs; since these are only shared libraries, and thus don't load at startup, take up RAM, or cause conflicts, you may as well leave them.

Network Extension

See "AppleShare (and related files)," earlier in this chapter. This extension disappears when Open Transport is installed (see Chapter 35).

Network Setup Extension

OS 8.5

Required for Mac OS 8.5's networking features.

ObjectSupportLib

For Power Macintosh only; lets several running programs exchange Apple Event messages regarding *shared libraries*. Unnecessary in Mac OS 8 and later.

OpenDoc Libraries

This folder, together with the helpfully named **SOMobjects for Mac** OS and the **Editor Setup** control panel, let your Mac work with *OpenDoc* parts. See Chapter 15 for the full explanation.

Open OT

The America Online installer blesses you with this little item. It's needed *only* on Macs where AppleTalk is not turned on (for example, if your printer is an inkjet).

Open Transport (and related files)

Open Transport, the 1995 universal networking software from Apple, introduces a bunch of clutter to your System Folder. You get four new control panels: **AppleTalk, Modem, Remote Access** (or **PPP** in systems before Mac OS 8.5), and **TCP/IP**. You also get numerous files in your Extensions folder: **Open Transport Library, OpenTpt Modem, OpenTpt Remote Access, OpenTpt Serial Arbitrator, OpenTptAppleTalkLib, OpenTptInternetLib,** and **OpenTransportLib**, among others.

See Chapters 25 and 35 to find out what good all this does you; for now, note that you need all of this Open Transport software if you hope to use the Internet or an in-office network.

PC Card Extension, PC Card Modem Extension, PC Card Multifunction Update

These drivers let PowerBooks recognize *PC cards* (those little credit-card size things like modems and Internet cards), as described in Chapter 14.

PC Clipboard Translator

Suppose your Mac has a DOS Compatibility Card installed (see Chapter 16). If you copy some text from a Windows program, and then switch to a Macintosh program, you'll want your Clipboard contents to survive the switch. This extension makes it possible.

PlainTalk Speech Recognition

See "Speech Recognition (and related files)," later in this chapter.

PowerBook 3400 Ethernet, PowerBook 3400 Modem

These extensions, known on the first PowerBook G3 as **PowerBook 3400/G3 Ethernet** and **PowerBook 3400/G3 Modem,** let the PowerBook 3400 and G3 models talk to their own built-in networking/modem card.

PowerBook Monitors Extension

See "Quadra Monitors Extension (and related files)," later in this chapter.

PowerBook ZoomedVideo

On PowerBooks that can accommodate a *zoomed video card* (a PC card that lets you watch live video via cable), such as the 3400 and G3, this extension is the driver software.

PowerPC Monitors Extension

See "Quadra Monitors Extension (and related files)," later in this chapter.

PowerTalk Extension (and related files)

PowerTalk is a complex, very technical set of interrelated software components for use in office networks, officially abandoned by Apple as of Mac OS 8. It's described more fully in Chapter 35.

Some of the PowerTalk components you'll find in your System Folder after installation are: **Catalogs Extension** (lets you create and manage icons full of addressee data called *catalogs*); **Mailbox Extension** (creates the Mailbox icon on your Desktop to store incoming e-mails, faxes, and so on); **PowerTalk Manager** (manages the Mailbox and other services); **Serial Tool** (lets your PowerTalk software dial the modem to retrieve e-mail); and others.

PowerTalk Guide

See "Apple Guide (and related files)," earlier in this chapter.

Printer Descriptions

This folder contains PPDs (PostScript Printer Descriptions) for individual printer models. It's used only by the LaserWriter 8 printer driver (see Chapter 30). Feel free to open this folder and discard the icons for any printers you don't use.

Printer Share

This extension lets you share one StyleWriter (see Chapter 30) among several networked Macs.

Printing Lib

Yet another shared library, as described at the beginning of this section; this one's needed only for laser printing.

PrintMonitor

PrintMonitor handles *background printing* if you don't use the Desktop Printing feature. See Chapter 30 for details on both.

QTVR, QTVR Components

See "QuickTime VR," later in this chapter.

Quadra Monitors Extension (and related files)

This optional extension provides your Monitors control panel with specific information about your model's video features. The only way you can see its effect is by opening the Monitors control panel and clicking the Options button. There you may see some additional choices — such as the ability to change the *gamma settings* (see "Monitors," earlier in this chapter), which are specific to your Mac model's family.

Other model-specific Monitors Extensions include **PowerBook Monitors Extension, Quadra AV Monitors Extension, PowerPC Monitors Extension,** and so on.

Queue Monitor, Queue Watcher

On PowerBook 3400 and G3 models, these are components of the Fax STF software used to control faxing on your built-in fax modem.

QuickDraw 3D

QD3D stands for *QuickDraw 3-D,* as you'll find out in Chapter 20. These extensions, which include **Apple QD3D HW Plug-in, Apple QD3D HW Driver, QuickDraw 3D, QuickDraw 3D IR, QuickDraw 3D RAVE,** and **QuickDraw 3D Viewer**, provide the underlying software for programs that let your Mac show, create, and (on special circuit boards) accelerate 3D graphics, as described in Chapter 20. (Frankly, most people can throw all of these out.)

QuickDraw GX (and related files)

The cornerstone of the vast, discontinued, Mac OS 8-incompatible, QuickDraw GX fonts-and-printing empire (including **ATM GX, Letterhead, N-Up Printing**, the **QuickDraw GX extension,** and much more), provided with System 7.5 and later. See Chapter 30 for details.

For now, note that when you install QuickDraw GX, you may notice a curious change to the icons in your Chooser: They all have the letters *GX* added to their names. The QuickDraw GX extension hides the icons of all your *normal* printer drivers.

If you want your original drivers to return to the Chooser — for example, if your laser printer or software doesn't work with the GX drivers — the fix is simple. Just restart your Mac with the QuickDraw GX extension turned off. Your normal icons return, and it will be the *GX* drivers' turn to vanish.

QuickTime (and related files)

When you add the QuickTime extension to your System Folder, your Mac can run programs that record, edit, and play digital movies — QuickTime movies. It also helps graphics programs open certain kinds of compressed graphics formats (such as JPEG) and even lets your Mac play MIDI music files. Chapter 23 provides details on the Mac's most famous multimedia technology.

The **QuickTime Power Plug** adds PowerPC-native programming for QuickTime movies to Power Macs. It doesn't help playback, but dramatically

shortens the time it takes to *create* (compile and save) QuickTime movies of your own. The **QuickTime MPEG Extension** lets your Mac play a specially compressed type of QuickTime movies called MPEG. You won't see MPEG files often (except possibly on the Web and on DVD discs) — but when you do, you'll be ready.

QuickTime Musical Instruments, meanwhile, contains the realistic sounds of 30 musical instruments. In conjunction with the QuickTime extension — and a program like Movie Player — it lets you open standard MIDI music files and play them using the Mac as a synthesizer. For the first time, the Mac is free from its age-old four-notes-simultaneously chord limit. See Chapter 23 for details.

(Check out the Balloon Help for this item: "Music n. 1: the science or art of incorporating intelligible combinations of tones into a composition having structure and continuity, 2: an agreeable sound, euphony, 3: punishment for a misdeed." As free book winner Leigh Blankenship points out, "Number 3 covers the Spice Girls phenomenon pretty well, I think.")

QuickTime VR

This QuickTime plug-in lets your Mac play QuickTime VR movies — "virtual reality" photos, as described in Chapter 23. If you have this extension, remove its predecessors, **QTVR** and **QTVR Components.**

Scanner

The driver (translator) that lets your Mac talk to an Apple scanner.

Scripting Additions

See "AppleScript (and related files)," earlier in this chapter.

SCSI Manager 4.3

This extension is the software that lets AV and Power Mac models take advantage of their faster SCSI circuitry, resulting in faster data transfer between SCSI devices. Unnecessary in System 7.5.3 and later.

Serial (Built-In)

A shared library that helps your programs talk to the Mac's modem and printer jacks.

Serial Port Arbitrator

This extension is installed with Apple Remote Access (see Chapter 31). If you've set up your Mac to answer the phone, this extension lets other programs use your modem port in the mean time (so you can surf the Web, for example, without having to turn off ARA).

Serial Tool

See "PowerTalk Extension (and related files)," earlier in this chapter.

SerialDMA

Some pretty sophisticated software is required to manage all the high-speed data that gets shoved in and out of your modem port — particularly modem and MIDI transmissions. This extension is it. Unnecessary in System 7.5.3 and later.

Shared Library Manager, Shared Library Manager PPC

These two extensions *control* the loading and unloading of shared libraries, which are discussed in this chapter (see the introduction of this section — "Extensions: One by One") and in Chapter 9. Required for Open Transport, Microsoft programs, QuickTime, and other programs that rely on shared libraries. (If you have a PowerPC-based Mac, you need both of these.)

Shortcuts

See "Apple Guide (and related files)," earlier in this chapter.

Slow SCSI Extension

For PowerBook 5300, 190, and 1400 models. This extension is designed to solve a crashing problem when transferring data from these PowerBook's slowish IDE drives and equally slow *other* SCSI devices (such as single-speed CD-ROM drives, Zip drives, and other PowerBooks). It works by slowing down *all* of your SCSI transfers — so if you're not crashing, and you're not using slow SCSI devices, turn this extension off.

SLPPlugin

See "DNSPLugin," earlier in this chapter.

SOMobjects for Mac OS

Yet another shared library, as discussed at the beginning of this section. This one, although it originally appeared as part of OpenDoc (see Chapter 15), is required to make Mac OS 8's contextual menus work (see Chapter 2). (SOM stands for System Object Model, if you must know.)

Sound Input Amplification

Apple's PlainTalk microphone generates an electrical signal that's strong enough to make the Mac's sound-recording software happy ("line-level" signal). Other microphones, however, are too weak. This extension, shipped only with 7200 models, adds a "Microphone amplification" option to your Sound control panel.

Sound Manager

There have been various versions of this sound-management software, each designed to make recording and playing back sounds better and more flexible. Unnecessary in System 7.6 or later.

Speech Guide Additions

See "Apple Guide (and related files)."

Speech Manager

See "Speech Recognition (and related files)."

Speech Recognition (and related files)

The Power Mac and AV lines, among other features, offer *speech recognition:* You speak into your Mac's microphone, issuing orders, and the Mac obeys. A separate set of programs provides *text-to-speech* features — which can run on any recent Mac — in which the Mac reads out loud, in a pseudo-human voice, what you've typed into SimpleText. See Chapter 23 for details on both features.

These speech features add all kinds of junk to your Extensions folder: several **TTS Voice** files (the voices used for text-to-speech); **SR North American English** (dictionary for recognized terms); **SR Monitor** (listens to the mike); **System Speech Rules** (teaches the Mac how English works); **PlainTalk Text-To-Speech** or **Speech Manager** (the heart of the text-to-speech feature); **My Speech Macros** (new spoken commands you've created, using the **Speech Macro Editor** program, for the Mac to understand); and so on.

StyleWriter

See "LaserWriter (and related files)," earlier in this chapter.

System Speech Rules

See "Speech Recognition (and related files)," earlier in this chapter.

SystemAV

Tells the Monitors & Sound control panel what sound and video features your particular Mac model has. Required by the Monitors & Sound control panel, described earlier in this chapter.

Telephone Manager

Here's the software your Mac needs to answer the phone — if you've installed Apple's Telecom Software, MegaPhone, or the like.

Text Encoding Converter

Probably unbeknownst to you, each kind of computer has a different way of referring to typed letters. Sure, all computers understand A through Z, but the wackier symbols (such as curly quotes, foreign diacritical markings, and so on) are internally summoned differently on each computer type. Ever get an e-mail in which all the apostrophes appear as capital U's? Or in which all the quote marks have turned to weird boxes? Now you know the problem.

The Text Encoding Converter is a shared library that's designed to translate other computers' wacky alphabet references into the Mac's system, so that fewer nutty boxes and U's show up in your e-mail.

Text Preview

When you're examining files in the Open File dialog box (see Chapter 15), there's a little Preview area in certain programs, notably ClarisWorks. This extension lets you see a few words of text files you're browsing — right there in the little Preview area — without actually having to open those files.

Thread Manager

A pre-System 7.5 extension that opens the way for certain programs (of which very few exist) to perform one task — like initializing a floppy disk — while you continue to work on something else.

Time Synchronizer

If you're using Mac OS 8.5's Date & Time control panel, you've noticed that it can set your Mac's clock *automatically* by dialing into the Internet, even compensating for Daylight Savings Time (if you observe it). This extension is the bridge between Date & Time and your Mac's dialing software.

TokenTalk Phase 2

See "AppleShare (and related files)," earlier in this chapter.

TokenTalk Prep

See "AppleShare (and related files)," earlier in this chapter.

Trackpad Climate Control

For three PowerBooks — the 190, 1400, and 2300. This extension reduces the likelihood of cursor jerkiness when you're using the trackpad with moist or sweaty palms. (Trust us: A Post-It note over the trackpad works better.)

UDF Volume Access

New for Mac OS 8.5: a driver that lets your Mac talk to DVD discs, as described in Chapter 32. ("Volume," in this case, doesn't mean "loudness"; it refers to a *disk.*)

Video Guide Additions

See "Apple Guide (and related files)," earlier in this chapter.

Video Startup

As you'll read in Chapter 23, some Macs — the 7600, 8600, and minitower G3, for example — let you create digital QuickTime movies simply by hooking your camcorder up to a jack on the back. This extension is required by Apple Video Player, the program Apple gives you to capture the incoming footage.

Voices

This folder contains the voice files for Macintalk, the extension that lets the Mac talk to you. See Chapter 23 for more on Macintalk.

Web Sharing Extension

Required by the Web Sharing control panel, described earlier in this chapter.

WorldScript Power Adapter

You may suspect that extension has something to do with WorldScript Language Kits (if you've bought any). In fact, it's far more useful; it actually speeds up text processing (by patching over non-native code) on Macs with PowerPC chips.

The Ultimate Extension-Linking Guide

Just about everyone in America now has some kind of program for *managing* all of these extensions — either Extensions Manager, which comes with the Mac, or its more powerful rival, Conflict Catcher.

Conflict Catcher lets you link various *clumps* of extensions, so that turning one of them on turns the entire group on. For example, an Apple CD-ROM drive comes with no fewer than *six* extensions, and a horrifying nine are required for Open Transport. To save you time and effort, here's a list that shows what extensions should be turned on together. Even if you don't use an extension-management program, this list should help you better understand the purpose of all those seemingly random files that clutter your System folder.

Note, first, though: (1) You may not have all of these components; our purpose here is to help you figure out which software suite something in your System folder came from. (2) Not all of these elements even show up in your extensions-management program. Some have no startup code to manage, and are simply support files, or are otherwise invisible to such programs.

Apple CD-ROM or DVD
Apple CD-ROM
Apple CD/DVD Driver
Audio CD Access
Apple Photo Access
Foreign File Access
High Sierra File Access
ISO 9660 File Access
UDF Volume Access

Apple Remote Access
Apple Remote Access Client
Dial Assist (application)
Link Tool Manager
Modem Link Tool Personal

Remote Access Aliases
Remote Access Setup (control panel)
Remote Only
Serial Port Arbitrator

Apple Telecom Software
AddressBookLib.ppc
AddressBookLib.68K
Apple Fax Gateway
Apple Phone Extension
Fax Extension
Fax Sender
Fax Sender GX
Log Extension (shared library)

At Ease
At Ease 7.5 Layer Patch
At Ease Items
At Ease Setup
At Ease Startup

File Sharing
AppleShare
File Sharing Library
File Sharing Extension
Network Extension
Users & Groups
File Sharing or Sharing Setup

Microsoft Word 6/Excel 5
Microsoft Dialog Library
Microsoft Find File Library
Microsoft Mail Library
Microsoft OLE Automation
Microsoft OLE Extension
Microsoft OLE Library
Microsoft Office Manager (control panel)
Microsoft Tool Editor Library

Microsoft Office 98
Microsoft Dialog Library
Microsoft Find File Library
Microsoft Mail Library
Microsoft OLE Automation
Microsoft OLE Extension
Microsoft OLE Library
Microsoft Office Manager (control panel)
Microsoft Tool Editor Library

Open Transport (networking/Internet)
Network Software Selector
Open Tpt AppleTalk Library
Open Tpt Internet Library
Open Transport Guide Additions
Open Transport Library
OpenTpt Modem
OpenTpt Remote Access
OpenTpt Serial Arbitrator
OpenTptAppleTalkLib
OpenTptInternetLib
AppleTalk (control panel)
TCP/IP (control panel)

PPP or Remote Access (control panel)
Modem (control panel)
Apple Built-In Ethernet or Ethernet (Built-In)

QuickDraw 3D
QuickDraw 3D
QuickDraw 3D Accelerator
QuickDraw 3D RAVE
QuickDraw 3D Viewer

QuickDraw GX
EPSExtension
ATM GX
Letterhead,
QuickDraw GX
LaserWriter GX, etc.

QuickTime
QuickTime
QuickTime MPEG Extension
QuickTime Musical Instruments
QuickTime™ VR
QuickTime Musical Instruments
QuickTime Power Plug
QuickTime Settings (control panel)

PowerTalk
Apple Fax Gateway
AppleTalk Service
DigiSign
Mailbox Extension
PowerTalk Catalogs
PowerTalk Extension
PowerTalk Manager
PowerTalk Guide
PowerTalk Setup

Speech
Macintalk
My Speech Macros
Speakable Items (folder)
Speech (control panel)
Speech Manager
Speech Recognition
SR Monitor
System Speech Rules
InLine Filter
Voices folder

MACINTOSH SECRET

Dave 'n' Joe's Ten-Step Mac Setup Guide

Plenty of people use Macs: programmers, network geeks, NASA scientists, third graders. Out of the box, the Mac tries to be all things to all people — and it's up to you to customize the thing so it works right for normal people.

Here are the steps we reflexively take when we take a new Mac out of the box — or sit down at somebody else's machine:

1. **Open the General Controls control panel.** Turn off menu blinking. Life's too short. While we're at it, turn off "Warn me if computer was shut down improperly" (in systems before Mac OS 8.5). If we had a system crash, we don't need our noses rubbed in it.

2. **Open the Views control panel**, if it's a pre-Mac OS 8 Mac. Turn on "Show disk info in header." There's no downside, and the info is useful.

3. **Open the Memory control panel.** Make sure virtual memory is turned on slightly; crank the Disk Cache to 32K per meg — or more, if we can spare it.

4. **Open the Apple Menu Options control panel.** Set Recent Servers to zero, and Recent Applications to 25.

5. **Open Extensions Manager** and turn off all the junk normal people don't need. When at home, we're not on a network and we don't need the Mac to talk. Therefore, in the Control Panels, we turn off AutoRemounter; File Sharing; Mac OS Easy Open; Numbers; QuickTime Settings; Speech; Text; and Users & Groups. In the Extensions, we turn off all of the Color SW files; Desktop Printing (useful only if you have multiple printers); File Sharing Extension; File Sharing Library; MacinTalk; Printer Share; QuickTime MPEG; QuickTime VR; all the QuickDraw 3D extensions; Speech Manager; and UDF Volume Access.

6. **Clean out the printers, modems, and monitors.** Open the Extensions folder and throw away the Chooser icons for all the printers we don't own: ImageWriter, LaserWriter 300, and so on. Then open the Printer Descriptions and throw away all the files except the one printer we own. In the Extensions folder, open Modem Scripts and throw out all the icons except the one for our modem. Wrap up by opening Mac OS 8.5's ColorSync Profiles folder and tossing all the files except the monitors we use.

7. **Clean out the Apple menu.** Open the System folder; open Apple Menu Items folder; and move, into the Apple Extras (or some other out-of-the-way) folder, everything we don't need in daily work: Apple System Profiler; Graphing Calculator; Jigsaw Puzzle.

8. **Change the look.** In Mac OS 8, we change the desktop to a solid, soothing color. (The Mac OS logo is too commercial, and photos take up a lot of memory.) In Mac OS 8.5, we then go to Edit ⇨ Preferences and set up our preferred view options for each kind of Finder window, as described in Chapter 2.

9. **Change the behavior.** In Mac OS 8 and later, we then visit the Edit ⇨ Preferences dialog box, change the grid spacing to Tight and the Spring-Loaded Folders feature to Faster, as described in Chapter 1.

10. **Clean up after Apple.** Finally, we throw away the stuff Apple's Mac OS 8.x installer leaves on the desktop: Mail, Browse the Web, Register with Apple, and so on — and then we open the Startup Items folder and throw away the various assistants. You know — 'cause we're power users.

Chapter 5

Enablers, Installers, and Apple Extras

In This Chapter

▶ The other crud in your System Folder

▶ Details on the automatic System Folder subfolders

▶ A few words about the System file

▶ Apple Extras

▶ All the invisible files

▶ The Installer nobody knows

That handful of control panels, extensions, and DAs described in the preceding two chapters doesn't completely explain why a Mac OS 8.5 System Folder can consume 330MB of your hard drive. Your Mac comes with a lot of other fascinating software, too — and the flood doesn't stop: Every few months, Apple releases some Updater or other, which you're supposed to know about, get, and install. Your Mac even comes with some software the Installer *doesn't* install; those additional programs get left behind on the original System CD, or dumped into an unexplained folder on your hard drive called Apple Extras. All of it is worth knowing.

The System Folder Folders

Back in the dark days of System 6, your System folder, if you can believe it, was even more chaotic and cluttered than it is today — it had *no* subfolders to help organize your fonts, desk accessories, and so on. But with each new system-software version, more subfolders have appeared to help organize the crud:

■ System 7 introduced folders for **Extensions** (INITs), **Control Panels**, **Preferences**, **Apple Menu Items**, **PrintMonitor Documents**, and **Startup Items**.

■ When System 7.1 came along, we got the **Fonts** folder, too.

■ **Shutdown Items**, **Control Strip Modules**, and **Launcher Items** made their debut in System 7.5. There was also **Speakable Items**, for those Macs with Macintalk text-to-speech software installed (see Chapter 23).

■ The **Contextual Menu Items** folder debuted with Mac OS 8.

■ Mac OS 8.5 (see Figure 5-1) brought us such additional folders as **Application Support**, **ColorSync Profiles**, **Favorites**, **Help**, **Internet Search Sites**, and **Scripts**.
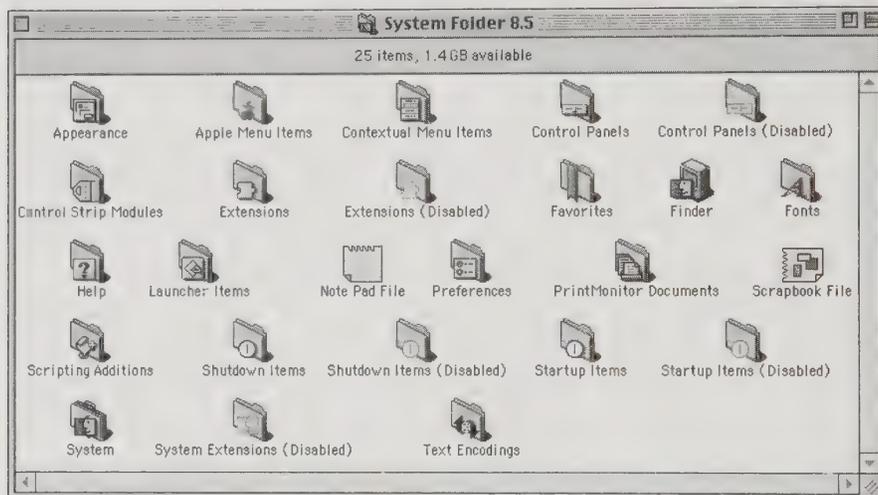
Figure 5-1: All the system folders…where do they all belong?

As you probably know, you're not expected to place each System Folder-bound icon into the appropriate subfolder manually. When you drop a font, sound, control panel, desk accessory, keyboard layout, or extension icon on top of the System Folder icon, the Mac automatically dumps it into the correct subfolder (and it tells you so, as shown in Figure 5-2).
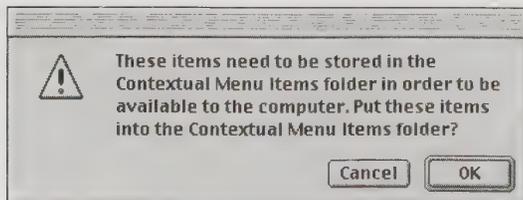
Figure 5-2: The System Folder has some drag-and-drop brains.

In Mac OS 8.5, in fact, even more kinds of files find their way into the System folder automatically: preference files (into the Preferences folder), shared

libraries (into Extensions), data-fork fonts (the Fonts folder), Open Font Architecture plug-ins (Extensions), and AppleTalk extensions (Extensions).

It makes no difference whether the System Folder window is open or closed, just so you drop the stuff on the *icon*.

In fact, you can even drop a whole group of System Folder items of mixed types — even a *folder* containing them — onto the System Folder. All of the items still get stashed where they belong.

In any of the System Folder's placement proposals, you're welcome to decline the suggestion shown in Figure 5-2 by clicking Cancel. If you want to place the item somewhere other than the proposed folder, however, you can't do it by dropping it onto the System Folder icon. First, you must open the System Folder into a window and *then* drag the icon into place.

Here, then, folder by folder, are the System Folder folders.

Appearance

(OS 8.5) Beginning with Mac OS 8.5, *keeping up Appearances* has a whole new meaning for Mac fans. Thanks to the jaw-dropping possibilities of the Appearance program in the Control Panels folder, you can now make your Mac's menu bar, scroll bars, windows, fonts, desktop backdrop, and other elements look and even *sound* like anything you want. In fact, using the Themes feature, you can switch among canned, color/sound-coordinated *sets* of these schemes with a single click. See Chapter 4 for details on these transformations.

This folder contains three subfolders that house the components of a Theme: Desktop Pictures (graphic images to serve as the backdrop of your desktop), Sound Sets (sounds that the Mac plays when you open a window, drag a scroll bar, and so on), and Theme Files (desktop picture/accent color combos that show up as Themes choices in your Appearance control panel). When Apple finally institutes *real* Themes in early 1999 — we're talking wild, menu-color-changing, Coplandesque Themes (see "Appearance" in Chapter 4) — this folder will house those more dramatic cosmetic overhaul files.

Mac OS 8.5 itself comes with only a few of each of these items — but the shareware and commercial software world offers dozens more, broadening the choices in your Appearance control panel until you barely recognize your Mac.

Apple Data Detectors

This folder appears only if you've installed Apple's Internet Address Detectors (IAD), a free software add-on that lets the Mac recognize Internet addresses in any blob of text, in any program. Control-click any highlighted text block to see a pop-up menu of useful commands pertaining to that Internet address: Open in Netscape Navigator, Add to Claris Emailer Address Book, and so on. See Chapter 27 for more on IAD.

Apple Menu Items folder

Beginning in System 7, Apple programmers hit upon the clever idea of using a menu that's been on your screen for years — the Apple (🍎) menu — as an ever-present file launcher. You can put *anything* into this 🍎 menu — not just documents and programs, but folders, disks, the Trash . . . literally anything in the entire Mac universe that can be represented by an icon.

Mac Basics

To change what's listed in the 🍎 menu, you simply add icons to (or remove them from) the Apple Menu Items folder. (More often, actually, you put an *alias* of the original file there. And in System 7.5 and later, you don't even have to do that — just highlight the original icon and choose 🍎 menu ⇨ Automated Tasks ⇨ *Add Alias to Apple Menu*.)

After you know about the relationship between this special folder and your 🍎 menu, you'll discover that the 🍎 menu is one of the operating system's most useful and well-designed features. See Chapter 3 for more on Apple Menu Items and desk accessories.

Application Support

OS 8.5

The Application Support folder debuted in Mac OS 8.5. The intent is obvious: To provide a place for individual software companies' support files to get dumped, thus relieving us of the need to stare at Claris, Adobe, and Microsoft folders (for example) every time we open the System folder.

Will software companies take the bait and rewrite their programs to take advantage of these folders? It's not quite as easy as it sounds, because those same programs must also work on all *older* systems — the ones that don't even have an Application Support folder. We look forward to finding out.

ColorSync Profiles

OS 8.5

This folder, yet another one that debuted with Mac OS 8.5, represents Apple's continuing focus on helping us keep consistent colors from scanner to monitor to color printer.

Chapter 4 describes ColorSync in more detail. For now, simply note that this folder is where the *profiles* — the little files that store color characteristics for every conceivable scanner, printer, and monitor — are stored. By all means throw away all of the profiles that don't correspond to equipment you actually use.

Contextual Menu Items folder

OS 8

Mac OS 8 introduced the delight of *contextual menus* — the pop-up menus that appear at your cursor whenever you Control-click an object (or no object) in the Finder and some other programs, as described in Chapter 2.

But both shareware programmers and Apple programmers were quick to realize untapped potential. Suppose you could add more commands to that pop-up menu? Suppose, in other words, these pop-up menus were *extensible,* just the way the menu and the Control Strip are?

To pave the way for this delightful possibility, the Contextual Menu Items folder was born. This is where new contextual menu plug-ins, such as FinderPop (included with this book), get installed.

CD

Control Panels folder

Today's control panels, as noted in Chapter 4, are increasingly more like individual, double-clickable programs than mere tiles of a central control panel, as they were in the bygone days of System 6.

Strange But True

Actually, as mentioned in Chapter 4, most control panels don't even have to be on your computer — they can live perfectly comfortably on some backup disk, or in another folder of your choosing, until you want to *change* one of your settings. You can open a control panel just like a double-clickable program, no matter where it is. Chapter 4 contains more information about control panels than you'll ever want to know.

Control Panels (Disabled)

See "Extensions (Disabled) folder" below.

Control Strip Modules folder

This folder is required for the glorious Control Strip found in System 7.5.3 or later. You can read about the Control Strip in Chapter 4; for now, note that any "tile" on your Control Strip is represented by a plug-in in this folder. Drag a Control Strip-module icon *out* of this folder, and that tile vanishes from your Control Strip; add one to this folder, and it *appears* on your Control Strip.

Desktop PrintMonitor documents

See "PrintMonitor documents" later in this chapter.

Extensions folder

If you read Chapter 4, you know about all the different things — extensions, shared libraries, Chooser icons, and so on — that are housed in the Extensions folder. Extensions also work fine loose in the System Folder or even in the Control Panels folder, but the Extensions folder is their official home.

Extensions (Disabled) folder

In the *very* old days, if you didn't want some extension (INIT) to load when you turned on the Mac, you'd have to drag the extension's icon out of the System Folder.

Fortunately, with the debut of Extension Manager (included with System 7.5 and later) and third-party programs like Conflict Catcher, a much easier method of turning off extensions came to pass. These "startup manager" programs simply *move* the extensions you want to turn off into a folder called Extensions (Disabled). When the Mac is then restarted, it ignores any extensions in that (Disabled) folder, thus carrying out your instruction to "turn them off." (And if, for some reason, Extensions Manager or Conflict Catcher isn't working or isn't available, you turn an extension back *on* simply by dragging its icon back into the Extensions folder manually.)

You'll also see **Control Panels (Disabled)**, **Startup Items (Disabled)**, **Shutdown Items (Disabled)**, and, sometimes, **System Folder (Disabled)** folders. They, too, are created by Extensions Manager (see Chapter 4) and Conflict Catcher (see Chapter 22), this time to turn off control panels, startup items, shutdown items, and loose-in-the-System-Folder items, respectively.

Favorites folder

Yet another of Mac OS 8.5's special System subfolders, the Favorites folder is used to store the icons of files, folders, or disks you use frequently. Once you've turned something into a favorite, it appears both as a submenu of

your Favorites command (in the menu) as well as in the Network Browser (see Chapter 3) and the new Open and Save dialog boxes (see Chapter 15).

As we mentioned in Chapter 2, it's a piece of cake to add an alias of any icon to this folder — just choose Add to Favorites from the File menu. Or, alternatively, Control-click any item and choose Add to Favorites from the pop-up menu. When you do so, the Mac places an alias of the selected icon into this folder.

(Does all of this sound vaguely familiar? It should — it's exactly the scheme used by Netscape Navigator and Microsoft Internet Explorer for creating *bookmarks* of Web sites you visit frequently.)

Fonts folder

Before the Fonts folder debuted in System 7.1, you installed fonts into the System *file* itself (into the little suitcase icon inside the System folder). That method had a few problems:

- Installing a font was time-consuming.

- You could install a font only if no programs were running.

- Having a lot of fonts inside the System-file suitcase bloated it like crazy — never a healthy situation.

- If your System file somehow got damaged, all your fonts got nuked.

By keeping all your fonts — not just TrueType fonts, but also screen (suitcase icon) and printer files for PostScript fonts — safely in one folder, you circumvent all of those hassles.

The maximum number of font files that can be in the Fonts folder is 128. This doesn't mean 128 *fonts,* however — it's 128 font *files* (suitcases). *Each* suitcase, in turn, can contain as many as 128 different individual fonts. Even so, big-time desktop publishers and font zealots still find a font-management program, such as Suitcase, to be a necessary and handy add-on. (Much more on these topics in Chapter 29.)

Mac Basics

A last note on font files: You can *double-click* a screen font file (or a TrueType font file) to see what the font looks like (see Figure 5-3). We smile at Apple's never-ending zaniness as the sample sentence is rewritten with each successive version of the OS software.

Help folder

The decision to add a Help folder to the System folder has been kicking around at Apple since 1991; as readers of previous editions of this book may remember, it was originally slated for System 7 — and then ripped out at the last minute amid heated programmer debate.
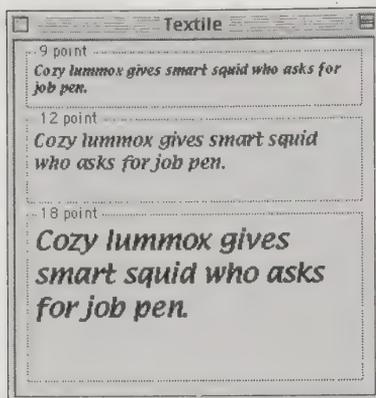
Figure 5-3: Double-click a TrueType font file, or a regular PostScript screen-font file, to see what the font actually looks like. Cute sentence, huh? It uses all the letters, but it's not quite as plausible as "The quick brown fox jumps over the lazy dog." Then again, as the owner of this book, you can change the sentence to say anything you want! See Chapter 21 for instructions.

It's finally here, as of Mac OS 8.5. The Help folder is a central place for help files: the innumerable Apple Guide files, balloon-help files, plus Mac OS 8.5's Apple Help Viewer (a Web-browser-like help-reading program).

Other software companies are welcome to program their products to use this Help folder as a handy storage place; but even if no software companies rise to the occasion, at least Apple's own help-file clutter now has a final resting place.

Internet Search Sites

In Chapter 3, you can read about the powerful new Find command that debuted in Mac OS 8.5. This command can do more than search for files by *name;* it can even search for the text *inside* of files. And more: the Find window's third tab lets you search the Internet, also as described in Chapter 3.

In fact, this Internet-search window offers a list of *several* Web sites worth searching: Apple's tech-support database, for example, plus such standard Web-search pages as InfoSeek, Excite, AltaVista, and Lycos. This Internet-searching feature is *extensible*; this folder, Internet Search Sites, contains a module for each of those available search mechanisms. Each module is known to the system software as an *Internet search site* document, and its name ends with the unusual suffix *.src.*

As more Web pages offer Mac OS 8.5 Find-compatible modules, you can install them just by dropping them into this folder. (Conversely, if you never plan to search one of the included Web pages — for example, if your Mac runs perfectly all the time and you conclude you'll never need to search Apple's tech database — you can pull modules *out* of this folder. They'll obediently disappear from the Find window's list of options.)

Launcher Items folder

The Launcher, of course, is the handy one-click icon-launching window described in Chapter 4. You have it on any System 7.5-or-later Macintosh.

The Launcher Items folder works exactly like the Apple Menu Items folder described earlier. In this case, any icon (or alias) you place into the folder shows up immediately in the Launcher window. For the full scoop, plus some Launcher Items folder secrets, see "Launcher" in Chapter 4.

Preferences folder

Mac Basics

A Prefs file (or Preferences file) is a storage bin for a program's settings. Every time you tell PageMaker that you prefer to work in picas instead of inches . . . or you change the font used for icon names in the Finder . . . or you select a new "scratch disk" for Photoshop . . . or you store your name and password into some Internet program . . . the program in question records your settings in a Prefs file.

In the early days of the Mac, a program might record such options settings in the body of its own code. But *self-modifying* programs are considered a programming no-no. Programs that modify themselves trigger anti-virus programs, they can't be run from a CD-ROM (because nothing on a CD-ROM can be changed), and they can't be shared from a network server (see Chapter 35). Therefore, well-behaved programs today never modify themselves; your settings changes are recorded in a Prefs file.

The Preferences folder exists for the benefit of your programs. There's virtually nothing you can accomplish by messing with Prefs files, except to read an error message that tells you so.

Worth Learning

These files do, however, represent cumulative hours of work over many months. As such, they should be backed up with great reverence and transferred carefully whenever you perform a clean system install, as described in Chapter 36.

We also believe that this folder gets gunked up rather quickly with Prefs files from programs you no longer use. Every little shareware program you try, and every program you delete from your hard drive, leaves behind that little piece of itself in your Preferences folder. Review the contents of your Preferences folder every couple of months, and throw away the Prefs files of programs you don't actually use. (This process is much quicker if you use the trick described in Chapter 2, in which you use your Labels menu to tag all the *official* Apple preference files. Then, when it comes time to clean out all the irrelevant reference gunk you've accumulated, you can see at a glance which icons to throw away.)

On a related topic: A corrupted Preferences file is one of the most common causes of computer-induced insanity. You try everything — zap the PRAM, rebuild the Desktop, reinstall the software — and some phantom glitch remains, much to your exasperation. The problem is likely to be a corrupted Preferences file. More on this topic in Chapter 36; for now, simply remember
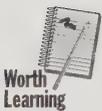
that if you throw away a Preferences file, the program to which it belongs will automatically generate a fresh, clean new one the next time it runs.

MS Preference Panels

If you've installed any Microsoft software lately, you've got this folder. It's part of the Configuration Manager, a little program (described in Chapter 4) that serves as a central clearinghouse for Internet-related preferences: Your e-mail name, signature, home page, and so on. Microsoft Internet Explorer and Outlook Express can then share this information without making you reinput it. (If this notion of rounding up all your Internet settings into a central program sounds suspiciously like Internet Config, Mac OS 8.5's Internet control panel, and so on, well, you're right.)

You can actually double-click one of these Preference panels to launch the Configuration Manager program, prescrolled to the "panel" of information you double-clicked, such as Security or User Passwords.

PrintMonitor Documents folder

When you use the Background Printing or Desktop Printing features, described in Chapter 30, an interesting thing happens each time you choose Print from a program's File menu. Instead of sending the printing information to your *printer,* the Mac sends it to a *file* on your hard disk. Then, as you continue to work on your Mac, these saved-up print files get fed, little by little, to your printer.

While they're waiting to be printed, your files' waiting room is the PrintMonitor Documents folder. (Or, if you're using Desktop Printing [see Chapter 30], this folder is called Desktop PrintMonitor Documents.) Under normal circumstances, you'll never need to interact with this folder's contents. But in times of troubleshooting, or when you're being particularly clever with one of the techniques described in Chapter 30, it's useful to remember that this is where your printouts-to-be live.

Scripting Additions

This folder and its contents will be pretty much meaningless unless you're into *AppleScript*, the built-in Mac OS automation software described in loving detail in Chapter 22. Turns out that this technology is extensible; by dropping modules into this folder, you can add powers to the basic AppleScript software. One of these add-ons makes your Monitors & Sound control panel scriptable, so that you can control it with your macros. Another makes Open Transport scriptable (in Mac OS 8.5 and later) so that an AppleScript, for example, could control when your Mac signs onto, and off of, the Internet. And so on.

The laser printer from Hell

Judy is the wife of an extremely famous director. (This is a true story.) She fell in love with her first Mac immediately. She played with it for three days. And then she moved to a different state and didn't have a chance to use the Mac for two weeks.

When she arrived at her new home, she set up the Mac and printer. Then she turned on the Mac — and it *immediately* started printing the same ten-page document over and over and over again! She panicked and turned off the Mac. She waited patiently for 15 minutes while it "cooled itself off" (as she described it later).

But when she turned the Mac on again, *the same thing happened!* Pages spewed out of the printer like crazy.

Here's how it happened, and what she could have done about it.

At the end of one day, she tried to print her ten-page document. She chose Print from the File menu. *Nothing happened.*

She had Background Printing turned on, so instead of printing, she was actually creating a disk-based file in the PrintMonitor Documents folder in her System Folder. Of course, *she* didn't know any of this. She just knew that no printing was going on.

So what did she do? She tried to print the document again. It didn't work again, so she tried to print it *again.* Little did she know that she was creating one PrintMonitor document after another, all piling up in her PrintMonitor Documents folder, waiting to be printed. When no printing had started in those 30 seconds, she gave up and shut down the Mac.

Of course, the next time she started up, good old reliable PrintMonitor took up from where it had left off and sanguinely began to print all of those ten-page documents, one after another.

Judy could have solved this problem by calling up PrintMonitor and deleting the items from the list, as described in Chapter 30. But perhaps a simpler method would have been to open the PrintMonitor Documents folder and physically trash all the little icons therein.

Scripts

Mac OS 8.5 brought us another AppleScript System folder add-on — the Scripts folder. As AppleScript (see Chapter 22) becomes increasingly important to Apple, its corporate customers, and the legions of publishing companies who rely on AppleScript to automate their publishing and printing tasks, Apple realized that it needed a central place to *put* all the scripts being created. This folder is it. Instead of storing your finished AppleScripts in the menu or in the Shutdown Items folder (like the tutorial AppleScript in Chapter 22), you finally have a good place to keep your finished work.

Chief among the contents of this folder is the Folder Actions folder, which represents one of Mac OS 8.5's most interesting AppleScript developments. Folder Actions are scripts that get triggered automatically when you open, close, move, or resize a specific folder, offering a useful scheme for

automating workflow (automatic backups, forwarding, notification, processing, and so on). For complete instructions on the use of Folder Actions, look up AppleScript in Mac OS 8.5's Mac OS Help.

Shutdown Items folder

Any icon you put into Shutdown Items gets magically "double-clicked" by the Mac's ghost when you shut down the computer. Whereas the self-launching items in the Startup Items run just *after* the Mac starts up, anything in Shutdown Items — need we say — runs just *before* the Mac actually cuts off its own power.

And what possible purpose could that serve? We can think of a couple, offhand. First, you could put a sound file there — maybe Porky Pig saying "Th-th-that's all, folks!" — so that your Mac can bid you adieu at the end of a hard day's work. Second, you could put in a backup program's alias, or the alias of an AppleScript (like the one you can create in Chapter 22), so that it runs automatically before shutting the computer down for the day.

Shutdown Items (Disabled)

See "Extensions (Disabled) folder" previously in this chapter.

Speakable Items folder

As you'll find out in Chapter 23, most Power Macs can actually recognize speech — if you've installed the necessary PlainTalk software and rounded up a PlainTalk microphone. Even so, those Macs actually have a pretty limited vocabulary. In fact, you can see a list of the phrases they understand — just open your Speakable Items folder.

In other words, anything you put in this folder (almost always aliases) gets added to the Mac's vocabulary (almost always files and folders). If you have been working on a spreadsheet called "Fourth Quarter" a great deal lately, put its alias into Speakable Items; from now on, the Mac will understand you when you command: "open Fourth Quarter." See Chapter 23 for details.

Startup Items folder

Anything you put into this folder gets automatically double-clicked when you turn on the Mac. Normally, you might place a program (a word processor, say, or its alias) in the Startup Items folder, so that you can start working on it immediately when you turn on the computer. You can also put a particular document (or set of documents) in this folder to ensure that your Mac will be ready for you to start work immediately. If you put several items in here, they launch in alphabetical order — two alphabetical-order cycles, really: first all the "real" icons, then any aliases.

Just remember that whatever icons you put into this folder will behave as though you double-clicked them. You may get unexpected results if you put something you're not supposed to interact with (such as a Preferences file) into the Startup Items folder.

For details on the Mac's startup process, see Chapter 7.

Startup Items (Disabled)

See "Extensions (Disabled)" previously in this chapter.

Loose in your System folder

Every System folder contains several other files that aren't stored in one of the subfolders described in the chapter thus far, such as the Clipboard file, Scrapbook file, and Note Pad file.

The Clipboard file stores whatever you have most recently cut or copied. It's wiped clean whenever you shut down the Mac. It exists as a file primarily so that you can double-click it to remind yourself of what's on the Clipboard at the moment.

The Scrapbook and Note Pad files, of course, store the information you've typed or pasted using those desk accessories. See Chapter 3 for a delightful discussion of the tricks you can perform with these files.

All About Enablers

An *enabler* is, we suppose, a relative of the extension. It, too, is installed into your System Folder for the benefit of the Mac itself and has no settings that you can make. An enabler, however, is supposed to be stored loose in your System Folder and not in the Extensions folder.

Why Enablers exist

In days gone by, Apple unleashed a new, improved (and newly numbered) System software version about every six months. There was System 6.03, then 6.04, then 6.05, and so on. What necessitated each new version of the System was the introduction of a new model of Macintosh. Each had slightly different circuitry, requiring a slightly modified version of the System.

Unfortunately, keeping up with Apple was no easy feat. With each new version of the System, power users lurched into action, getting their hands on the new System by hook or by crook (which usually meant downloading it from America Online). The rest of us slogged along in quiet obsolescence, or got so much anxiety over having somehow been left in the dust that we finally got the new System from an Apple dealer.

The enabler is born

Mac Basics

So Apple did what they hoped was a clever thing: They left a convenient software outlet in the basic operating system. Into this socket could be plugged a little file that explained a specific Mac's circuitry to the System. As each new model of Mac came out, Apple wouldn't have to rewrite (and rerelease) the entire System Folder; instead, Apple could just make available the appropriate plug-in file, now called an *enabler.*

Sure enough, beginning in 1992, every new Mac model came equipped with an enabler. The enabler is important; without it, those models can't even run. And each enabler only works with one specific Mac model (or model family —there was only one enabler for the original three Power Macintosh models, for example).

Periodically—with System 7.5 and Mac OS 8, for example—Apple resets the counter by incorporating the computer instructions contained in currently distributed enablers. But it's not long, of course, before new models (and new enablers) appear once again.

The System File Itself

Mac users almost never think about the System file—that little suitcase icon inside the System folder. And why would they? The System file's primary duty is to serve the machine, not you. It's supposed to lurk behind the scenes, working with the machine's ROM chips (see Chapter 7) to manage windows, fonts, and menus.

TRUE FACT

The System Update Series

As the Mac gets more complex, Apple's challenge—adding new features that work with all the *existing* features and models—becomes more and more difficult. As such, Apple programmers are spending more and more of their time fixing ("patching") their own system-software code.

They sometimes release these fixes in the form of *System Updates*—collections of debugged control panels or extensions, new enablers, faster printer drivers, and so on. Unfortunately, there's no logic to these updates' names, their timing, or their distribution. Your only hope is to stay alert—subscribe to a Mac magazine, visit www.macintouch.com regularly, or join a user group.

Some of the best-known, relatively recent updates were **System 7.5 Update 1.0** (a four-disk set that turns any System 7.5 System folder into System 7.5.1; see Chapter 6) and **System 7.5 Update 2.0** (turns any flavor of System 7.5 into System 7.5.3, described in detail in Chapter 6). The massive installer that turned Mac OS 8 into **Mac OS 8.1** was also a system update, even though Apple didn't call it that. (Consistency in naming schemes has never been Apple's strong suit.)

For details on some of the older system updates, see Chapter 5 in the electronic edition of *Mac Secrets, 4th Edition* (on the CD-ROM that comes with this book).

Mac Basics

But as savvy Mac users know, you can indeed interact with the System file. You can drag-and-drop keyboard layouts or sound icons on top of it (or onto the System Folder icon), instantly installing them. Similarly, you can double-click the System file icon to open it into a window, where you can see all the keyboard layouts and sounds you've installed.

(For more on keyboard layouts, see Chapters 8 and 20.)

Apple Extras and Apple Leftovers

Even if you install the full System using the Installer onto a hard disk, there's a lot of System software left over on that system CD-ROM that came with your Mac. Every new Mac also comes with a folder called Apple Extras on the hard drive.

Apple Extras

The contents of the Apple Extras folder evolves with each system-software release. The Mac OS 8/8.5-era Apple Extras folder, for example, may contain such miscellany as:

- **Register with Apple.** If you have a correctly configured Internet account, this little applet launches your Web browser and visits a special Web page. There you're expected to provide your name, address, and other information to register your new Mac and get on some exciting new junk-mail lists.

- **Apple LaserWriter Software** includes the **Desktop Printer Utility** program, which, like its ancestors LaserWriter Utility (LU) and Apple Printer Utility, is a collection of miscellaneous PostScript laser printer-management features. You'll find our potent Desktop Printer Utility secrets in Chapter 30, where they rightfully belong. For now, we'll just point out that the Desktop Printer Utility is the key to making your laser printer quit spewing the wasteful start-up page every time you switch it on.

- **AppleScript** is a programming language that lets you automate certain tasks on your Mac. See Chapter 22 for a crash course.

  This folder doesn't just contain Script Editor, the program you need to write your own little programs (called *scripts*); it also contains several ready-to-run scripts. To run one of these little programs, you either double-click it or drop one of your own icons onto it. For example, the program called Add Alias to Apple Menu is one of the latter kind: Drop a regular icon onto it, and — presto — after a moment, an alias of that icon appears in your menu.

- **Mac OS Runtime For Java**. Java, as you may have heard, is a programming language that's required to appreciate certain Web pages fully — those with animations or games, for example. See Chapter 25 for the scoop on Java — and MRJ (the initials for this little program). The

bottom line: if you do your Web surfing with Netscape Navigator or Internet Explorer, you probably don't need this.

- **FireWire.** See Chapter 33 if you want to get inspired reading about FireWire, Apple's ingenious replacement for the nightmarish old SCSI technology. This folder contains the FireWire Support extension, which lets your Mac talk to whatever FireWire card you install.

- **Iomega.** The software for Zip and Jaz drives, such as the one that you may have had built into your Mac.

- **Monitors Extras Folder**. In here, you'll find a bunch of monitor-related software, such as DigitalColor Meter, a clever calibration program that walks you through the process of correctly adjusting AppleVision monitors.

- Although your Macintosh probably already has this software installed, the **Open Transport/PPP** suite is what your Mac needs to dial the Internet, as described in Chapter 25.

- **Sample Desktop Pictures**. As you can read in Chapter 4, Desktop Pictures is the Mac OS 8/8.1 "control panel" that lets you slap a photograph across your desktop. This folder contains a handful of gorgeous nature shots to get you started. (In Mac OS 8.5, such pictures are stored in the System folder ⇨ Appearance folder ⇨ Desktop Pictures folder.)

  Don't forget, by the way, that an equally stunning raft of *additional* desktop pictures came on your system CD, as described in a moment, and even more come with *this book's* CD.

- **QuickDraw 3D.** See Chapter 20 for details on this neat, but nichey, 3-D modeling technology.

- **Map Control Panel, Sound Control Panel.** Chapter 4 describes these two control panels, which have been superseded or laid to rest by the march of new system-software versions.

On your system CD

Depending on your version of the system software, the following programs may be on the startup CD that came with your Macintosh (the Mac OS 8.1 CD, for example):

Adobe Software

As of the Mac OS 8.1 CD, this folder contains two programs. First, there's Acrobat Reader, a free program that lets you read *PDF files* — electronic manuals, complete with fonts, graphics, and text in their original layouts. As you can read in Chapter 20, the Acrobat format has several attractive features, such as Find, Copy, and Zoom In/Out commands and Windows exchangeability. (Get used to it; Apple has announced that PDF will be the official graphics file format of Mac OS X, as described in Chapter 6).

Mac OS 8.1 and later also includes Adobe Type Manager (ATM), as described in Chapter 29.

America Online

Just when you thought you didn't have enough copies of the America Online starter software (see Chapter 26) coming to you in the mail, here's a spare.

CD Extras

This folder contains a host of handy add-ons, such as:

- **Additional Desktop Pictures**: More gorgeous photos you can drag-and-drop into your Desktop Pictures control panel (Mac OS 8 through 8.1) or your Appearance control panel (Mac OS 8.5). See Chapter 4 for discussions of these control panels.

- **Additional Modem Scripts:** A *modem script* is a tiny text document that explains the particular features of your modem brand to your Macintosh software. You need one specific to your modem model if you hope to get onto the Internet, as described in Chapters 24 and 25. If your Modem control panel doesn't list your particular modem brand, look through this folder to see if your modem model is among them. If so, drag it into your System folder ⇨ Extensions ⇨ Modem Scripts folder.

- **AppleCD Player:** We can't guess why Apple insists on giving us a duplicate copy of this program that's already in your menu, but there you have it.

- **At Ease Updaters**: For users of At Ease, Apple's front-end software that replaces the Finder with an extremely simple jumbo-icon, protected interface for the young and the clueless. These updaters bring your already purchased copy of At Ease up to date so it'll be compatible with the new OS you're about to install. For details on At Ease, see Chapter 14 in the electronic version of *Macworld Mac Secrets, 4th Edition* (on the CD-ROM that came with this book).

- **Eric's Solitaire Sampler:** Windows users aren't the only ones who can waste their time mindlessly playing Solitaire!

  In fact, depending on your Mac model, you may find any of several games on the hard drive (or on the system CD): Eric's Solitaire Sampler, Spin Doctor, or Super Maze Wars, for example. We won't take up precious pages describing them — if you have time for games, you have time to figure these out for yourself — but we are happy that Apple has begun to realize that games sell computers.

- **HyperCard Updates:** Brings already purchased copies of HyperCard, Apple's "software construction kit" with a cult following, into compliance with the latest system software.

- **Iomega Tools:** For Macs with built-in Zip or Jaz drives. These programs let you format new cartridges, duplicate cartridges with a minimum of swapping, reinstall the Iomega control panel or extension, and so on.

CD

- **MoviePlayer Extras:** MoviePlayer is the movie-playing program described in Chapter 23. This folder contains some classical-music files (in QuickTime format), animation, and graphics files to play with in MoviePlayer 2.5. It also houses a couple of plug-ins that give MoviePlayer 2.5 more features, as described in the accompanying Read Me file. (But read Chapter 23 to find out why all this may be obsolete with QuickTime 3 — or maybe not.)

- **Pointer Mode Control:** See "Pointer Mode" in Chapter 4.

- **QuickDraw 3D Extras:** Read Chapter 20 to find out more about QuickDraw 3D. This folder contains some sample 3-D images, texture files you can drag-and-drop onto them, and the classic 3-D arcade adventure, Gerbils!

- **QuickTime Sample**: A four-minute rock video QuickTime movie. Clearly, the producers hadn't read our Chapter 23, or they'd realize that their oddball frame size (400 pixels wide, 200 tall) is just asking for jerky playback.

- **Spanish Text-to-Speech:** Installs two new Macintalk speech voices — Carlos and Catalina — that know how to read Spanish and pronounce it correctly as it reads aloud. Read more about Macintalk and PlainTalk in Chapter 23.

- **Third-Party PC Card Drivers:** For PowerBooks. Contains the software needed to access modem PC cards from Global Village, Dayna, and Farallon/Netopia.

- **Universal Access:** Contains two control panels described in Chapter 4: CloseView and Easy Access, which make using the Mac easier for the disabled.

MACINTOSH SECRET

Gerbils!

You can't go through life claiming to be a true Mac user until you've tried Gerbils! It may be the most useful thing the average non-3-D-model building person may ever do with QuickDraw 3D (see Chapter 20).

Gerbils! is a game found on most system-software CDs, although it doesn't get installed by default. Drag its folder from your CD Extras folder onto the hard drive, make sure QuickDraw 3D's extensions are installed, and away you go!

As shown on the next page, Gerbils! offers you two different windows. The one on the left is the track-construction window; drag-and-drop the various track sections (loops, twists, humps, and so on) onto the master layout to change the terrain. The right window is where the action is: cute little 3-D gerbils zoom around your track, saying "bye-bye!" in cute little gerbil voices when they're bumped by other gerbils (and plunge to their deaths), all accompanied by a thudding rock soundtrack. Change your point of view with the Camera menu, whose commands (Gerbil Cam, Bird of Prey Cam, and Food Cam) need little introduction.

Gerbils! even offers an Easter egg or two. For example, hold down Option while choosing Rendering ▸ Textured Track. There, among the other track-texturing options, you'll now see two surprising track surfaces: BRIAN'S HEAD and DAN'S HEAD. Choose one to make your track paved with endless repetitions of the programmers' faces.

Actually, it gets better. Using ResEdit (see Chapter 21), you can paste your own photo into the PICT resource, ID 145 or 146.

Then tell your friends how it feels to have 3-D rodents running over your face all day.
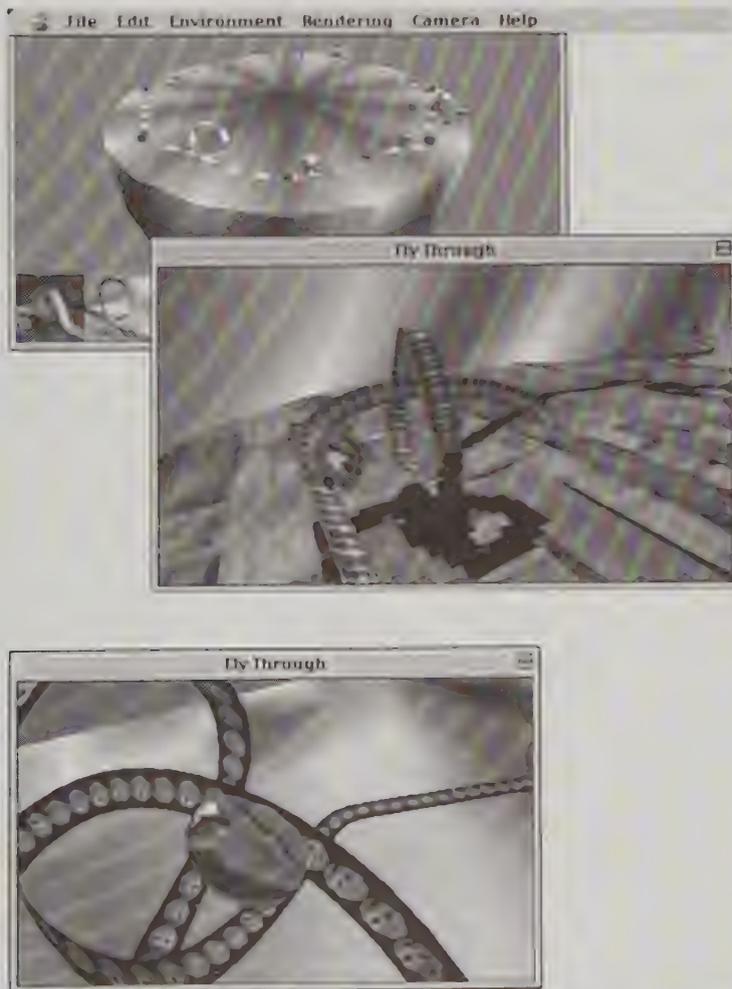
Disk Tools Images

Chapter 23 explains the wonders of *disk image* files. In this case, Apple has given you disk images that create Disk Tools floppy disks that can start up your Mac when everything else—even the CD drive—is dead.

Full Install Pieces

The Mac OS 8/8.1 Installer (described later in this chapter) is a strange hybrid. As the software installation proceeds, you get the distinct impression that, in fact, the Mac is simply launching one installer after another (instead of being guided by one mother-ship Installer).

In fact, you're right. Open Full Install Pieces ⇨ Software Installers, and you'll discover folders and installers for each *individual* piece of software that make up a Mac OS 8/8.1 installation. (The Mac OS 8.5 installer, by contrast, is much better integrated.)

Why is this trivia useful? For the times when you want to reinstall only one component of your system folder, not the whole thing. Your choices may include:

- **ARA Client Install:** The dialing-out portion of the Remote Access software, as described in Chapter 35.

- **English Text-to-Speech:** The software that lets your Mac read text (in SimpleText, America Online, Word 98, WordPerfect, ClarisWorks, and so on). See Chapter 23.

- **Info Center:** A weird little Web-browser-based series of information screens about Mac OS 8.x.

- **Internet Access:** The suite of control panels and extensions needed to dial up the Internet.

- **Internet Explorer:** Microsoft's browser. See Chapter 25.

- **Location Manager Install:** See Chapter 4 for a description of Location Manager.

- **Mac OS Runtime for Java:** See "Apple Extras," earlier in this chapter.

- **MacLink Plus, Open Transport/PPP, OpenDoc:** These control panels are described in Chapter 4.

- **Personal Web Sharing:** You can "publish" the contents of any folder on your hard drive—to the entire Internet. See Chapter 28 for details.

- **QuickDraw 3D, QuickDraw GX:** See Chapters 20 and 29, respectively.

- **System Software:** This is it—the *actual* system software installer.

Important Extra System Software

This folder contains extensions required by certain add-on equipment you may have bought with your Mac, such as video or networking cards.

Internet Extras

This folder may contain **Macromedia Plug-ins** (read Chapter 25 to find out about plug-ins) and **The PointCast Network,** a Mac program that puts a "ticker" of continually updated Web-page info, such as stock prices or news, on your screen (assuming you're willing to remain connected to the Internet all day long).

Mac OS Read Me Files

This collection of SimpleText documents is Apple's timid attempt to explain what the heck all those files are in your Extensions and Control Panels folder. Not nearly as complete, needless to say, as our own Chapter 4.

Netscape Navigator

The Web browser for people who'd rather not use the default browser, Microsoft Internet Explorer (see Chapter 25).

Restore Installed Software

This strange little program restores your hard drive to the way it was when you bought the machine — including *erasing all of your files* and restoring the original stuff that came on the hard drive.

Utilities

This folder contains three very important disk-related programs: Drive Setup (see Chapter 8), Disk First Aid (Chapter 8), and Disk Copy (Chapter 22).

Older system-software versions

Depending on your Mac model and system-software CD that came with it, you may also find these goodies:

Apple Video Player

If your Mac model has a *Video In* RCA jack on the back panel, it's capable of converting footage from your VCR or camcorder into a QuickTime movie. The software responsible for this *digitizing* is Apple Video Player. For complete instructions, see Chapter 23.

For PowerBooks Only

Today's Mac laptops come with a couple of special software bundles preinstalled on the hard drive (probably in, once again, the Apple Extras folder). You get an assortment of useful information and utility programs like these:

■ **PowerBook File Assistant** — This program is useful if you have two Macs — a PowerBook and a desktop machine at home, for example.

File Assistant solves the age-old problem of updating the appropriate machine's documents before and after you leave on a trip. In other words, it can *synchronize* a folder (or set of folders) on each machine, making sure that the most-recent files from each Mac exist on both Macs. (This program is the predecessor of Mac OS 8.5's File Synchronization control panel, described in the previous chapter.)

■ **Battery Recondition** — Use this program to fight the *memory effect* of NiCad batteries, the type used in most PowerBooks (and camcorders, by the way). The memory effect is a problem that develops if you repeatedly use up a battery only partway — and then recharge it. Eventually, the battery may come to believe that that halfway-discharged point is its *fully* discharged point. In other words, your battery now holds only half a charge.

Clearly, the solution is (whenever possible) to use your battery until it's empty, and only then recharge it. Battery Recondition is a little program that does exactly that, automatically — it uses up the remaining juice in your battery, then recharges it completely.

■ **Apple IR File Exchange** — Lucky, lucky PowerBook (and iMac) owners: your models contain a tiny red plastic transmitter. It's for wireless infrared networking. You can transfer files, or play games, between two thus-equipped Macs without connecting any cables between them. This software, IR File Exchange, is the program you launch when you want to begin such a transfer. (You can also equip a desktop Mac with wireless networking if you purchase for it a Farallon AirDock.) For details, see "Infrared Beaming" in Chapter 14.

■ **Remote Access Client** — Remote Access is the Apple software that lets you dial into one Mac from another one anywhere in the world — provided both are equipped with modems. This free software, called Remote Access Client, is what you use to dial *in;* Apple makes you *buy* the software for the receiving end. (It's called Remote Access Personal Server.) For details, see Chapter 35.

■ **PC Card Modem Files** — Recent PowerBooks let you install a modem simply by inserting a metal card — a *PC card* — about the size of your Visa card. This folder contains the extensions you need to install to make your PowerBook recognize such a modem.

Network Software Selector

This tiny application is useful only on Power Macintosh 6100, 7100, and 8100 models onto which you've installed Open Transport — the networking software described in Chapters 25 and 35. It simply lets you switch your Mac between the older networking software — known as AppleTalk — and the newer one, Open Transport.

Strange But True

(Talk about Strange But True! Choosing the Open Transport option in this little program actually makes your MacTCP control panel *invisible!* And when you switch back to AppleTalk, it makes your TCP/IP control panel invisible! Well, that's one way to prevent you from getting confused — make control panels disappear before your eyes.)

Crossing the Restarting Line

Shutting down certain older Mac models, as you may know, involves two steps. First, you choose Shut Down; after a moment, when the computer says "It's safe to shut down the computer now," you flip off the power switch. But that's not how TV sets and light switches work, so some confusion is inevitable, as this Mac fan discovered:

The whole family was astonished at how powerful our new Power Mac was. We had been taking turns using it all evening, and at around 10 P.M., everyone started turning in.

Except for Mom, that is. She used the computer for a couple more hours. Then, just before she got up to go to bed, a problem arose. She called Apple's help line.

Mom: Could somebody there please tell me how in the world to shut down my computer!? I've been trying to shut down for the past *three hours*!

Tech: You just press the button.

Mom: I've been doing that, and the computer keeps restarting!

Tech: Tell me what you are doing.

Mom: I go to the "Special" menu, I go to "Shut Down," and I release the mouse button. But it doesn't shut down! It just gives me a message that says, "It is now safe to shut down your computer," with only one button that says "restart," and when I press it, my computer restarts. How do I get it to shut down? It has been restarting for the past three hours!

Tech: No... not that button. The little white button in front of the computer. You know, the one you use to turn it on.

Mom: Ohhhhhhh, *that* one!

Mom was very embarrassed. In fact, ever since, whenever she needs any assistance from Apple, she has *me* call them; she thinks that when she gives them her name, they've got the word "idiot" next to her name on their database screen.

Text-to-Speech, English Speech Recognition

If you have a PowerPC-based Mac model or a Quadra AV model, your Mac can respond to spoken commands; the software is called **English Speech Recognition.** And if you have System 7.5 or later, your Mac — *any* model — can read text back to you; the software is called **Text To Speech.** Together, the speech technologies are known as PlainTalk.

PlainTalk software, however, doesn't get automatically installed. You have to use this separate Installer to do the deed. See Chapter 23 for more on speech features.

The System-Software Installer

The Installer is the program that gives birth to a System Folder — an extremely important program, in other words. It loads your Mac with all the system software described in the previous chapters. The Installer figures out

which pieces of software are required to operate your particular Macintosh model, and places each required file where it belongs. Every Mac comes with this Installer.

If you're like most people, you bought your Mac with the system software in place. Therefore, you may not have had to mess with the Installer. But everyone encounters the Installer at some point. You may use it for one of the following reasons:

- To eliminate problems in your current System Folder by replacing it with a fresh one (see Chapter 35)

- To install system software onto a backup cartridge or hard drive

- To replace your current system software with a newer version

- To create a leaner System Folder to conserve dwindling hard drive space and memory

As a matter of fact, we run the Installer every few months as a disk-health measure, replacing our older (and possibly corrupted) System files with fresh, clean, untarnished versions.

Mac Basics

Every Mac comes with a copy of this Installer — on the system-software CD-ROM that came with your Mac. (On pre-CD Macs, it's on a white floppy disk called *Install* or *Install Me First*.) In general, the master system-software installer is an icon (usually an alias) in the exact center of the CD window.

Why use the Installer

In the olden days, you could install the system just by dragging the files you need from the floppy disks onto your hard drive. But using the Installer is better and safer for the following reasons:

- The Mac looks for the various pieces of system software in specific locations within the System Folder. The Installer ensures that everything will wind up where it belongs (control panels in the Control Panels folder, and so on).

- Not every Mac model requires *every* piece of system software. The Installer copies only the files needed for your machine.

- If you're upgrading from one System version to another, the Installer can intelligently build a new System Folder around your old one, preserving whichever fonts, control panels, sounds, and extensions you added (although we don't recommend this technique, as we'll explain later).

- The Installer these days does much more than simply copy files from the CD. It also performs several important troubleshooting tasks, such as updating your hard drive's invisible driver software, checking it for problems, and making it ready to receive Apple's latest blessings.

- With the Installer, you can *customize* an installation to create a system perfectly suited to your needs. If you don't have a laser printer, for example, you can certainly live without the LaserWriter printer driver

taking up 900K of your hard disk. The Installer lets you choose which optional items get placed into your System Folder.

■ The software to be installed has generally been compressed to save disk space. The Installer automatically decompresses whatever you're installing, sometimes even rejoining pieces that had to be split apart. After reading all of the reasons above, it turns out you couldn't drag the system-software pieces to your hard drive even if you tried!

Step 1: Start up from the CD

Mac Basics

If you're doing a *clean install,* as described in our upcoming Installer Secrets, you don't have to start the Mac up from the system-software CD. In most other cases, though, doing so is the safest way to install system software. (Among other things, booting off the CD allows Disk First Aid to repair any problems with your hard drive before installing; until Mac OS 8.5, Disk First Aid couldn't operate on the startup disk.)

■ Insert your System CD-ROM, restart the Mac, and hold down the letter *C* key while the startup process is under way. (The *C* key makes the Mac start up from the CD instead of its own hard drive.)

■ If you arrive at the desktop and the icon of the hard drive, not the CD, is in the upper-right corner of the screen, you must have the rare Mac model that doesn't offer the "C-key" trick. In that case, open your Startup Disk control panel, select the system CD, and restart.

In any case, you should now see an icon in the CD window called something like *Install Mac OS 8.1* or *Mac OS Installer*. Double-click it (see Figure 5-4).
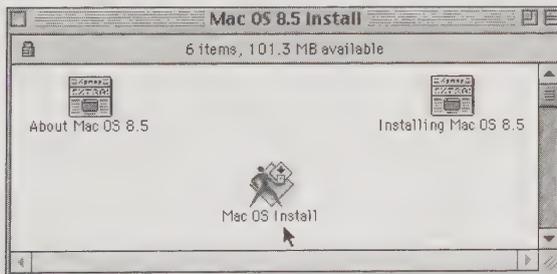
Figure 5-4: The Installer, as it may appear on the Installer disk.

Step 2: Run the Installer (Mac OS 8.x)

In all modern installers (Mac OS 8 and later), you're forced to wade through a sequence of silly screens before even initiating the installation process. They include:

- The Installer's title screen. In the Mac OS 8 through 8.5 installers, this screen explains the basic four steps of installation. Click OK or Continue.

- Next screen: Now you must specify onto to which disk you want to install a System Folder (see Figure 5-5). As you choose different disks from the pop-up menu (if you have more than one drive), you're shown how much space is available (and how much the installation requires).

  This screen offers the Perform Clean Install checkbox (in Mac OS 8 or 8.1) — or an Options button that makes that checkbox appear (in Mac OS 8.5). See the upcoming Installer Secrets for our diatribe on the importance of this option in times of troubleshooting.

  When you're finished with this screen, click Select.

- Next screen: the Read Me file. Read it if you like, and then click Continue.

- Next screen: A time-wasting annoyance, courtesy of Apple's lawyers — the software license agreement (which has, in the history of software, never been invoked). It says absolutely nothing meaningful. Click Continue — and then, in the annoying pop-up message that you *can't* dismiss with a tap of the Enter key, unlike all the dialog boxes so far, click Accept.

- Next screen: Click Start to install yourself a full operating system, complete with everything Apple thinks you ought to have. Or click Customize to view a list of all the stuff the Installer plans to give you (see Figure 5-6); feel free to turn off the stuff you won't be needing. You'll save yourself disk space, memory, and installation time.
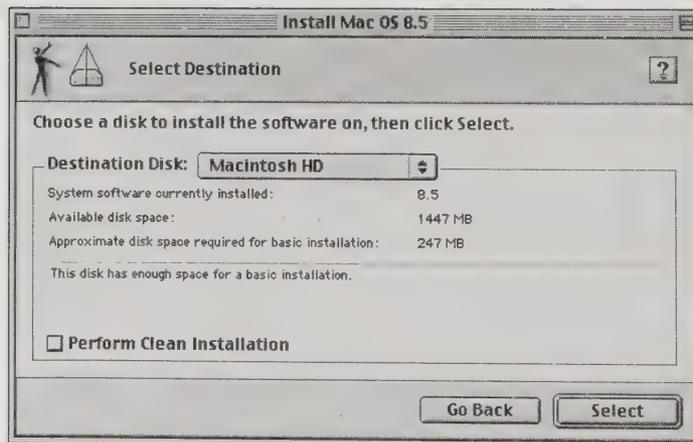
Figure 5-5: In Mac OS 8 and 8.1, the second screen you see lets you specify an installation disk — and whether or not you want to do a *clean* reinstall.

At this point, you can also specify exactly which components you want installed by clicking the Customize button. Doing so in Mac OS 8.5, for example, brings up the dialog box shown in Figure 5-6. Here you can not only specify which major chunks of the OS you'd like installed, but also which

chunks *of* those chunks (by using the tiny pop-up menu to the right of each chunk name, as shown in Figure 5-6). You also see how much space it'll take up on your hard drive. For example, the Apple Remote Access option reveals that it'll install not just the software necessary to dial up another Mac network, but also 50,000 modem scripts. (Fortunately, this is your opportunity to turn *off* the installation of the 49,999 of them that don't match your modem brand.)

Finally, click Start — and prepare to make phone calls, sort the mail, or read a magazine. The installation process isn't quick.

Figure 5-6: The Customize screen shows you all the little chunks of software the Installer is prepared to give you.

Step 2: Run the Installer (System 7.5–7.6)

The System 7.5/System 7.6 installers offer a slightly different sequence of events. In System 7.6, for example, the screen shown in Figure 5-7 encourages you to think "Safety First!" You're walked through the process of updating your hard-disk driver, checking your hard drive for damage, and reading the Read Me file before you can proceed with the installation.

The next box is the welcome screen; click OK or Continue. Now you arrive at the "Switch Disk" screen, where you click the Switch Disk button until the desired target disk is named in the middle left side of the dialog box (if, in fact, you have more than one drive).

Now you're faced with a decision (see Figure 5-7): You can perform the Easy Install or choose Custom Install to configure your own installation.

Clicking the Install button (or simply hitting Return) starts the Easy Install. Again, our advice is: *Don't do it.* The Easy Install copies onto your hard drive a huge assortment of software, much of which you don't need.
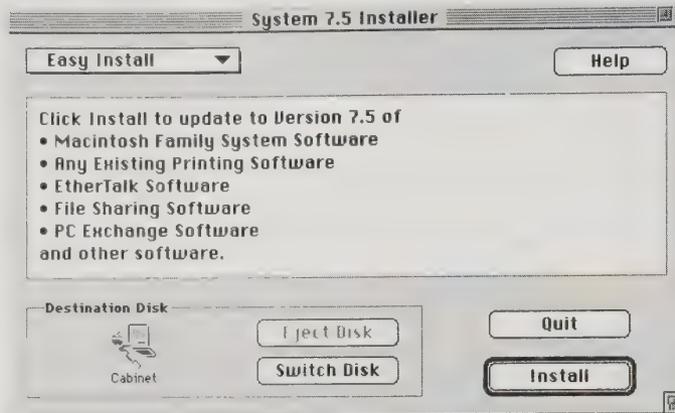
Figure 5-7: Click Install to begin Apple's Easy Install. If you want to install only certain items, choose Custom Install from the upper-left pop-up menu. If you have the older-style Installer, click the Customize button instead.

Your cheerful authors recommend, therefore, that you generally opt for the Custom installation. You're now allowed to choose only the items that do you any good (see Figure 5-8), using the following discussion as your guide. You can save plenty of installation time and clutter on your disk by selecting only what you need.
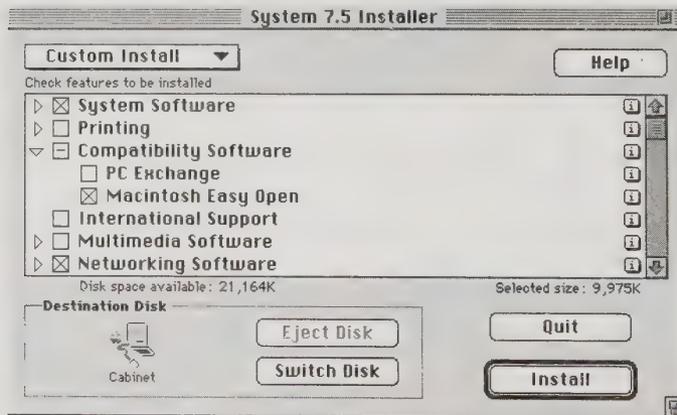
Figure 5-8: Fun aplenty in the System 7.5/7.6 Installer. You can resize the window; switch back to the Finder without quitting (to make more room on your hard drive, for example); click the little *i* button to get a description of something; and control what gets installed, even down to the individual control panel, because of the Finder-style triangle buttons.

What the components are

Once you've clicked Customize, you're offered a bewildering array of software modules to install. You can click the tiny *i* button to the right of each item for a terse and nerdy description. But we think plain English works better. Here's the rundown on the modules you'll be offered:

- **Mac OS 8.x** or **System Software.** This is the actual System folder you're trying to install. Unless you're just adding on to an existing System folder, you'll generally want this option turned on.

- **Internet Access.** This item gives you all the extensions and control panels needed to dialup the Internet and connect. We vote: leave it on.

- **Apple Remote Access.** Leave it off unless you regularly tap into a distant Mac network back at your office (see Chapter 35 for details).

- **Personal Web Sharing.** Why this item defaults to being *on,* we can't possibly imagine. As described in Chapter 28, this software lets you make folders on your hard drive available to in-house corporate intranets. Turn it off.

- **QuickDraw 3D.** Turn it off unless you're doing three-dimensional modeling and have purchased software programs that require this feature.

- **OpenDoc** and **CyberDog.** It blows the mind, but the installation checkbox of these unpopular "modular software" schemes defaults to being *on* in systems as late as Mac OS 8.1. Read about OpenDoc in Chapter 15, and Cyberdog in Chapter 27, of *Macworld Mac Secrets, 4th Edition* (on the CD-ROM that came with this book) if you must — but don't install them.

- **MacLinkPlus.** See Chapter 4.

- **Apple Location Manager.** See Chapter 4.

- **Text-to-Speech.** As described in Chapter 23, this is the PlainTalk software that lets your Mac read typed text out loud.

- **Mac OS Runtime for Java.** See "Apple Extras," earlier in this chapter.

- **ColorSync.** If you scan, retouch, and print color photos, install this. Otherwise, don't.

- **QuickDraw GX.** Don't install it. (See Chapter 29.)

- **English Speech Recognition.** The speech-recognition half of the PlainTalk suite, as described in Chapter 23. Try it if you like, but you'll probably wind up leaving it off.

CD

- **Worldwide Text Access** or **International Support.** Leave this off unless you've purchased a WorldScript language kit for your Mac (so that you can display, for example, Japanese text on your screen).

The following items are offered only in System 7.5 through 7.6:

- **Printing:** Printer drivers for Apple printers. Click the triangle next to this item's name, and select only the names of the printers you'll actually use. (You can always run the Installer again later if you want to connect to an additional printer.)

- **Multimedia Software:** The QuickTime movie extension and related files. Install them (unless you've updated to a newer version, such as the 3.0 version described in Chapter 23).

- **Networking Software:** For File Sharing (Chapter 35) and Internet access.

- **Utility Software:** This includes nonessential items such as the Apple Guide, AppleScript, and ColorSync. You should install AppleScript; many programs rely on it to automate certain tasks. Apple Guide is dispensable, though, if you don't think you'll need online coaching. And you can forgo ColorSync if you don't require monitor-to-printer color matching.

- **Fonts:** The basic set of True Type fonts that come with every Mac. If you're upgrading your system and you've purchased and installed your own fonts, you may not want to install these.

- **Apple Menu Items:** Installs the full complement of items that appear by default under the menu, but you can pick and choose among the available items. Here's your chance to eliminate the Jigsaw Puzzle before it gets installed on your Mac.

- **Control Panels:** The standard set of control panels.

- **Apple Telecom Software:** Megaphone, the answering-machine software, software for Apple fax modems, and so on.

The System 7.5 disks also offer *separate* Installers for PowerTalk and QuickDraw GX, both of which you should avoid.

System 7.0–7.1 notes

For advice in installing these older systems, consult Chapter 5 of *Macworld Mac Secrets, 4th Edition* (on the CD that came with this book). Sorry, kids — technology marches on, and these pages aren't getting any taller.

CD

Installer Secrets ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━■

The golden troubleshooting rule: A clean install

Here's one of the most important secrets in this whole book: There's a difference between installing System software and performing a *clean install*.

Mac Basics

When you run the Installer under normal circumstances, it actually *updates* whichever System you already have on your disk. This is a great feature; suppose that you're using System 8.1 and you customize it to the hilt with desk accessories, control panels, and so on. When you upgrade to System 8.5, the Installer thoughtfully preserves all of your customizations: fonts, sounds, DAs, extensions, and so on. (Even if you reinstall the *same* version of the System, this same process takes place.)

A potential problem with this technique lurks, however. If there's some dormant corruption or problem with the existing System file, it's still there when the file is upgraded to the new version of the System. (That's why you sometimes hear of people who have reinstalled the System for the purpose of eliminating some mysterious crash they've been having—and it *doesn't work*. They're just building one System file onto an existing bad one.)

To get around this, you can force the Installer to place a *completely new* System Folder onto your disk. It won't just update the existing System; it creates a completely clean, untarnished, factory-fresh one. This process is called "doing a clean reinstall."

In Mac OS 8.0 and 8.1, it's incredibly easy to do a clean install. On the welcome screen of the Installer, the checkbox that says "Perform a clean install" stares you in the face. Turn it on. (To do a clean install of previous versions of the System folder, see Chapter 36.) The important thing to understand is that when the installation is over, you'll have *two* System folders: your old, corrupted one (called Previous System Folder) and your new, perfect, un-customized one (called System folder).

Worth Learning
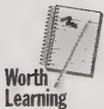
Your Mac should hum along delightfully at this point. Unfortunately, all your customized fonts, preferences, desk accessories, and so on are stranded back in your *old* System folder. But that's easy enough to solve; again, Chapter 36 offers step-by-step instructions. (Or you can use Conflict Catcher 8, whose Clean-Install Merge feature makes copying those useful items into the new System Folder as easy as clicking checkboxes.)

A clean reinstall of System software is almost guaranteed to improve the performance and reliability of your Mac.

The Un-Installer

You can use the Installer to *remove* printing and networking software from your current system if you no longer need it.

Mac OS 8.x Installer: Run the installer. On the screen where you choose a hard drive, select the same hard drive you've previously installed onto. When you click Select, the box shown in Figure 5-7 appears. Click Add/Remove. You're now shown a list of software components you can un-install!

System 7.5/7.6 Installer: Choose Custom Remove from the upper-left pop-up menu.

Pre-System 7.5 Installer: First click the Customize button to open the Customize window. Then hold down the Option key; the Install button turns into a Remove button.

With the Option key still depressed, scroll through the configuration options. Items that can't be removed are dimmed. Select what you'd like to remove from among the undimmed items and click the Remove button. The selected items will be deleted from your System.

Don't restart until you're good and ready

It's a creepily annoying fact of life: Every time you install almost anything these days, the Mac makes you restart after the installation.

Contest Winner

But free book winner Ubence wanted to install a series of software-module updates: the Mac OS 8.1 updater; a new version of Open Transport; PlainTalk; and so on. He realized he'd go quietly mad if he had to restart after each installation. He became determined to find a way around the Mac's insistence at restarting after every newly-installed module.

His solution was to copy all the installers to his hard drive; start up the Mac from his system CD; and *then* install the software. Amazingly enough, he didn't have to restart a single time.

Speed Tip

The lesson: If you start up from a *different disk,* you can freely install software onto your regular internal hard drive without having to restart — until *you* want.

How to prevent a component from being installed

It'll happen to you. If not today, tomorrow. If not tomorrow, then someday. But it'll happen: You run a software installer (not necessarily from Apple). And the stupid thing tries to give you an *older* version of something — QuickTime, the Chooser, AppleScript, whatever — than the version you've already got, wiping it out in the process.

Or this: An installer tries to give you a *newer* version of some component you've already got, but you *want* the older version. (That was the situation, for example, for many Radius MotoDV owners in 1998 who had been producing full-screen, seamless video with QuickTime 2.5 — but got blotchy graininess when they upgraded to QuickTime 3.0.) What's a Mac fan to do?

Simple: Put a *folder* of the same name into the target location. That is, put a folder called QuickTime into the Extensions folder; or a folder called Chooser into the Apple Menu Items folder; and so on. (Beforehand, of course, put the *actual* QuickTime or Chooser file out on the Desktop for the moment.)

Now run your software installer. It won't replace the folder — because the Mac OS won't *let* you replace a folder with a file of the same name! Thwarted, your installer will proceed with its placement of other components; when the installation is complete, trash your temporarily named folder and restore the component you hoped to keep.

TRUE FACT

The secret message in the System file

Nobody doubts that Apple's renowned system-software programmers have a sense of humor. But here's how you can prove it to yourself.

Launch Microsoft Word. While pressing the Shift key, choose Open from the File menu. Navigate to your System Folder and open the *System file* itself.

If you're using System 6, there's a copyright notice and only one other intelligible sentence: *"Help! Help! We're being held prisoner in a system software factory!"*

The joke was good enough to live on. If you open the System file for System 7.0 through 7.1 this way, the sentence says, "Help! Help! We're *still* being held prisoner in a system software factory!" And in System 7.5, it changed again, to "Help! Help! He's STILL being held prisoner in a system software factory!"

Interestingly, if you try this trick in System 7.5, you can scroll down into the document for an extremely interesting set of additional credits. (We'd give almost anything to know precisely what services were provided by Domestic Partner Amy, the Underpaid Process Dude, or The Flake.)

The saga finally ended in System 7.6: "Mercenaries hit the software factory and freed the prisoners." (And the programmers' names are categorized into two lists: "On contract:" and "Freed, armed, and dangerous:". Alas, the legions of fans following the action-movie-inside-the-OS were disappointed to find out that that was truly the end of the adventure; Mac OS 8 and later make no reference to hostages or mercenaries of any kind whatsoever.

TRUE FACT

Startup-disk switching on the fly

If you do much switching between system disks, the routine of opening the Control Panels folder, opening Startup Disk, closing Startup Disk, and restarting the Mac gets tired fast.

If you have Conflict Catcher, however, an easier solution awaits. Once it's installed, you can hold down the space bar during startup; when the Conflict Catcher window appears, choose a disk from the Startup Disk pop-up menu. Your Mac will automatically restart with the new start-up disk you specified. (If your Conflict Catcher screen doesn't show the start-up-disk menu, choose Edit ⇨ Preferences ⇨ General, and then turn on the option called "Show Startup Disk Menu.")

Switching between System Versions

Whenever you switch major System versions — from 8.1 to 8.5, for example — compatibility is an issue. Older programs (especially games, ATM, fax/modem software, Suitcase, and After Dark) may not run until you get upgraded versions.

You can eat your cake and have it, too. As long as your Mac doesn't *require* the very latest system, you can install *both* Systems and switch between them as needed. Here are several methods.

Two different disks

The easiest way to set up a two-System environment is to install one system on each of two drives (your hard drive and a SyQuest or Zip disk, for example).

To switch from one to the other, do this:

1. Open the Startup Disk control panel.
2. Click the icon for the disk that contains the System to which you want to switch.
3. Restart the Mac.

Two different disks (occasional method)

Suppose you almost always use Mac OS 8.1, but occasionally want to run Mac OS 8.5 (or vice-versa). If you have two hard disks (or an external Zip, Jaz, or similar device), try this. Install 8.1 on the hard drive built into your Mac. Install 8.5 on the external drive.

CD

On the day you want to start up with Mac OS 8.1, switch on the computer. Press the ⌘, Option, Shift, and Delete keys continuously. The Mac *ignores* the internal hard drive, Mac OS 8.1 and all. In fact, the drive's icon won't even show up on the Desktop. Instead, the Mac will boot from the first System Folder it finds — in this case, Mac OS 8.5 on the external drive. (You can then bring your primary hard drive back onto the screen using SCSIProbe, the control panel included on the CD-ROM with this book.)

Or get this: If you hold down ⌘, Option, Shift, Delete, *and* a number key — corresponding to the SCSI ID of the disk you want to start up from — your Mac starts up from that corresponding device!

You read it here first, kids.

One disk

Conventional wisdom has it that you should never put two System Folders onto a single hard disk, or you're certain to get crashes.

Worth
Learning
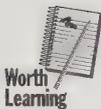
Actually, doing so is utterly safe. Go ahead and keep two System Folders on one disk. Only one of them at a time can display the telltale Macintosh icon on its folder (and all the special folder icons inside). The other System Folder will be officially disabled.

The one functional System Folder is, in programmer parlance, the *blessed* folder — the one that will be in charge the next time you start up the Mac.

So how do you switch?

The easy way

Get Conflict Catcher 8. Simply choose the System Folder you want from its Startup menu, and then restart the Mac.

The cheap way

1. Remove the Finder from one of the System folders. (Put it on the desktop, for example.)

2. Open and close the other one.

   The second System folder is now "blessed."

3. Restart the Mac.

To restore the first System folder, put its Finder back in (click it and use File ⇨ Put Away, for example) — and then repeat the two steps above.

The Great Invisible-File Collection

The Mac, in its efforts to be user-friendly, hides all kinds of technical goings-on from you. If you use the Find File program's "find invisible" option (see Chapter 3), however, you can view an appallingly long list of all the files the

Mac chooses to make invisible. You'll also spy these folders if you examine your own hard drive via network, while seated at another Mac.

■ **Shutdown Check:** You've undoubtedly seen the "Your Macintosh was shut down improperly" message when you restart after a crash. (Then again, if you take our advice and turn off the "warn me" checkbox in the General Controls control panel, you never saw that message again.)

Anyway, when the shutdown doesn't go as planned — that is, when the computer crashes — the Mac doesn't get a chance to delete this little invisible file as it usually does during a proper shutdown. The next time you start up, the presence of the Shutdown Check file triggers the "shut down improperly" dialog box on the next startup — and, in Mac OS 8.5, launches Disk First Aid on a quest to repair any hard drive damage that occurred during the crash.

■ **VM Swap File:** Virtual memory, as you can read in Chapter 9, works by setting aside a large chunk of hard drive space to use as temporary memory. The chunk of space is actually a file — called a *swap file*. This is it. It goes away if you turn off virtual memory.

■ **Desktop DB:** The Desktop BNDL file. It's where the Mac stores the *bundles* — the relationship between a certain program or document and its icon. See Chapter 1 for details.

■ **Desktop DF:** Stands for Desktop Files. This is the database that records what files you've got and what the icons look like.

■ **Move&Rename:** You'll see this mysterious invisible folder only if your Mac has ever been networked (connected to other Macs). It's used by the Mac's File Sharing feature to prepare for the moment when somebody at a remote Mac tries to move or rename a file on your disk.

■ **Icon:** As we mentioned in Chapter 1, you can paste a new graphic onto any file, folder, or disk to serve as a custom icon. Well, the Mac must store that pasted-in icon graphic *somewhere*.

When you paste a new icon onto a *file,* your custom graphic is stored in the Desktop file. But if you replace the icon of a *disk or folder,* the Mac creates the Icon file. (Caution: If you trash this invisible file, your disk or folder's icon will be in an iconic no-man's land, having neither its original nor its replacement icon . . . so it's best to leave this, and all invisible icons, alone.)

■ **Trash:** The Trash in System 7 and later doesn't just *act* like a folder — it *is* one. That's why you can drop things onto it, double-click it to view it as a window, and so on.

■ **Desktop:** The Desktop folder holds any icons that, under System 7 and later, have been placed out on the Desktop outside of any window. Keep this in mind when you try to access your Mac over a network — the very icons you put out on the Desktop so they'd be *easy* to find are, when viewed over the network, hidden away in the Desktop folder.

- **ATM.temp, Brand.BRD, Aladdin Transaction Info:** In the beginning, software didn't require serial numbers. But software pirates ate into the software companies' profits, so serial numbers were born to thwart illegal copying.

  But eventually, the software pirates realized that the passwords were being stored in the software's Preferences files, which could be easily copied or e-mailed to friends. And that's when software companies began storing your passwords as *invisible files.*

- **TheFindByContentFolder, TheFindByContentIndex:** These two invisible files are the indexes created by Mac OS 8.5's Find command. As explained in Chapter 3, this Find program can search an enormous hard drive instantaneously — even if you're looking for text inside documents — as long as you've taken the time to create an index of everything on that drive.

  TheFindByContentFolder is the invisible folder that stores the indexes for a drive; TheFindByContentIndex is the actual invisible index file, which can be many megabytes in size.

- **Temporary Items:** The Temporary Items folder is a locked, invisible folder that lives permanently at the root level of your hard drive. Applications are allowed to use this hidden folder for any purpose; generally, programmers instruct applications to use the Temporary Items folder to store scratch files or other temporary data. QuarkXPress, for example, drops an XPress Temp file in this folder whenever you have a Quark document open. Microsoft Word also uses this folder as a temporary dumping ground. In the days of Word 5, these files were called WordTemp-1, WordTemp-2, and so on; Word 6 tags them with bizarre names such as <<dftmpAIBDBENKkkkkkk>. (Our theory behind the name: This is the sound Word 6 users make when they first encounter the program's bloated interface.)

  Incidentally, *you* are absolutely forbidden to name a folder Temporary Items. No matter where you create a new folder — on the Desktop, on the root level of your hard drive, or anywhere else — you can't name it Temporary Items. If you try, a dialog box asks you to choose another name. (Some programs create a Temporary Items folder inside the Preferences folder, but it's not really called Temporary Items. Look closely — there's an extra space at the end of the name; that's the only way the Mac will accept it.)

ANSWER MAN

Return of the Rescued Items

Ever wonder about the strange *Rescued Items* folder that periodically appears in the Trash? Usually this folder shows up when you restart your Mac after a crash or freeze. It contains, believe it or not, all the files that were in the invisible *Temporary Items* folder when you crashed.

When you finish using a program and use the Quit command, the program is supposed to neatly purge the Temporary Items folder. But if your system crashes, the program never gets a chance to empty the Temporary Items folder.

Then, when you restart and your Mac notices that you still have files left over in the Temporary Items folder, the System automatically creates a new Rescued Items folder in the Trash and moves the files there; it's the Mac's last-ditch effort to salvage your unsaved work. Every now and then, you can actually recover some of your work by poking into the rescued temp files.

Chapter 6

The System Software Museum

I n a little more than a decade, Apple has served up no fewer than 37 different versions of the Mac operating system. We will attempt in this chapter to guide you on a never-before-attempted journey: We will describe every permutation of the Mac's system software, from the short-lived System 1.0 to the sprawling, sophisticated System Mac OS 8.5. Beyond that, we'll show you exactly what to expect from Apple's as-yet-unreleased system updates and the still-evolving Mac OS X.

The Jurassic Era: System 1.0–4.2

Why create a museum of the Mac's system software? For one thing, exploring the nitty-gritty of system compatibility may prove valuable to Mac troubleshooters. It can be handy to know, for example, that in a pinch, you can run an LC II with System 6.0.8, but not 6.0.7. Or that a Quadra 630 can run System 7.1.2P, but not the nearly identical System 7.1.2. Furthermore, the rash of System 7 varieties has boggled even us. Quick, without looking: What's the difference between Versions 7.1.1, 7.1.2, 7.1.3, and 7.5? And what on earth was System 7.5.3 Revision 2.1?

On a more philosophical level, this retrospective provides a stunning overview of just how far the Mac has come since its introduction. As we dug up this information, we were continually surprised to learn how many of the basic Mac interface features that we take for granted weren't around when we bought our first Macs.

For example, did you know that in the original Finder, you couldn't drag a disk into the Trash to eject it? That folders were nonexistent in Open and Save dialog boxes? That the original Calculator buttons were in a completely different order?

Join us now as we stroll down the corridors of the System Software Museum. Watch as the Mac operating system evolves before your very eyes.

System 1.0

The original Mac operating system was tiny by today's standards — a total of about 216K, including the Finder (46K) and a solitary printer driver, the Imagewriter file. (Note the lowercase *w*. The ImageWriter designation came along later.) Desk accessories, such as the Alarm Clock and Calculator, were installed in the System file, which was a whopping 142K, with fonts accounting for about 86K.

If you opened the System Folder on an original Mac 128K, you saw only six files — all with identical Finderlike Mac icons (see Figure 6-1).

Finder   System   Clipboard File

Imagewriter   Scrapbook File   Note Pad File
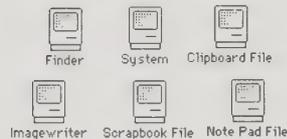
Figure 6-1: The entire contents of the System Folder — all 216K of it — as it appeared in 1984.

The original system also included a separate tutorial disk, called Mousing Around, to help new users get acquainted with using the mouse. Remember, the whole concept of a mouse as a pointing device was new to the general public in 1984. Mousing Around let you play connect-the-dots and plunk out tunes on a tiny on-screen keyboard to hone your mousing skills (see Figure 6-2). We have one dark secret to tell you about Mousing Around, though — it was incompatible with the Finder! Apple actually had to ship a different version of the System and Finder on the Mousing Around disk. If you tried to use your Mac using *that* copy of the System, your Mac crashed!

CONNECT THE DOTS

Try moving the mouse yourself. The pointer can move all over the screen. It will never disappear. Run the pointer over each number to connect the dots.

!

9.   10.   .2   .3

8 ·   · 4

6

7   ·5
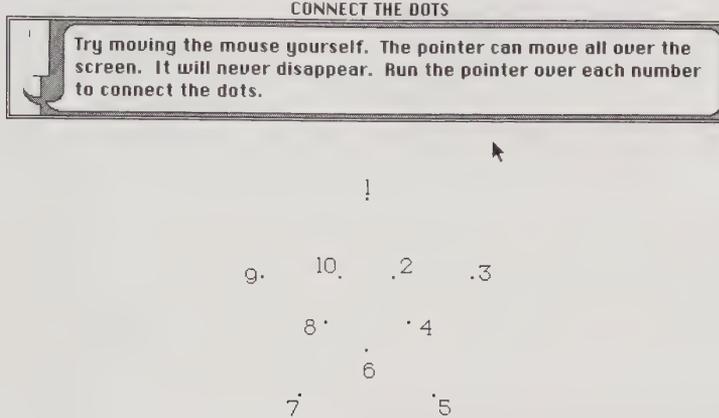
Figure 6-2: Hey, remember this? Mousing Around was mouse training at its most basic — and it came with all the early Macs.

System 1.1

It took less than four months for Apple to release its first system upgrade for the Mac. System/Finder 1.1 was introduced on May 5, 1984, the same week Apple announced that it had already sold 70,000 Macs.

The big selling point of 1.1 was disk-copying speed. Apple increased the size of the Finder's memory buffer, significantly reducing the number of swaps it took to copy a disk on Macs with a single floppy drive. Improved system code also reduced the length of the system startup by about 20 percent and sped up returning to the Finder after quitting an application.

Finder 1.1 also included, for the first time, a Set Startup command in the Special menu, so you could designate a specific application to launch automatically when starting the Mac.

Still, there was no New Folder command; there was always an empty folder on each disk, no matter how many times you tried to delete it. If you renamed the empty folder (to use it for something), another empty folder appeared instantly. And there was no Shut Down command!

System 2.0

Nearly a year went by without the release of a new system. Then, in April 1985, Apple engineers unveiled System 2.0. Evidently, they had done most of their tinkering in the Finder; its version number jumped from 1.1 to 4.1. (And for the next three years, these two primary components of the operating system — the System and Finder — continued to have different version numbers.)

Strange But True

Finder 4.1 was not only faster, it was packed with new features. Some commands (such as Put Back and Close All) were removed forever. For the first time, list views displayed tiny icons next to file names. A new desk accessory, Choose Printer, was introduced — the forerunner of the Chooser. The Empty Folder command was replaced with the New Folder command. Another new command, Print Catalog, appeared in the File menu; it let you print a listing of a disk's or folder's contents. The Special menu sported two new commands: Shut Down and Use MiniFinder.

The MiniFinder was an embryonic version of what would someday be At Ease. Here's how it worked. You selected the icons of the applications you wanted and then chose Special ⇨ Use MiniFinder. A dialog box appeared, asking whether you wanted to install the selected applications in the MiniFinder. After that, whenever you quit an application, the MiniFinder dialog box would open, showing the icons of all the programs you had installed. You then could launch an application by double-clicking its icon.

Surprisingly, it wasn't until Finder 4.1 that dragging a disk icon into the Trash resulted in ejecting the disk and removing its icon from the Desktop. In Versions 1.0 and 1.1, you had no choice but to use the Eject Disk command — and only then could you drag the icon to the Trash to remove it from the Desktop.

All these changes made for a much more sophisticated and polished operating system. But, of course, even these enhancements weren't enough for some people. Mac gurus were already searching for ways to optimize Mac performance. In early 1986, one Mac magazine suggested rebuilding the Desktop. Doing so, an article pointed out, would trim "15K worth of System-slowing stuff" from your Mac.

The Official SECRETS Macintosh Time Line

1976

1984

MAY
David Pogue and Joseph Schorr, in OH and NY, respectively, graduate from seventh grade.

JANUARY
The Macintosh 128K is introduced with System 1.0. Price: $2,500.

MAY
System 1.1 is released.

APRIL
Steve Wozniak and Steve Jobs, age 21 and 26, finish work on a preassembled computer circuit board. It has no keyboard, case, sound, or graphics. They call it the Apple I. On April Fool's Day, they form the Apple Computer Company.

JULY
The Apple I board goes on sale to hobbyists for $666.66.

FEBRUARY
Navy Captain Bruce McCandless and Army Lt. Colonel Robert Stewart become the first humans to fly free of a spacecraft during a Space Shuttle mission.

Evolution of the folder

Many elements of the Mac operating system have remained constant as newer versions of the system have been developed, but most have gone through at least a few little refinements. Folder icons are a good example. Sure, there were folder icons in System 1.0—but the original folders were different: They had four widely rounded corners and tabs that were one pixel shorter than today's folders; the System 7-era design (right) featured three sharp, pointy corners and a slightly rounded upper-right corner (look closely—a one-pixel chunk is missing, creating a slightly softer edge). And, of course, with Mac OS 8, the folder got yet another—and much more dramatic—makeover.

Mac Secrets   Mac Secrets

The Trash also received a tiny cosmetic change. In the older versions of the system software, the lines indicating the ribbing on the body of the can were drawn with edges leading off to the right. In Finder 5.0, the Trash can design was inexplicably flipped around, with the lines trailing off to the left, and it stayed that way right up until the arrival of Mac OS 8's 3-D-style icons. Now *that's* progress.

Interestingly, rebuilding the Desktop didn't just erase Get Info comments back then: It removed *all* your folders, leaving all your icons naked and shivering on the Desktop.

System 3.0

The Mac Plus appeared in January 1986, equipped with a hot new Mac operating system—System 3.0 and Finder 5.0.

1984 **1985** **1986**

NOVEMBER
Ronald Reagan is elected to a second term as President of the United States.

MARCH
Construction of the MX missile is approved by Congress.

SEPTEMBER
The Mac 512K is introduced with a list price of $3,200. At the same time, the price of the Mac 128K drops to $2,200.

JANUARY
Apple announces the first LaserWriter printer. Price: $7,000.

APRIL
Finder 4.1 is released. The Empty Folder command is replaced by the New Folder command.

JANUARY
The Space Shuttle Challenger explodes. The Mac Plus debuts. The Hierarchical Filing System (HFS), earlier introduced with Apple's first hard drive (a non-SCSI, 20-megger) wins InfoWorld magazine's 1986 Readers Choice Award for OS product of the year.

This upgrade brought some of the biggest changes in the Macintosh operating system to date. It featured a faster and more efficient Finder. It introduced the RAM cache — a small portion of superfast memory that speeds up Mac performance by storing frequently used instructions during a work session (today called Disk Cache). This was also the first version of the system that came with an Installer.

The most significant change was, without question, the mainstream introduction of the Hierarchical File System (HFS), replacing the old Macintosh File System (MFS). The old MFS system, you may recall, was nonhierarchical. In other words, you couldn't nest one folder within another. Oh, you could *put* files into a folder, but as far as the Mac's brain was concerned, all the files were on one level — the only level. When you used an Open or Save dialog box, the folders disappeared and all your files appeared in one gigantic list. (HFS had first appeared as a patch to accompany the HD20, Apple's 20MB hard disk, which hooked up to the floppy connector on the back of the Mac and which could have a floppy drive daisy-chained to it!)

System 3.1

You don't hear much about this version. It was released just one month after System 3.0 and was paired with an upgraded Finder — Version 5.2. Evidently, it had serious bugs; this is one system that Mac gurus of the day urged users to avoid.

System 3.2

Apple released System 3.2 in June 1986 (along with Finder 5.3) to fix about 30 bugs. Among other things, this release featured a redesigned Calculator. The old Calculator, frankly, drove a lot of people crazy; its buttons didn't match the layout of the numeric keypad — the division, multiplication, and equal buttons along the top row were in the wrong order (see Figure 6-3). The new Calculator had (and still has) a layout that exactly matches the numeric keypad on Apple keyboards.

1986   **1987**   **1988**

JUNE
Apple releases System
3.2 and Finder 5.3.

APRIL
AppleShare 1.1 is introduced.

JANUARY
Apple introduces the first
CD-ROM drive, the
AppleCD SC, for $1,200.

FEBRUARY
Mac gurus suggest speeding up
your Mac's performance by
rebuilding the Desktop, thereby
reducing system clutter by 15K.
Swedish Premier Olaf Palme is
assassinated in Stockholm.

FEBRUARY
Disk First Aid is born. The Tower
report finds that President Reagan
was "confused and uninformed"
about the Iran-Contra affair.

OCTOBER
The stock market crashes.

Figure 6-3: The layout of the old Calculator (left) didn't match the numeric keypad. The current layout (right) was introduced with System 3.2.

This update also fixed problems with the Chooser. It patched up a problem that was causing italicized fonts to get mysteriously chopped off when printed, and it also fixed bugs involving lost files and system crashes.

System 3.3

This incarnation of the system was paired with Finder 5.4. It debuted in January 1987 and was a slight upgrade from 3.2. It was designed to accommodate networked Macs that used AppleShare.

System 4.0

In March 1987, Apple released System 4.0. This time, the Finder didn't get upgraded; the current version (5.4) remained. Apple recommended this system for all Macs with at least 512K of RAM. In other words, this was the first system that could *not* be run with the original Mac 128K. Mainly, System 4.0 fixed bugs that were still floating around in Versions 3.2 and 3.3.

1988   **1989**

JUNE
Apple releases System 6.0, the first
version of the OS to include the
MacroMaker, CloseView, and Map
utilities. The price is $49.

APRIL
Apple announces the FDHD External
Floppy Drive for a price of $629.
Takeover rumors swirl.

SEPTEMBER
Apple introduces the Macintosh
Portable.

FEBRUARY
Panamanian ruler Gen. Manuel
Noriega is indicted in federal court
for assisting the Medellin drug cartel.

NOVEMBER
George Bush is elected President.

AUGUST
System 6.0.3 is released
with the SE/30.

Cosmetic changes took place, too. Mac Pluses and ImageWriter IIs rolling off the assembly line were no longer beige. They were clothed in Apple's official new color: platinum, a gray color that would remain untouched on desktop Macs for 11 years. Not until the radical iMac design would Mac fans get a break from gray.
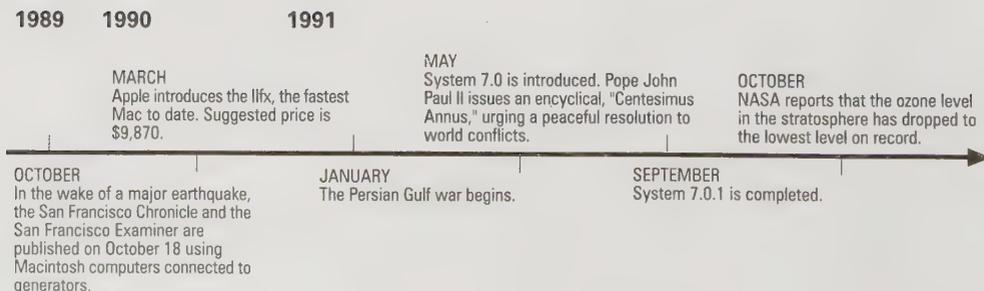
System 4.1

This upgrade was released in April 1987 along with Finder 5.5. The new system came with AppleShare 1.1, which was required for networking the Mac II. Apple recommended this version of the system for the Mac Plus and higher. Among other things, System 4.1 improved performance of *large capacity* hard drives — meaning, of course, any drive over 32MB!

System 4.2

This update was released in October 1988. It became available to current Macintosh users as part of the Apple System Software Update 5.0, which included System 4.2 and Finder 6.0. This update introduced the first version of MultiFinder — the pre-System 7 answer to multitasking. MultiFinder (code-named Juggler) let you run two or more applications simultaneously and switch between them by clicking an application icon in the menu bar. (Andy Hertzfeld's rival multitasking technology, called Servant, was never officially adopted by Apple.)

The Victorian Age: System 6

The System 6 era began in August 1989 with the release of System 6.0.2. (This also began the era of *three*-digit system numbers; a change in the third digit, after the second decimal point, indicates an even more minor upgrade than a change in the second digit.)

1989   1990   1991

MARCH
Apple introduces the IIfx, the fastest
Mac to date. Suggested price is
$9,870.

MAY
System 7.0 is introduced. Pope John
Paul II issues an encyclical, "Centesimus
Annus," urging a peaceful resolution to
world conflicts.

OCTOBER
NASA reports that the ozone level
in the stratosphere has dropped to
the lowest level on record.

OCTOBER
In the wake of a major earthquake,
the San Francisco Chronicle and the
San Francisco Examiner are
published on October 18 using
Macintosh computers connected to
generators.

JANUARY
The Persian Gulf war begins.

SEPTEMBER
System 7.0.1 is completed.

System 6.0.2

Savvy Mac fans noticed a single visual change in System 6.0.2 that immediately signaled the presence of System 6: a single black pixel. This extra screen dot appeared at the left edge of any Finder window, where the double line beneath the disk information joined the left wall of the window. (And by the way: What happened to System 6.0 and 6.0.1? The former was so buggy that it was immediately replaced — and the latter was so buggy that it was never even *released.*)

By this point, the system disks had grown into a four-disk set. Small upgrades and enhancements followed over the next two years, many of which simply accommodated the needs of specific new Mac models and printers.
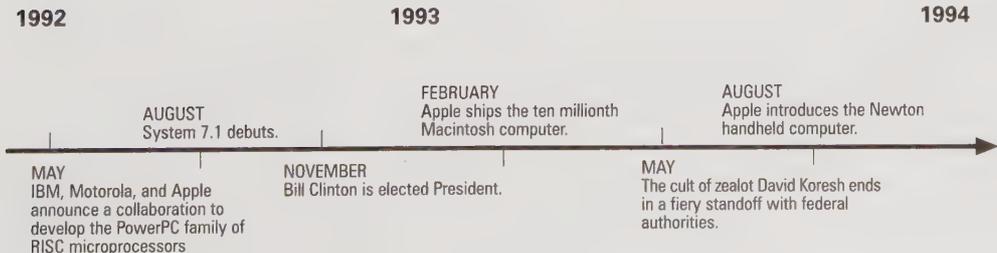
System 6.0.3, 6.0.4, 6.0.5, 6.0.7

System 6.0.3 made its debut with the SE/30. Apple recommended 6.0.3 for all recent models. System 6.0.4 is the oldest version of System 6 that can run on a IIci. For a IIfx, you need at least System 6.0.5, whereas 6.0.7 is required to run a Classic, IIsi, or the LC under System 6. (The LC II, however, requires at least 6.0.8, whereas the LC III requires System 7.0.)

System 6.0.8

Apple's code name for System 6.0.8 was Terminator — a fitting name, as this was indeed the last version of System 6, released just months before System 7 was unveiled. According to Apple, this is the only version of System 6 software that can run an LC II. It supports Macs as early as the Mac Plus. In essence, this system was 6.0.7 with improved printer drivers.

As the sun set on System 6, the Mac's System and Finder, weighing in at about 610K, had more than tripled in size since the days of System 1.0.

1992   **1993**   **1994**

AUGUST
System 7.1 debuts.

FEBRUARY
Apple ships the ten millionth
Macintosh computer.

AUGUST
Apple introduces the Newton
handheld computer.

MAY
IBM, Motorola, and Apple
announce a collaboration to
develop the PowerPC family of
RISC microprocessors

NOVEMBER
Bill Clinton is elected President.

MAY
The cult of zealot David Koresh ends
in a fiery standoff with federal
authorities.

System 7.0

System 7 was Apple's quantum leap forward. Much hyped and heavily criticized, System 7 — code-named Big Bang — was rolled out in May 1991.

Upgrading to System 7, for many, was something of a pain. You had to have a hard drive. You had to have 2MB of memory or more. And upgrading all your existing programs to versions that *ran* under System 7 cost good money.

But System 7 made life a great deal easier. Several bugs had been fixed, a lot of poor interface elements had been improved, and a lot of thought went into making System 7 as effortless and elegant as possible. The completely refurbished operating system introduced dozens of new features. Among the most significant: 32-bit addressing (which finally allowed Macs to access more than 8MB of RAM); aliases; an   menu that could contain not just desk accessories, but also applications, folders, documents, and so on; the Application menu; Balloon Help; colorized 3-D windows; faster printer drivers; built-in File Sharing; the ever-useful Put Away command; the Startup Items folder; stationery pads; the Views control panel; and QuickTime.
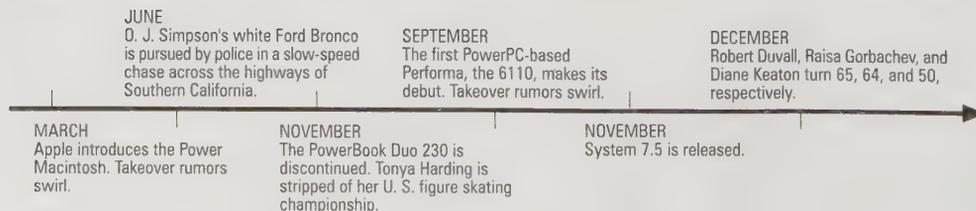
In fact, System 7 introduced many of the basic Mac interface features that we've now come to take for granted: hierarchical list views that let you expand and collapse the contents of nested folders; shortcuts that let you select icons, open and close windows, and collapse and expand folders from the keyboard; the "renaming" rectangle that appears when you click an icon's name; the capability to paste custom icons onto files; and a Trash can that *doesn't* automatically purge its contents every time you shut down.

System 7.0.1

Users had only a few months to enjoy the fresh, clean, hearty feeling of having an operating system with a big, round integer before Apple followed System 7 with System 7.0.1, adding not one but two irritating decimal points. At Apple's headquarters in Cupertino, the new system version was known by two code names: Road Warrior and Beta Cheese.

1994   **1995**

JUNE
O. J. Simpson's white Ford Bronco
is pursued by police in a slow-speed
chase across the highways of
Southern California.

SEPTEMBER
The first PowerPC-based
Performa, the 6110, makes its
debut. Takeover rumors swirl.

DECEMBER
Robert Duvall, Raisa Gorbachev, and
Diane Keaton turn 65, 64, and 50,
respectively.

MARCH
Apple introduces the Power
Macintosh. Takeover rumors
swirl.

NOVEMBER
The PowerBook Duo 230 is
discontinued. Tonya Harding is
stripped of her U. S. figure skating
championship.

NOVEMBER
System 7.5 is released.

The new version was mainly about bug fixes — especially an insidious disappearing icons-problem — and accommodations for the then-new PowerBook and Quadra families. For example, the old Portable and Brightness control panels (left over from the Mac Portable) were updated, and the Caps Lock extension made its debut. The Cache Switch control panel, along with internal system file-tweaks, was introduced for the 68040 Macs. And the software governing RAM disks and sound management were touched up for the new machines.
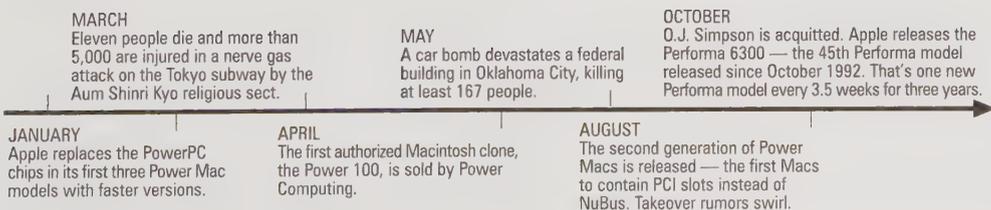
System 7.1

After the harrowing experience of cranking out System 7.0.1 solely to support a couple of new Mac lines, Apple hit upon the enabler scheme described in Chapter 5 and rolled it out in System 7.1, which was destined to be a solid "reference release" for several years.

System 7.1 was remarkable for another reason, too: It was the first system-software update Apple didn't give away. You had to *buy* it, much to the fury of user groups and online services that had gotten used to making each new system release available to everybody. Backing down in the face of the protests, Apple eventually offered the System 7.1 upgrade kit to user-group and online service members for less than $30. But the writing was on the wall: Apple was jealous of Microsoft, system-software superstore to the world.

Many wondered if the upgrade was even worth it. System 7.1 incorporated a huge number of changes, but the vast majority were deep-seated, core-level rewrites that added no usefulness to standard American Mac users. For example, System 7.1 *enabled* (but didn't provide) foreign-language translations, using a technology called WorldScript. Along with that change came new control panels for "internationalizing" your Mac: Numbers, Date & Time, and so on.

1995

MARCH
Eleven people die and more than 5,000 are injured in a nerve gas attack on the Tokyo subway by the Aum Shinri Kyo religious sect.

MAY
A car bomb devastates a federal building in Oklahoma City, killing at least 167 people.

OCTOBER
O.J. Simpson is acquitted. Apple releases the Performa 6300 — the 45th Performa model released since October 1992. That's one new Performa model every 3.5 weeks for three years.

JANUARY
Apple replaces the PowerPC chips in its first three Power Mac models with faster versions.

APRIL
The first authorized Macintosh clone, the Power 100, is sold by Power Computing.

AUGUST
The second generation of Power Macs is released — the first Macs to contain PCI slots instead of NuBus. Takeover rumors swirl.

Except for the QuickTime extension (see Chapter 23), the sole practical new feature of 7.1 was the Fonts folder. For the first time, all your fonts could be stored sensibly in one Fonts folder in the System Folder — instead of being buried in the System *file* or, in the case of printer-font files, scattered to the winds of your System Folder.

System 7 Pro (System 7.1.1)

System 7 Pro formalized Apple's practice of throwing existing software programs into the System 7 box and calling it a new operating system. This October 1993 release, aimed at networked offices, was nothing more than System 7.1 with the addition of the utterly incomprehensible and prematurely hatched PowerTalk (see Chapter 35). It also included AppleScript and QuickTime (see Chapters 22 and 23, respectively).

Overall, the $150 System 7 Pro was the least exciting upgrade — as far as the individual Mac user was concerned — in memory.
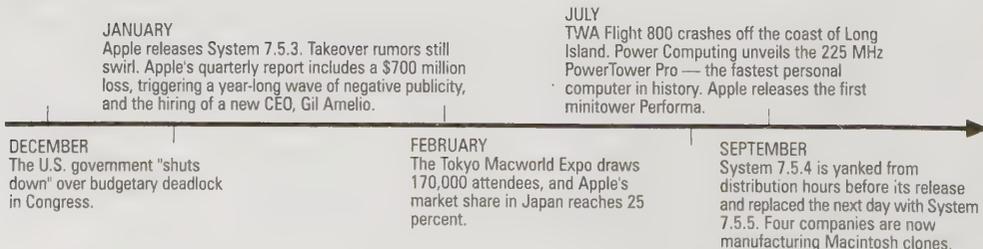
System 7.1.2

This minor upgrade accompanied the first-generation Power Macintosh models. Despite what you may expect, it was *not* substantially rewritten in "native" code to add a speed boost. In fact, only about 10 or 15 percent of the system was native — according to Apple, the parts that are used most frequently.

The physical signs of change were primarily in the new Memory control panel — that weird Modern Memory Manager setting — and its effects. For example, turning on virtual memory now let you lower your programs' Get Info memory sizes, as you'll see in Chapter 9.

Otherwise, 7.1.2 includes only subtle internal tweaks and remains, for all practical purposes, another spin on System 7.1.

1995   1996

JANUARY
Apple releases System 7.5.3. Takeover rumors still swirl. Apple's quarterly report includes a $700 million loss, triggering a year-long wave of negative publicity, and the hiring of a new CEO, Gil Amelio.

JULY
TWA Flight 800 crashes off the coast of Long Island. Power Computing unveils the 225 MHz PowerTower Pro — the fastest personal computer in history. Apple releases the first minitower Performa.

DECEMBER
The U.S. government "shuts down" over budgetary deadlock in Congress.

FEBRUARY
The Tokyo Macworld Expo draws 170,000 attendees, and Apple's market share in Japan reaches 25 percent.

SEPTEMBER
System 7.5.4 is yanked from distribution hours before its release and replaced the next day with System 7.5.5. Four companies are now manufacturing Macintosh clones.

System 7.1.2P

Don't confuse this subtle variation on System 7.1.2 with System 7.1*P2*. The former is a special version of 7.1.2 that was released with the Quadra (and LC and Performa) 630 models. It's a standard Macintosh operating system, essentially the same as System 7.1.2, but included on all 630-series machines, regardless of their designation as LCs or Performas. On the other hand, System 7.1P2 was a *Performa-only* version of System 7.1. See "Performa System-Software Annex," later in this chapter, for details.

System 7.1.3

This system debuted with the PowerBook 500 series and merited the new number only in that it included some improved software — notably the Control Strip (see Chapter 4).

Here's a little-known fact, however: A PowerBook 500 comes with the equivalent of System 7 Pro. It's bundled with PowerTalk, QuickTime, and all of Apple's usual goodies. We shudder to wonder if, having purchased a PowerBook 540c, anyone then went out and purchased System 7 Pro to use on it.

System 7.5

There wasn't much surprise about the contents of System 7.5 by the time Apple released it in late 1994. The new "reference release" included dozens of truly useful new features, but most had been available in other forms before being incorporated into System 7.5. In fact, the only truly new, significant features from Apple were Macintosh Drag & Drop (see Chapter 1), QuickDraw GX (the new font and printing software — see Chapters 29 and 30), and Apple Guide (see Chapter 2).

1996   **1997**

MARCH
Thirty-nine members of the Heaven's Gate cult commit suicide in a Rancho Santa Fe mansion. NBC sportscaster Marv Albert is indicted on charges of assault and sodomy.

JULY
Mac OS 8 is released. Apple posts a loss of $56 million for the quarter.

NOVEMBER
Bill Clinton is re-elected President.

OCTOBER
After three quarterly losses, Apple's finances seem to stabilize with a $25 million quarterly profit.

JANUARY
Apple releases System 7.6, the first version of the System folder to require a 68030 chip or better. Apple records a net loss of $120 million for the quarter.

APRIL
Microsoft reports third quarter earnings of $1.04 billion, a 45 percent increase in revenue.

MACINTOSH SECRET

Apple's best secret About box yet

Move the mouse to control your paddle; try to make the bouncing ball break through all the "bricks" containing System 7.5's authors' names. Click the mouse to return to your life already in progress.

To everyone's horror, Apple removed this awesome secret About box in System 7.5.1 — but replaced it with something equally delicious in System 7.5.2.
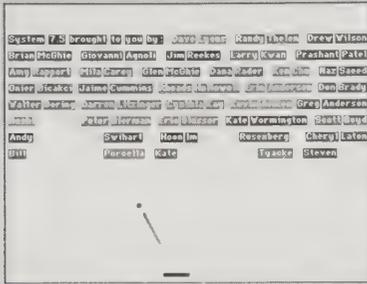
In System 7.5, open any Drag-and-Drop-savvy program, such as the Note Pad or SimpleText. Type **secret about box**. Select the phrase. Drag it onto the Desktop, creating a Clipping file. The Note Pad disappears and is replaced by a game of Breakout!

The most surprising new inclusions were shareware. Apple licensed a handful of popular shareware programs and adopted them as official system software. This must have come as a pleasant and remunerative surprise to their authors — the one-man operations who wrote MenuChoice, WindowShade, and SuperClock!, for example.

1997   **1998**

SEPTEMBER
Apple pays $100 million to purchase Power Computing Corp, the top seller of Macintosh clones, putting an end to the Mac clone era.

NOVEMBER
Jury selection begins in the trial of accused Unabomber Theodore Kacszynski. "Titanic" is released, the most expensive (and most profitable) movie in history.

AUGUST
Amelio is out, Steve Jobs is in (on an "interim CEO" basis). Jobs and Bill Gates join forces at Macworld Expo to announce an alliance, with Microsoft to invest $150 million in Apple and develop Mac software for at least the next three years.

OCTOBER
John Denver is dead at 53 after his private plane plunges into the Pacific Ocean.

JANUARY
Apple releases Mac OS 8.1. Bill Clinton is accused of having a sexual affair with White House aide Monica Lewinsky.

Added value

Apple also tossed in some utility programs that it had previously sold separately: PowerTalk network software, formerly available only with System 7 Pro; PC Exchange, the IBM disk-reading software (see Chapter 4); Macintosh Easy Open, which suggests applications capable of opening an orphaned document (Chapter 4). For PowerBooks, System 7.5 made the Control Strip available (which had originally been included only with the 500 series) to all PowerBook models. System 7.5 included enhanced desk accessories, too: a new Note Pad, Scrapbook, Puzzle, and Find File command, for example.

The new General Controls panel offered several features that had debuted on the Performa line: a Documents folder that automatically collected new documents; System Folder contents protection; self-hiding Finder windows; and the Launcher one-click icon-launching pad. (See Chapter 4 for some Launcher tricks and tips.)

Meanwhile, the Desktop pattern-editing features of the old General Controls panel were relegated to a stand-alone program called Desktop Patterns. (See Chapter 4 for details.) Another example: 7.5's Disk Cache (see Chapter 9) was rewritten to eliminate all the silly rules about maximum and optimum settings. In System 7.5, the higher you set the Disk Cache, the more speed your Mac gains.

Deep-seated changes

Apple also made some substantive changes to the body of the system itself. For example, Apple incorporated into System 7.5 the purple window highlighting you see when, while dragging an icon from one window to another, your cursor moves inside the destination window (a nice touch introduced with System 7.1.3 with the PowerBook 500 series).

Other than GX and Apple Guide, the only brand-new software feature added to System 7.5 was Macintosh Drag and Drop, a fantastically useful new core Macintosh feature. Under this scheme, you can *drag* selected chunks of text or graphics among Macintosh windows, even if they belong to different programs, without copying and pasting (see Chapter 1 for details).

1998   **1999**

MAY
The final episode of "Seinfeld" airs. Steve Jobs announces Apple's latest OS plan, the development of a new system, Mac OS X, for 1999, fusing portions of the existing Mac OS 8.5 with the core elements of Rhapsody.

OCTOBER
Clinton-scandal hysteria continues. Mac OS 8.5 ships. Apple reports its fourth straight profitable quarter; its stock price has nearly quadrupled since January.

APRIL
Apple announces its second straight quarterly profit, $55 million. Steve Jobs announces the one-piece, two-toned, translucent, inexpensive, fast iMac.

AUGUST
The iMac debuts — a wild success, selling several hundred thousand units within hours of going on sale. Its impact is large enough to boost Apple's market share, Mac software, and even Apple's other Mac models.

DECEMBER
Macworld Mac Secrets, 5th Edition, ships.

System 7.5, overall, didn't change much of the behind-the-scenes operating system at all; it was System 7.1 with fine-tuning. (Faster file copying and Trash emptying were among the subtle tweaks.) But the enhancements Apple *did* choose to include showed a great deal of thought and were beautifully done. As a result of this conservative approach, you didn't have much software-upgrading to do. Anything that worked with 7.1 generally worked well with 7.5, eliminating worries of another compatibility nightmare (a la System 7's introduction).

System 7.5, in fact, was probably disappointing to only two groups of people. Power Mac owners had hoped that Apple would rewrite the operating system to incorporate more "PowerPC-native" code (see Chapter 13). That crucial speed enhancement, Apple hinted, would not appear until the release of Mac OS 8. The upgrade was also disappointing to those users running short of disk space or memory. System 7.5, particularly QuickDraw GX, consumed substantially more RAM and hard drive than any system before it.

System 7.5.1 (System 7.5 Update 1.0)

Shortly after System 7.5 was released, Apple discovered more than a few nasty bugs that were in desperate need of patching. In the months that followed, Apple released a series of updated system components that fixed specific problems — EM Sound Update, PowerBook 150 Update, and Mount IDE Drive, to name a few. However, by March 1995, these patches started mounting up. To avoid more confusion, Apple's development team decided to roll the patches together, throw in a generous bundle of system enhancements as a bonus, and release the whole thing under one new name — the System 7.5 Update. (This later came to be known as System 7.5 Update *1.0*.)

System 7.5 Update 1.0 was a four floppy-disk affair that dumped all kinds of updated components into your System Folder, swallowed up the chunks that were obsolete and, most significantly, officially upgraded your operating system to 7.5.1.

System 7.5.1 improved memory stability and fixed potential crash problems when pasting large blocks of data. It cleared up a weird problem in which double-clicking an alias on the Desktop opened the *wrong* original file. The update also cared for a number of model-specific issues.

The update also introduced new and improved versions of many system components. File Sharing Version 7.6.1, for example, eliminated the need to turn off file sharing in order to eject a removable disk or CD-ROM. Launcher Version 2.7 added drag-and-drop support and a number of other slick Launcher features (described in detail in Chapter 4). There were also new versions of Apple Guide (rewritten in native PowerPC code), SCSI Manager, Speech Manager, PowerTalk Mailbox, General Controls, Apple Menu Options, Keyboard, WindowShade, MacTCP, Macintosh Easy Open, SimpleText, Find

File, Stickies, PowerTalk Catalogs Extension, and the LaserWriter printer driver (updated to Version 8.2). The update also gave most Macs the ability to be turned off with a press of the Power key.

What System 7.5.1 *didn't* offer, once again, was a significant rewrite of the operating system to PowerPC-native code. As of System 7.5.1, only three components of the operating system had been rewritten to take advantage of the speed of the PowerPC chip — QuickDraw, Modern Memory Manager, and Apple Guide.

Nevertheless, 7.5.1 was a substantial upgrade — a must-have for every user of System 7.5.

System 7.5.2

Five months after the System 7.5 Update appeared, Apple released the first Power Macs with PCI slots (see Chapter 34) and a new fleet of PowerBooks. Yet another update was needed to address the new hardware features on these models. The result: System 7.5.2. The only Macs capable of even running this operating system are the Power Mac 7200, 7500, 8500, and 9500 — and the PowerBook 5300 line (or 500-series PowerBooks with a PowerPC upgrade).

TRUE FACT

Not About This Macintosh

Mac fans who installed System 7.5 and then chose About This Macintosh from the   menu were in for a rude shock. Unlike in all previous system-software versions, this dialog box no longer specified one prominent fact About This Macintosh — your Mac model. Instead, it just identifies the general class, such as Macintosh, Power Macintosh, or Macintosh PowerBook.

Apple wrote System 7.5 to hide the model information because of changing times. For example, your About This Macintosh window used to extract the model information from a chip on your Mac's motherboard. But today, Apple builds the identical logic board into several different Mac models — for example, the Performa 6115 and the Power Mac 6100, or all of the first-generation G3 machines. Furthermore, Apple's logic boards became available in *other* companies' Mac clones. In both cases, logic

boards could no longer be trusted to accurately identify the model they once defined.

Of course, to find out your Mac's model name, you *could* just read what's painted on the front panel.

But then we're forced to ask: What about the fact that the command says About This Computer? Sure, Apple did that for awhile, during the Macintosh clone era, because only *Apple's* machines were allowed to be called Macs. Apple didn't want the word Macintosh to show up on clones from other companies.

Well, fine. But when Apple killed off the clone program in 1997, only Macs were left. So why didn't the command return to About This Macintosh with Mac OS 8.1?

The world may never know.

Apple's second-best secret About box

When it really counts, Apple listens to its customers.

For example, when System 7.5.1 appeared without the famous System 7.5 secret game of Breakout (or Pong), as described in an earlier sidebar, Mac aficionados screamed bloody murder. Fortunately, in System 7.5.2, Apple came to its senses and put some fun back into the secret architecture.

Once again, the trick is to type the words **secret about box** into any Drag-and-Drop text program (such as SimpleText or the Note Pad), highlight those words, and drag them onto the Desktop. The secret picture now revealed is that of Apple's Cupertino headquarters. The QuickTime movie flag in the foreground reads, "iguana iguana powersurgius." (Power Surge was the code name for the PCI-slot Mac models; the secret movie is actually part of the ROMs in PCI Macs and was included in the System 7.5.2 software on PowerBook 2300s and 5300s.)

By moving the mouse, you can change the direction of the waving flag (move the mouse downward to draw the flag "toward" you, up for "away," and left or right). In fact, you can make it break off entirely, fluttering toward the ground and off the screen. (Whip the flag right and left or toward you and away; at just the right level of violence, the flag will break off.) Even when the flag is adrift, you can control its direction with the mouse. Meanwhile, various inside jokes scroll by.

As though to prove themselves totally apologetic for having interfered with our good, clean secret-About-box fun of System 7.5,

Apple's programmers even added secrets *within* the secret About box. By pressing certain keys just after you begin dragging the words *secret about box* to your Desktop, you can make all kinds of strange things happen in your little hidden world:

System 7.5.2 Project Team: Jennifer Ahlquist, William Berry, Tom Black, Michael Crawford, Dave...

Press letter *P* to see a picture of the design team, with an iguana, on the flag. (With System 7.5.3 and later, pressing *P* puts a picture of the Mac OS logo on the flag.) Press letter *Q* to see a pink flag, blank background, and a message that QuickTime must be installed. Press letter *W* for a dialog box that displays the current coordinates of the mouse. Press letter *T* for a dialog box that identifies your QuickTime frame rate (of the waving flag). Try pressing *P*, *Q*, *W*, and *T* in combination, too.

Despite the fact that this secret About box couldn't possibly remain a secret at Apple, the Powers That Be were good enough to let this gem remain — at least for a while. The great Cupertino Iguana flag flapped proudly all the way through System 7.6.1.

The release of 7.5.2 caused a lot of confusion. Hordes of Mac owners heard about 7.5.2 and scrambled to get what appeared to be another essential upgrade — the vital System 7.5 Update, which had converted System 7.5 to 7.5.1, evidently was still fresh on everyone's mind — only to discover that *this* version of the System had absolutely nothing to offer most Mac owners.

Worse, the PowerBook and the PCI-Mac versions of 7.5.2 *weren't the same!* To the horrified bewilderment of everyone everywhere, it became apparent that Apple had released two different, mutually incompatible operating systems *with the same name.* The world held its breath until the universalized 7.5.3 made its debut.

System 7.5.2 also got some bad press because of the number of bugs and quirks reported by users shortly after its release. Many users reported problems establishing PPP or SLIP access to the Internet using 7.5.2's Open Transport networking scheme. Apple hastily churned out successive Open Transport patches — Versions 1.0.6, 1.0.7, and 1.0.8 — to deal with the problem.

Oddly enough, this specialized system also required a new model-specific *enabler* and, in keeping with Apple's well-established tradition of giving enablers names that bear absolutely no relation to the Macs on which they are required, this new file was dubbed System Enabler 701. (It gets worse; the 7200 and 9500 require Version 1.1 of System Enabler 701 version, while the 7500 and 8500 call for Version 1.2.)

Probably the best news about System 7.5.2 was that it increased the maximum size of a volume that can be mounted on Mac from 4 gigabytes to 2 *terabytes* (the equivalent of 2,048 gigabytes), thus providing support for even more massive storage devices.

System 7.5.3 (System 7.5 Update 2.0)

After the disastrous confusion caused by its preceding System 7.5-point-something updates, Apple attempted to set the record straight in early 1996 with System 7.5.3. This was Apple's effort to reset the counter and establish a standard system supported by all current Mac models — no enablers needed. System 7.5.3 incorporated all existing enablers and system-software updates into a single package. Once again, several dozen little system bugs were fixed and a number of system components were replaced with new versions. A new QuickDraw 3D-capable version of SimpleText (1.3.1) appeared, and Monitors & Sound replaced the Sound & Displays control panel on PCI Power Macs.

Apple took advantage of this update as an opportunity to clean up its increasingly sloppy, sprawling, extension-ridden System Folder. The numerous little patches and updates Apple had been cranking out to fix specific problems in the months prior to the release of 7.5.3 were all merged into the System 7.5.2 Update file or the System file itself. Files such as 7.5.2 Printing Fix, 040 VM Update, 630 SCSI Update, CFM Updater, EM Sound Update, and Serial Update 406 were all eliminated. SCSI Manager 4.3 also was incorporated into the System file and terminated as a standalone extension. The Apple Multimedia Tuner became part of QuickTime 2.1.

But the new system was more than just a patch-up job; it introduced some fascinating refinements to the Mac operating system. For example, on a Power Mac running 7.5.3, when you drag an icon, it no longer turns into a

simple outline as you drag it. Now a translucent, ghosted version of the icon remains visible as it is dragged across the screen — a fundamental change in the Finder's behavior. The Name field in the Finder's list views got wider, permitting you to read more of your long-titled files' names.

System Update 2.0 also introduced Open Transport 1.1, Apple's revamped networking system software intended to replace the aging AppleTalk networking scheme. This version of Open Transport worked with all 68030 and 68040 Macs, as well as with all the Power Macs except, oddly enough, the 5200, 5300, 6200, and 6300 series.

Realizing that this new networking software was likely to be incompatible with plenty of existing programs, Apple tossed another odd little application into 7.5.3 — the Network Software Selector. This tiny program served one purpose — on non-PCI Macs, it let you *choose* between Open Transport and classic AppleTalk. (See Chapter 5 for more on this peculiar little doodad.)

Another noteworthy change: Under 7.5.3, for the first time in Mac history, you could rebuild the Desktop file without destroying any comments typed into a file's Get Info box. The new system also sped up Finder copying (eliminating some of the advantage of copy-acceleration programs such as CopyDoubler).

The Memory control panel got smarter, too, automatically adjusting the default value for the Mac's disk cache based on the amount of physical RAM installed. (The default is 32K for each meg of RAM, up to 4,096K.)

Finally, the new system introduced more components written in native PowerPC code to speed up Power Mac models. The Resource Manager was rewritten in native code, as was the software that controls the serial ports. Desktop Printing software also was released in completely native PowerPC form.

Other 7.5.3 improvements included a new, faster version of Apple Guide (Version 2.0); an improved, more reliable Apple Menu Options control panel; and, at last, a version of the Control Strip for all Macs, not just PowerBooks.

System 7.5.3L

Virtually identical to System 7.5.3, this variation was created specifically for Macintosh clones. Mac-compatibles from companies such as Power Computing, UMAX, and Daystar all shipped with 7.5.3L systems.

System 7.5.3 Revision 2

In the months following the release of System 7.5.3, Apple released a couple of minor patches and updates — items so minor they didn't even earn a version number. Within a short time, however, the bug reports came pouring in and it became obvious that some larger updates were necessary to address problems that were cropping up on PCI Power Macs and PowerPC-based PowerBooks.

ANSWER MAN

The many faces of System 7.5.3

*Q. What's the difference between **System 7.5.3** and **System 7.5 Version 7.5.3**?*

A. Congratulations. You've just discovered that Apple had two different names for exactly the same system. Try to follow the logic here: System 7.5 Version 7.5.3 is the name of the *software* Apple sold to people who wanted to upgrade to System 7.5.3 from a version of the system prior to System 7.5. On the other hand, System 7.5.3 is what actually appeared in the About This Macintosh window of desktop Macs that *shipped* with System 7.5.3.

Q. OK, so then how come, on my Mac, the About This Macintosh window says I'm running System 7.5.3 Revision 2. But on my friend's Mac, the About This Macintosh window says he's running System 7.5.3 Updated to Revision 2. Who's got the newer system?

A. Again, they're identical. The only difference: Your Mac came with the revised version of System 7.5.3 preinstalled, while your friend *upgraded* his copy of System 7.5.3 using the System 7.5.3 Revision 2 updater.

Thus was born System 7.5.3. Revision 2 — the first of what Apple dubbed its "rapid response updates" to address problems discovered between major system releases. (The "2" was chosen, by the way, to reflect the fact that earlier patches of 7.5.3 *did* exist, though there was never a Revision 1.) Revision 2 was a two-disk upgrade released to fix a few select problems on specific models — the PowerBook 5300 and Duo 2300 systems; any PowerBooks (PowerPC or otherwise) running Connectix RAM Doubler; any PowerBook 200 or 500 models that had been upgraded to PowerPC; and all 7200, 7500, 7600, 8500, and 9500 systems. Revision 2 didn't do a thing on any other models, except change the name of the operating system to "System 7.5.3 Updated to Revision 2" — yes, that's the *name* of the system that appears in the About This Macintosh box.

Apple distributed the update for free via the Internet. You could also buy the update on floppy disks or CD-ROM direct from Apple for $13.

Unfortunately, this update resulted in even more confusion among thousands of Mac users, who understandably mixed up System 7.5 Update 2.0 (which installed System 7.5.3) with System 7.5.3 *Revision* 2. Macintosh experts and columnists (such as your cheerful authors) had to refer to cheat-sheets to claw their way through comprehending Apple's system-software version stew, praying that Apple would come to its senses and start getting its version act together.

Still, Revision 2 did, at the very least, re-establish a standard system for all Macs.

System 7.5.3 Revision 2.1

Just when it seemed that Apple had again unified the operating system and come up with a version that worked on all Macs, along came the Performa 6400 — a 200 MHz, PowerPC 603e-based minitower. The 6400 required a new version of LocalTalk DMA in order to transfer files across a network properly, and a video driver patch to fix a problem that occurred — get this — when the computer went into sleep mode while connected to a 15-inch monitor. Apple had no choice at this point but to release a revision of the revision of the update to accommodate these tiny changes.

At any rate, the obscure System 7.5.3 Revision 2.1 was only for the Performa 6400/200 and 6400/180 — no other models were affected.

System 7.5.4

Apple planned to release System 7.5.4 in September 1996. Once again, the objective was to create a standard, universal system that would work with any Macintosh. Primarily, the new system was supposed to make PowerPC-based PowerBooks and PCI Power Macs more stable and reliable. It was also supposed to improve memory management and boost performance when using virtual memory.

However, just after limited, prerelease distribution of System 7.5.4 began — and literally just *hours* before the moment of the system's official release — a glaring bug was discovered that created problems with the 5400 and 6400 models. Apple frantically pulled System 7.5.4 from distribution and canceled its release.

System 7.5.5

The day after System 7.5.4 was canned, Apple patched it up and released it with a shiny new version number — 7.5.5. Apple recommended this update for *all* System 7.5.3 users, but it didn't contain any new features or interface changes.

System 7.5.5 was largely about improving the stability of Power Macs and PowerPC-based PowerBooks. For example, it eliminated one of the problems that was causing newer Power Macs to lock up when accessing a hard disk. It also improved the reliability of the higher performance Power Macs — those with 604 or 604e chips that run at 180 MHz or faster — particularly when formatting floppy disks.

For all models, System 7.5.5 made virtual memory work better, speeding up the time it takes to launch big programs, switch between programs, and switch between large documents within a program. (It also made virtual memory more reliable when used over an Ethernet network.) On Power Macs, the update improved memory management and supposedly eliminated at least one cause of Type 11 errors.

The biggest news about 7.5.5 was that it allowed you to create a universal System Folder — one that can start up any Mac, from the Mac Plus to the latest model, which at that time was a Performa 6400.

This system represented a watershed of sorts for older models, too. It was the last system Apple ever released that can run on Macs without built-in 32-bit addressing (see Chapter 9): the Mac Plus, SE, Classic, Portable, PowerBook 100, original SE, SE/30, LC, II, IIx, and IIcx.

If you're running any earlier version of System 7.5, the upgrade to System 7.5.5 is free. You can download the updater from Apple's Web site.

Copland: The OS That Wasn't

Even as System 7.5 began shipping in 1994, Apple was promising its customers something better — much better. Within a year, Apple intended to release its biggest and most dramatic rewrite of the Mac OS in history. Code-named Copland, this version of the Mac's system software would be designed exclusively for the Power Macintosh, with almost every key component written in native PowerPC code. Copland was to take a new approach to memory management and multitasking that would let your Mac perform several functions simultaneously without running into memory problems.

However, it soon became obvious that Apple's engineers had bitten off more than they could chew. Copland's release date was repeatedly pushed back, first to the end of 1995, then to the middle of 1996, then to the end of 1996, and eventually to the end of 1997. In the meantime, Apple started calling this still-nonexistent operating system by its official name — Mac OS 8 (no relation to what you think of as Mac OS 8 — read on).

With millions of customers growing impatient for the benefits of a more modern operating system, Apple finally got radical: it canceled the Copland project. Instead, Apple decided to purchase an existing OS — the Next OS, as you'll find out later in this chapter — and refashion it into an all-new operating system called Rhapsody.

In the meantime, however, Apple promised to continue developing the System 7 family in a series of incremental upgrades, six months apart, each with a few of the features originally promised to arrive in Copland. These semi-annual OS revisions were code-named Harmony (now System 7.6), Tempo (now Mac OS 8), Bride of Buster (now Mac OS 8.1), and Allegro (now Mac OS 8.5). At least one more as-yet-unnamed upgrade is scheduled for 1999.

System 7.6

The first of these incremental releases, code-named Harmony, finally arrived in January 1997 — officially called System 7.6. To the disappointment of many, this release didn't include any Copland-derived features. However, System 7.6 did offer a dramatic leap forward in speed and stability — which are big features indeed, in our book (and it *is* our book). System 7.6 Macs start up much faster than Macs running previous system versions — extension startup icons seem to fly by — and programs launch more quickly, too.

More than anything else, System 7.6 was an enormous multi-megabyte compilation of previously released software, including the latest LaserWriter 8.4 drivers, America Online 3, QuickTime 2.5, QuickDraw 3D, Open Transport 1.2.1, Open Doc 1.1, Cyberdog, Apple Telecom 3.0 software, PlainTalk 1.5, Text-to-Speech 1.4.1, Apple Remote Access 2.1 Client, and PC Compatibility Setup 1.5 (for Macs with DOS cards).

In addition, System 7.6 offers behind-the-scenes OS support for multiprocessor Mac models, such as the "MP" models from Apple, Daystar, UMAX, and others.

But we're not saying this OS version offered *no* new features; just no dramatic ones. For example, this OS version came with a newer, more sophisticated Extensions Manager (see Chapter 4) and a smarter Installer that walks you through the safety checks you were previously told about only in Read Me files: running Disk First Aid, updating your hard drive driver, and so on. You also got a new Speech 1.5 control panel that you can configure to *speak* the messages displayed in dialog boxes after a moment or two — in case you've dozed off, we suppose. You can have it preface the contents of the error message with any of several hilarious attention-getting utterances, like "Yeow!" or "Blast!" or, our personal favorite, "It's not my fault!"

Our one and only System 7.6 secret: In previous System versions, you could press ⌘-Shift-3 to take a full-screen snapshot, producing a PICT graphics file. Beginning in this OS version, however, you can press any of the other screen-grabbing keystrokes (such as ⌘-Shift-4) listed at the end of Chapter 2.

System 7.6.1

This little update came along just a few months after System 7.6, to squash bugs and replace a couple of components that needed updating to maintain compatibility with current hardware. The 7.6.1 Update fixed some embarrassing

little glitches, such as the fact that on a PowerBook 1400, the brightness and contrast controls somehow ended up working in *reverse* under System 7.6 (pushing the + button made the screen *darker*). The update also improved some error handling, improved reliability when playing back large QuickTime movies, fixed infrared problems on PowerBook 1400s and 3400s, sped up printing on 5400- and 6400-series desktop models, and tossed in new versions of Apple System Profiler, AppleVision monitor software, and the Apple Video Player.

Among other things, the 7.6.1 Update eliminated the need for a host of obscure patch files Apple had distributed as temporary remedies for 7.6-related incompatibilities. Gone from the System folder were 54xx/64xx Update, 7.5.5 SCSI Server, Assistant Toolbox, PCI Network Legacy, PowerBook 1400 ATA, PowerBook 1400 PMU Updater, PowerBook VM Tuner for OS 7.6, PowerMac Format Patch, and PowerPC Interrupt Extension.

Overall, the 7.6.1 wasn't big news, but it did indeed provide greater stability on some newer PowerBooks and desktop Macs.

MACINTOSH SECRET

Bluets, granola, and System 7.6

System 7.6 was a stable, solid upgrade that didn't pack many surprises — except for one that certainly ranks as one of the most mysterious hidden Mac OS oddities of all time. It's not dramatic, it's not profound — it's just weird.

Here's how it works: A Mac running System 7.6 crashes. During restart, without warning, the Mac displays the following cryptic message instead of the usual Mac OS splash screen: "Bluets and Granola Bars." Desperate, you look up *bluets.* You learn that they're a kind of mountain wildflowers. *Now* what?

The message is stored away deep inside the System file's DSAT 0 resource (which you can peek at using ResEdit — see Chapter 21) along with a second line: "make a chewy snack."

The whole thing is sort of cute — until you realize that your Mac won't start up successfully once the Granola Bars have made their appearance!

Of course, these little messages were probably intended to be part of an Easter egg — a surprise feature that only manifests itself when

certain keys are pressed or certain spots on the screen are clicked.

But the so-called "bluets and granola bars" Easter egg has proved particularly elusive, however. Nobody really knows how to make it appear. In fact, you can't *make* it happen at all. It simply shows up, unexpectedly and unannounced, at the oddest times, as if by accident. Is this an Easter egg that never got fully hooked up, or is it just so subtle and elusive that no one's been able to figure out what exactly triggers it?

At any rate, it's not hard to fix a Mac that's been corrupted by the bluets-and-granola-bar phenomenon. Just start up from another disk (such as the Disk Tools disk or System Software CD that came with your Mac) and perform a clean install (see Chapter 36). Or upgrade to Mac OS 8 or later.

If you happen to witness this elusive secret, consider yourself lucky (once you get your Mac running again, that is) to be among the privileged few who actually saw it with your own eyes.

Mac OS 8

Strange
But True

The first real Copland goodies to hit Mac fans' hard drives were postponed until the summer of 1997, in the biannual OS update called Mac OS 8. (This version was code-named Tempo; was originally going to be called System 7.7; and was finally renamed Mac OS 8, to the confusion of Apple-watchers who thought that *Copland* was going to be OS 8.)

OS 8

Mac OS 8 was big news. Not since the introduction of System 7 more than six years earlier had the Mac's system software been given such a substantial overhaul. Indeed, recent system updates such as 7.5.5, 7.6, and 7.6.1 had been disappointing to Mac users who had been waiting for years to see a new OS that offered more than just a handful of upgraded system components or some subtle speedups.

Mac OS 8, finally, delivered. First, this $99 system upgrade introduced a whole new Macintosh look, filled with 3-D surfaces, a new font to replace Chicago, and a new standard folder icon. Giving the Mac a new visual look was a shrewd move on Apple's part; if you ask us, the geeks can talk about multi-threading and multi-whatever until they're blue in the face, but the press and the public will be more impressed by a snazzy exterior any day. (Overall, of course, this look had been available to Mac fans for over a year, via the shareware program called Aaron. Still, it's modern, clean-looking, and built-in.)

Found: new Finder

But possibly the best feature of Mac OS 8 was the new Finder (Version 8.0), which was completely written in native PowerPC code. Finally, with all that old non-native code stripped out, the Finder could run like a real PowerPC program instead of slogging behind at Quadra speeds.

Finder 8 was not only extremely fast, but also *multi-threaded* — it could really, truly do two things at once. You could get several things copying simultaneously (farewell, Speed Copy and CopyDoubler!) — and *then* launch a program as the copy continues, without any loss in speed. And while the multiple copying was going on, the Finder gave you something to read: details about how fast the copy is proceeding, time remaining, file names being copied, and so on.

U-Design-It

Mac OS 8 also took the concept of customizing your Mac's look far beyond creating your own Desktop pattern. Using the new Appearance control panel, you could choose a color for the interface "accents" — scroll-bar "elevator" boxes and the progress bar you see when you copy files. The Appearance control panel also let you change, for the first time in Mac history, the font used for menus and dialog boxes; goodbye, Chicago, goodbye. This control panel also incorporated the old WindowShade control panel. The new

Desktop Pictures control panel let you fill your desktop with not just a repeating pattern, but even a full-screen PICT or JPEG file if you wish.

Apple's overhaul of the Finder went beyond pure looks. Spring-loaded folders, which pop open automatically when you drag a folder on top of them, made their debut, as did the new Finder Preferences command in the View. Other major changes that arrived with Mac OS 8 included menus that stay open when you click them; sortable icon views that can *stay* sorted, even if you add or remove icons from the window; collapsible "pop-up" windows that can be dragged to the bottom of the screen, where they become small button-like tabs; and contextual pop-up menus that you can invoke by Control-clicking icons or the desktop. (See Chapters 1 and 2 for much more on all this.)

Other refinements showed up in the Finder menu. The question-mark menu in the upper-right corner of the screen, also known as the Guide menu, also known as the Balloon Help menu, was finally given a *name,* to the relief of telephone tech-support personnel everywhere. Starting with Mac OS 8, it was called the Help menu, and it was moved just to the right of the Special menu.

Even the subtler changes of Mac OS 8 were smart and elegant. This was also the first Mac OS to offer "live" scrolling in Finder windows, so that when you drag the little square "elevator box" of the scroll bars, the window's contents shift in real time, smoothly and responsively. Mac OS 8 also brought faster desktop rebuilding; a new Color Picker; a single, revamped File Sharing control panel (to replace Sharing Setup and File Sharing Monitor control panels); two new File menu commands: Move to Trash and Reveal Original (for use with aliases and preference files), each with a keyboard equivalent; and a faster, more powerful Apple Guide.

Evidently, Mac enthusiasts were hungrier for a faster, sleeker, more elegant operating system than Apple realized; Mac OS 8 turned out to be one of Apple's most successful system releases ever, breaking all sales projections, with more than 1.2 million copies sold in the first two weeks of its release.

Mac OS 8.1

The next incremental Mac OS upgrade — free to owners of Mac OS 8.0 — came along at the beginning of 1998. Mac OS 8.1, code-named Bride of Buster, wasn't nearly such a dramatic makeover as Mac OS 8. It left the Mac interface mostly unchanged, but it did fix a load of bugs, and introduced updated versions of a number of important system components, including new printing software (LaserWriter 8.5.1) and more reliable networking software (Open Transport 1.3).

The biggest news about Mac OS 8.1 was its optional new Macintosh disk format called HFS+, or the Mac OS Extended Format. For the full Mac OS Extended scoop, see Chapter 8. For now, it's enough to say the this new disk format uses an improved filing system that makes far more efficient use of disk space, dramatically increasing the number of files that can fit on your hard drive.

The ultimate guide to upgrading software

As you probably know, buying a program is more like *subscribing* to something than owning it; every year, you get some brochure in the mail cheerfully pointing out that the version *you* bought is now obsolete. Upgrading Macintosh software is an art unto itself — not nearly the all-weekend nightmare it is on other computers, but still a project.

Most companies, including Apple, label their software updates according to this scheme:

Double-decimal-point upgrades: The Double-Decimal-Point Upgrade is when a company updates the software in such a minor way that the program's number changes from, say, Version 1.5.1 to Version 1.5.2. (Don't ask us why the second decimal point is even necessary.) Such a tiny tweak in the number generally signifies that the new version offers no *new* features. Instead, it's only a cleaned-up (less bug-ridden) version, or it's just been updated to be compatible with some new Mac model or new System-software update.

Certain kinds of software are especially susceptible to frequent tiny updates of this kind: fax software (especially Global Village), screensaver software (especially After Dark), virus software, and other enhancements (especially ATM, RAM Doubler, and Speed Doubler).

Fortunately, a Double-Decimal Upgrade is almost always free. In fact, it's almost always available for free *electronically* — you can download a little updater program from America Online or the Internet. After this updater whirs and clanks for a moment, you wind up with a single, updated version of the program in question. Documents you've created (for example, ClarisWorks files) aren't affected by a Double-Decimal Upgrade.

The software companies, unfortunately, generally don't tell you when they release these tiny upgrades. They might not even change the version number. For example, ClarisWorks 4.0 was silently updated several times — "4.0v2," "4.0v3," and so on — and the only way you'd know that a newer version exists would be by calling the company. Microsoft, Intuit, and other companies operate similarly.

Therefore, your sources of info are Mac magazines and newsletters, user groups, and online gossip.

Major upgrades: Then there are the meatier upgrades, where the number *immediately* to the left or right of the decimal point changes (from 3.3 to 3.4, for example, or from 3.0 to 4.0). You generally have to pay for these, and the program's document format may change.

Unfortunately, "downgrades" are becoming increasingly common; the new versions of some programs are so huge, bloated, and sluggish that they're not worth getting (see Word 6, for example).

System-software upgrades: In many ways, upgrading your Mac's System Folder is much like upgrading any other software. As with other software, finding out that such updates are available isn't necessarily easy, although Mac magazines *always* have articles about this kind of thing.

Apple's system updates generally give your Mac better speed, fewer crashes, and a couple of juicy new features. Unfortunately, these updates sometimes also mean that all your *other* programs may need updating to work with the new System software. The software you need to worry about mostly are the extensions and control panels: RAM Doubler, Speed Doubler, fax software, After Dark, ATM, virus checkers, printer drivers (Chooser icons), and programs of their ilk.

Other changes in Mac OS 8.1 included an improved version of PC Exchange that supports Windows 95's long file names and both Zip and Jaz disks formatted for PCs; support for the Universal Disk Format used on some DVD-ROMs (see Chapter 32); better virtual memory and memory caching; and a bunch of updated system components. 8.1 also introduced the tiny "pyramid" button above the vertical scroll bar in each Finder list-view window. Clicking it lets you reverse the sorting order of what's in that window.

Mac OS 8.5.1

Another monumental upgrade, Mac OS 8.5 (code-named Allegro), arrived in the fall of 1998. (Bug-fix version 8.5.1 debuted shortly thereafter.) While retaining the overall look and structure of Mac OS 8.0, this new system offered dozens of new features, including PowerPC-native QuickDraw and AppleScript for much better speed. The enhancements rolled into Mac OS 8.5 were numerous — and are detailed throughout this book, especially in the first three chapters.

Good looks, good speed

Aesthetically speaking, Mac OS 8.5 brought further refinements, with system-wide antialiased text; new, graduated-fill icons; translucent icon names; and an improved fit and finish that Windows users have to envy. List views are totally customizable, letting you rearrange and resize columns. The enhanced Appearance control panel lets you change the look, fonts, and *sounds* of Finder windows, icons, and menus.

Other changes that made their appearance in Mac OS 8.5: Faster file copying and improved networking; a much better, tear-offable Application menu (see Chapter 2) that makes it easier to tell which programs you're running and switch between them; a super-charged Find command that lets you quickly search files on your hard drive by content, or even extend a search to the Internet (Chapter 3); centralized Internet setup through a new Internet control panel (Chapter 4); a new Disk First Aid that lets you repair a disk even if it's your start-up volume (Chapter 8); a new Date & Time control panel that automatically adjusts for Daylight Savings Time (and can dial the Internet to learn the exact correct time); and a new Control Strip that lets you install modules by dragging them right to the strip itself (Chapter 4).

Apple also overhauled its Apple Guide help mechanism, switching to an HTML-based system that makes it easier for software companies to write online help systems.

Mac OS 8.5 is pretty much good news all around — but not for users of older, 68K Macs. This is the first system upgrade in Apple history that requires, at a minimum, a Mac with a PowerPC chip. Otherwise, though, 8.5 is an impressive reworking of the Mac OS that shows Apple is pressing forward with the process of metamorphosing the aging Mac OS into a powerful, modern operating system.

The Microsoft Invasion

It's not your imagination—the Mac OS and Windows 98 are looking more and more alike. But it's no longer because Microsoft is desperately trying to imitate the Mac's polished, graphical interface. More and more, Apple's designers are adopting the look, feel—and even the terminology—of *Windows*. It's the Microsoftization of Apple—and it's got die-hard Mac fans spooked.

Is this what Steve Jobs and Bill Gates had in mind in August 1997 when they announced a "technology development agreement" between Apple and Microsoft? Consider some of the clearly Microsoft-derived components that showed up in Mac OS 8.5:

Alias icons now sport a tiny, curly arrow logo, just like Windows' "shortcuts." The Network Browser (see Chapter 3) bears a striking resemblance to Windows' Network Neighborhood. The Finder now has a folder called Favorites and a command called Add to Favorites—both borrowed directly from Windows.

Meanwhile, Internet Explorer is the default Web browser; QuickTime movies are configured to open in Explorer; and the default e-mail program isn't Apple's own home-grown Emailer (inherited from Claris) but Microsoft Outlook Express.

Mac vs. Windows? In a few more years, it may be hard to tell which is which.

Rhapsody and Next

Even as Apple continued to update and refine Mac OS 8, engineers were feverishly working behind the scenes on a completely new operating system—one that would eventually deliver the key features originally promised as a part of Copland. Rather than build such an operating system from scratch, Apple eventually decided to buy one. After rejecting one possible candidate, the Be OS, as fledgling, incomplete "demoware" (as one Apple buddy of ours called it), Apple paid $400 million in December 1996 to acquire NeXT Software. NeXT happened to be owned by Apple's founder and former chairman, Steve Jobs (who began serving as Apple's acting CEO several months after the acquisition).

Apple originally announced that the next major Mac OS—code-named Rhapsody—would arrive in 1998, based on NeXT's highly stable OpenStep operating system. What made OpenStep so appealing was that it offered some vital technologies that everyone had been waiting for years to see in Copland:

- **Protected memory:** The OS allows each program to access and manipulate only the specific chunk of RAM allocated to it; any other available memory—the RAM being used by the system itself, for example—is protected. By strictly protecting each program's memory allocation, the OS makes it less likely that the crash of one program will bring down the entire system.

■ **Preemptive multitasking:** Suppose you have several programs running on your Mac simultaneously. Ordinarily, each program tries to grab whatever CPU processing cycles and memory it can to carry out its tasks. The resulting conflicts are generally what cause those "application unexpectedly quit" messages. The new system architecture prohibits programs from competing with each other for resources, however, by *preempting* the requests of each individual program. It systematically controls the switching between tasks that require attention and stands between applications that would otherwise be grabbing for the same resources at the same time.

There was only one catch: The version of OpenStep that Apple purchased didn't run on the PowerPC chip, and it was going to take a year or more to complete a PowerPC-compatible operating system based on OpenStep. That's why Apple decided to continue upgrading its current OS every six months while simultaneously developing Rhapsody — to satisfy the Mac faithful's hunger for a new OS for a couple of years until Rhapsody was ready for prime time.

Apple pushed ahead with this dual-OS development plan for a while, unveiling Developer Release 1 of Rhapsody in October 1997 and Developer Release 2 in May 1998. But then, once again, Apple announced a shift in its OS plans.

Suddenly, Rhapsody was *not* going to be the all-new OS that would universally replace the outdated Mac operating system. Instead, Rhapsody would be developed only as a specialized OS to be used on file servers and in high-end publishing and media production environments. Apple announced that its fall 1998 Rhapsody 1.0 version would be the end of the line for that OS.

Why this dramatic switch? Most Mac software companies weren't thrilled about the Rhapsody plan. The problem was that to tap into all the benefits of the Rhapsody OS, developers would have to rewrite their programs from scratch — not an enticing proposition. With few developers willing to jump on the Rhapsody bandwagon, it became clear that Apple had to adopt a new approach — one that would allow for a modern new Mac OS, but wouldn't alienate developers who had already poured millions of dollars into creating standard Mac OS software.

Carbon and Mac OS X

Steve Jobs announced the solution in May 1998 — a completely new system that will fuse together portions of the existing Mac OS with the core elements of Rhapsody. The new system will be called Mac OS X (pronounce it "Mac OS ten," not "Mac OS ex").

By updating some of the existing Mac OS code and then adding a new software architecture (called Carbon) that allows developers to plug easily into the OS's new Rhapsody-based features, Apple will at last be able to offer an operating system that supports most existing Mac software, while also delivering the modern OS features that made Rhapsody attractive. Carbon — a cleaned-up version of the Macintosh Toolbox routines familiar to

programmers — provides a set of *application programming interfaces* (APIs) that make it easy for engineers to adapt current Mac programs to run under both Mac OS 8.x and Mac OS X. That's the theory, anyway.

Software companies still have to rewrite their Mac software to benefit from Mac OS X's advanced features — just not completely. Apple has estimated that most Mac programs are 90 percent compatible with the Carbon-based architecture that will be used in Mac OS X. In other words, with just a minimal amount of recoding, software companies will be able to release Mac OS X versions of their programs.

The bottom line: by the year 2000, your Mac situation may fall into one of three categories:

- **You're running (new) Mac OS X programs in (old) Mac OS 8.** With the installation of a Carbon compatibility extension, you'll supposedly be able to run both the programs you're running today *and* programs that have been rewritten for Mac OS X. Of course, you won't get any of the speed or features of Mac OS X (such as protected memory).

- **You're running (old) Mac OS 8 programs in (new) Mac OS X.** Apple says that if you can run a program today under Mac OS 8-point-whatever, you'll be able to run it under Mac OS X — but, again, without the benefits of Mac OS X. When one of these older programs crashes, *all* your older programs will crash — but if you're also running newer Mac OS X programs at that moment, they'll remain alive. And because the OS itself is a Mac OS X program, you won't have to restart the Mac.

- **You're running (new) Mac OS X programs in (new) Mac OS X.** The best of all possible Mac worlds. Programs run fast and launch fast, because all of the old bottlenecks have been stripped out of the system software. When a program crashes, the dialog box says: "The application has quit. You do not need to restart the computer."

Mac OS X will look and feel like Mac OS 8.5, and it will be written in native PowerPC code, optimized to run on G3 and later PowerPC chips. With protected memory, preemptive multitasking, a more sophisticated, self-adjusting virtual memory system, and, of course, blazing speed, Mac OS X should represent a huge step forward in the evolution of the Mac OS.

All of this isn't going to happen overnight. Programmers won't get their first hands-on opportunity to work with Mac OS X until early 1999, and the operating system probably won't be available to the public until the dawn of 2000. In the meantime, Apple will forge ahead with at least two more updates of the existing Mac OS, culminating with the release of Mac OS 9 (code-named Sonata) at about the same time Mac OS X nears completion.

Our take on all this: It was confusing for awhile, but now Apple seems to be on a solid track. The OS updates have been on time and a joy to use, and the early prototypes of Rhapsody indicate even more exciting things to come as its key features are rolled into the Mac OS itself. We have no doubt whatever that if Apple can finally stick to an OS strategy, the final release of Mac OS X will make Windows 98 look like System 6 — even more than it does today.

Performa System-Software Annex

The Performa line of Macs, discontinued in 1997, differed from their mainstream counterparts primarily in their system software. There was never as much black magic to these special "P" system versions as most people thought — the "P" versions ran on mainstream Macs, just as non-P versions run on Performas.

Today, of course, there's no longer any differentiation between Performa system software and mainstream Mac System Folders. That's why we've removed our comprehensive Performa System Software Annex from this chapter; there's simply no such thing as a Performa operating system anymore.

CD

If, for some reason, you still need to know the difference between System 7.1P3 and System 7.1P4, consult Chapter 6 in the electronic edition of *Macworld Mac Secrets, 4th Edition* (on the CD-ROM that comes with this book).

MACINTOSH SECRET

Mac OS X Server

In Steve Jobs's now famous January 1999 Macworld Expo keynote speech, he unveiled a staggering site: 50 iMacs, on a huge shelving unit, all booting off a single System Folder — on a Power Mac G3 running Mac OS X Server.

Running *what?* This first piece of the Mac OS X puzzle got the Mac world buzzing in a hurry. Shipped in the spring of 1999, this $1,000 software package looks like Mac OS 8.5, but is a full-fledged server software suite. Its most interesting feature, of course, is what Jobs showed — the *netboot* feature. Those iMacs, in fact, could well have had no hard drives at all, since they were running from a System Folder — and running applications — that were all installed on the central G3 machine. In other words, Jobs and his team achieved what the computing press had been babbling on about for

years: the possibility of upgrading and troubleshooting *one Mac*, and dozens of connected computers are the beneficiaries. Schools, in particular, are likely to get excited about this feature, which saves hours of time and hundreds of maintenance dollars.

The Mac OS X Server software also includes the Apache Web Server software (a UNIX-based program for dishing out Web pages), QuickTime Streaming Server (to play QuickTime movies and sounds), and WebObjects (Apple's outstanding suite of Web-software creation tools for programmers — inherited from Jobs's Next Software company).

If Mac OS X itself — the OS — turns out to be as powerful and sophisticated as its forerunning server cousin, we've got a lot to look forward to.

Part II

Secrets of the Machine

Chapter 7

On, Off, and Everything in Between

Power On

Hundreds of design elements are consistent from one Mac model to the next — but the method of turning them *on* isn't one of them. Your Mac's power switch may be (a) a rocker switch on the back panel (as on one-piece Macs and LCs); (b) a round nubby button on the front panel (as on 610- and 6100-shaped models); or (c) a half-inch long, capsule-shaped button on the top surface (as on a PowerBook Duo). Fortunately, all Macs manufactured these days turn on *and* off with option (d), the power key at the upper-right corner of the keyboard.

The ADB Bus

The term *bus,* as it applies to the Mac, makes much more sense if you imagine the stream of electricity that courses through the computer's veins. It streams along specific pathways — wires and circuits — much like, well, a bus route in a *very* congested city. Along the way, this stream of electricity makes regularly scheduled stops, checking to see if there's any new information to pick up (see Figure 7-1).

CPU

Keyboard and mouse ———●   ●——— ROM chips

Disk drive ———●   ●——— Memory (RAM) sockets

PCI or NuBus slots ———●   ●——— Printer and modem ports
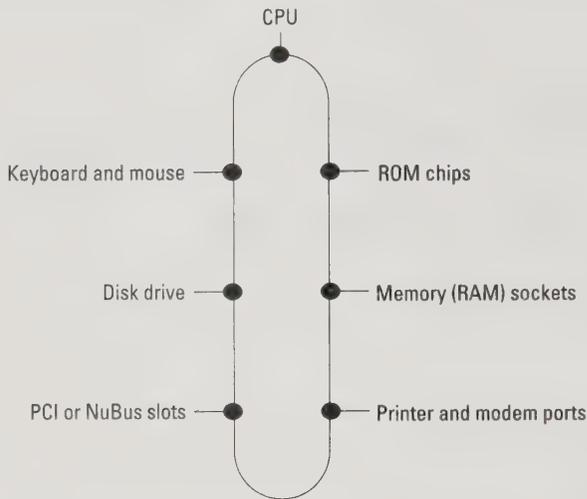
Figure 7-1: A bus map for your computer, showing all regularly scheduled stops to pick up and discharge messages: the keyboard jack (have you typed anything?), the mouse plug (are you clicking?), and, eventually, the Grand Central Station of the Mac — the Motorola central processor chip (CPU) that serves as your computer's actual brain.

The term *Apple Desktop Bus* (ADB) or *Universal Serial Bus* (USB) is the official name for one particular loop of the bus route: the one that includes the keyboard and mouse. You can read about these loops of circuitry in Chapter 10; for now, note that it's this circuit that's constantly on the alert for a press of your power key to turn on the Mac.

How to turn on the Mac
when there's no keyboard

Mac Basics

If you turn on your computer by pressing your keyboard's power-on key, it's useful to know about the alternative method (for when you have a broken or missing keyboard, for example). On most Mac models, the alternate power switch is the small, round, slotted button in back of the computer. It's about the size of a pea, usually in the lower-left corner of the back panel as you look at it. On some models (such as the tower-style Quadras, the 630-series, and early Power Macs), it's at the *top* left — and on recent Power Macs and clones, it's on the *front* panel. On PowerBooks, there's usually a bizarre-looking plastic button that looks like a dash (—) on the back panel.

In a pinch, such as when the system has crashed, you can turn the Mac off using this button.

The Startup Sequence

All right, juice is flowing. You hear the startup chime (see Figure 7-2).
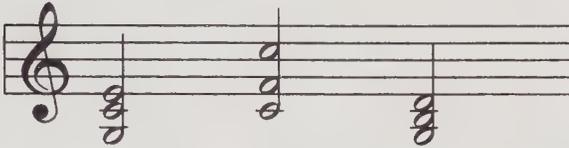
Figure 7-2: From left to right: The Quadras and PowerBooks play the breathy C-chord sound. The Mac II startup sound is an open fifth: F and C. The AV Macs start up with a majestic G chord. Interestingly, these three startup chords, played in sequence, form the harmonies for "La Bamba."

The startup chimes

Over the years, Apple has waged various internal wars over the sound of the startup chime. (You can hear *all* of them — we've included them on the CD-ROM with this book.) Join us now for a countdown of the greatest startup hits through the years...

- **The one-note ding** — In the beginning, there was the single ding (a D, a ninth above middle C). This was the welcome to the original Mac, the Mac 512K, the Plus, SE, and Classic. Not much oomph, but unmistakably different from what had come before.

- **The hollow fifth** — Then came the Portable, SE/30, Classic II, and Macintosh II family, accompanied by a two-note "chord" — an open fifth, F and C. Still rather hollow sounding, but at least it's harmony.

- **The breathy chiff** — The second-inversion C chord played by a breathy synthesizer was a big hit; Apple used it to start up the Color Classic, IIvx, IIvi, LC family, most Quadras, and most three-digit PowerBook models.

- **The grand G triad** — With the Quadra AV series, Apple's sound technicians unveiled what would become the most important startup chime of all: a rather grand-sounding, root-position G triad played on a synthesizer. This sound may also be heard on all post-1996 PowerBook models, plus all Power Macs (7200, 75/7600, 85/8600, 9600, and so on) after the original three models. Most of Power Computing's clones use this sound; Apple's G3 models use an F-major variant.

- **The fancy guitar chord** — Apple wanted its Power Macintosh series (the 6100, 7100, and 8100 models) to make a statement. Giddy with the musical possibilities, Apple went wild with the complex E V11 chord, strummed as a harmonic on a jazz guitar.

- **The grizzly D fifth** — Only two models came with this quickly-abandoned, mournful-sounding open fifth — D and A: the 6200 and 6300 Performas (plus the Power Macintosh upgrade card).

- **The grand F triad** — 1998's PowerBook G3 Series introduced this lower-pitched variation of the classic grand G chord. Let's get this straight: it's called the PowerBook G3 — but its startup chime is an F triad? Where's the logic?

ROM: the hidden software

In any case, you may have wondered: What the heck *takes* so long for the computer to come to life?

The answer is that the Mac is busily running programs without your even knowing about it. These programs are normal Mac software, but they're not sold in any store, and they don't come on any disks. They come "hardwired" into the permanent silicon memory of your Mac — the ROM chips.

ROM stands for *read-only memory*; the implication is that you, O user, may not store (write) anything in this kind of memory. It's *read-only*.

Mac Basics Every Mac has ROM chips. (The iMac is a special case — see Chapter 13.) Indeed, the ROM chips are what make a Mac a Mac. Some of the "programs" (more accurately, *code libraries*) stored on the ROM chips are QuickDraw, the software that draws lines and colors on your screen; the Window Manager, responsible for drawing and manipulating the familiar Macintosh windows; and the Menu Manager, which creates the menus at the top of your screen.

Because these programs are built into the Mac, people who write Mac programs are spared the time and headache of writing lines of menu-handling code, or window-handling code, and so on. They just write references ("calls") to the Mac's ROM, which takes it from there. No wonder most Mac programs work alike — they all rely on the same chunks of interface code.

ANSWER MAN

The silence of the RAMs

Q: How can I turn off my Mac's startup chime? I don't want to wake my spouse when I go online for my 4 AM download sessions.

A: Unless you have an iMac or PowerBook, you can't. You could insert the end of a pair of Walkman headphones into the Mac's speaker jack, but that silences *all* sounds.

If you have a fairly recent model, you can also try Quiet Start, a free extension that's included on the CD-ROM with this book. It sneakily turns your Mac's volume to zero when you shut down — and then back to its previous speaker level at the next startup (*after* the chime). Unfortunately, early Macs' ROMs don't bother to check the speaker-volume level before chiming, which makes even Quiet Start useless.

Why the Mac needs a System file

So if the Mac operating system is stored in ROM, why do you need a System Folder?

Actually, the System file and the ROM work together to create an operating system. The System either *adds to* or *replaces* parts of the ROM. Apple, for example, improves or enhances its system software at least twice a year — and sometimes more often than that. (In a period of three years, Apple managed to release System 7.5, 7.5.1, 7.5.2, 7.5.3, 7.5.5, 7.6, 7.6.1, 8.0, and 8.1.) You can imagine what a mess you'd have if Apple had to replace your Mac's ROM chips twice each year! As it is, the company just creates a new software-only System Folder with programming that supersedes or adds onto what's in ROM.

The second reason for a System file: As in any software, the code in the ROM chips is sometimes buggy. What do programmers do when their code has been permanently etched into silicon and they discover a mistake? Simple: Write a fix for the bug in the System file (the part that comes on a disk), which forms a computer-code detour around the problem in ROM.

The startup continues

Back to our story in progress. The electricity sparks the ROM chips' programs into life. These startup programs are instructed, first of all, to check out the machine. The computer sends electronic feelers into its own circuitry, making sure that everything is as it should be. The Mac inspects the chips that control the keyboard jack, the SCSI port, and so on, restoring them to their "ready-for-action" settings.

One familiar example is the memory (RAM) checkup: The ROM programs test the health of your RAM chips every time you turn on the computer. That's why the more memory your Mac has, the longer it takes to start up — because there are more RAM chips to inspect. You particularly notice the longer delay after you install more memory.

TRUE FACT

How big is your ROM?

The Mac's ROM chips are growing.

As each successive Mac model becomes more complicated, more and more of the computer's Notes to Itself must be crammed onto its chips. The original Macintosh, for example, fit all of its identity into 64K of silicon. When the faster Mac Plus came along, the ROM chips grew to 128K.

Color-processing instructions bloated the Mac II's ROMs to 256K; the complex 68030 CPU chip used in the IIci and most of the II series required 512K ROMs.

Today, the Power Macintosh G3 calls for 4MB of ROM instructions — that's 32 times more ROM than the first Mac had *RAM!*

If even *one pin* of a memory board (each has dozens of pins) isn't solidly seated in its slot, the ROM program reports the bad news to you. Instead of playing the usual chime, it plays a Chime of Death.

The Chimes of Death

CD

Like the startup chimes, Apple's Chimes of Death sounds have evolved over the years; the one constant trait is a grisly sense of black humor. (We've provided all of these sounds on the *Mac Secrets* CD-ROM, so you can listen for yourself.) When you consider that this sound is meant to denote a problem serious enough to require a technician's attention, the following choices seem particularly grim/funny:

■ **The cartoony breakdown** — Only the Quadra AV models (see Chapter 12) featured this funny, sputtering-into-decay recording.

■ **The happy arpeggio** — On the SE/30, Classic II, and Macintosh II series, you get the four single arpeggiated notes of an A major chord. The worse the problem is, the happier the music. Gruesome.

■ **The chilling movie music** — The Performa 6200 and 6300 (along with the Power Macintosh upgrade card) get their own special death chime: a sinister, three-note, synthesized-brass fanfare that makes you expect Dracula to show up, laughing, "MUAH-ha-ha-ha-haaaaaaa!"

■ **The "Twilight Zone" theme** — Not content with playing only the cheery four-note chord of the Mac II line, Apple's wisecracking engineers tacked the first four notes of the "Twilight Zone" theme to the end of it. The resulting chime lifts your spirits when your LC, Quadra 600-series, or PowerBook Duo dies.

■ **The car crash** — Most Power Macintosh models, plus the Radius 81/110 and Power Computing clones, play the digitized recording of a horrific car accident, complete with shattering-windshield sounds.

In addition to the cheerful audio cue, if something is drastically wrong inside, you may also see the "sad Mac" icon on a dark screen. See Chapter 36 for details and troubleshooting tips.

What else takes so long

OS 8.5

Quadras and PowerPC-based Macs, by the way, occasionally take especially long to start up — for your own protection. If the Mac wasn't shut down properly last time — for example, if you had a system freeze and had to restart — the Power Mac ROMs perform an additional test, a scan of the hard-drive to confirm the integrity of the disk file structures, during the appearance of the happy Mac icon. And if you've got Mac OS 8.5 or later, you'll *really* wait around after a system crash — the Mac launches Disk First Aid to make sure the hard drive survived the crash in perfect health.

Strange But True

How does the Mac know that you crashed the last time? During a normal shutdown, the Finder clears vulnerable file-directory information out of RAM first and then resets a system flag—a tiny invisible software "switch"—signaling that all is OK on your hard drive. (Want to see this little flag file for yourself? Use your Find File program to search the hard drive for *invisible files,* as described in Chapter 3. At the "root level"—that is, not inside any folder—of your hard drive, thar she blows: a tiny file called Shutdown Check.)

When you shut down after a crash, however, without using the Shut Down command, the Shutdown Check flag never gets reset. When the Mac restarts, the ROM encounters the "file system dirty" flag and assumes the Finder *didn't* safely clear all the file info out of RAM the last time you shut down. That's what triggers it to (a) spend a little extra time checking the drive's data to make sure they survived the abrupt shutdown, and (b) bring up the "This Mac wasn't shut down properly" message (if that option is turned on in the General control panel; see Chapter 4).

The larger your hard drive—and the more files stored on it—the longer this extra integrity test takes.

The search for a good system

When the hardware checks out as OK, the ROM hands off to your System file—or tries to. It seeks a System Folder in the following order:

- On the floppy disk in the main floppy drive

- On the floppy disk in an external drive (if any)

- On the hard disk you selected (if any) using the Startup Disk control panel

- On the internal hard drive (whose SCSI ID number is always 0; see Chapter 33 for a discussion of SCSI ID numbers)

- On an external hard drive with ID number 6, and then 5, and then 4, and so on

MACINTOSH SECRET

You haven't got time for the pain

Conflict Catcher, a demo of which is included on the CD-ROM with this book, does much more than catch conflicts. We stumbled onto a little-known feature that made us gasp in enlightened amazement.

With the control panel open, choose "by Load Time" from the right-hand pop-up menu. You'll be shown exactly how long each extension and control panel takes to load as your Mac starts up! Some of this information will shock you: you've been waiting for *four seconds* every single morning for Apple Guide to load into memory? It scarcely seems worth it.

This exercise may convince you that some of your extensions aren't worth leaving installed for everyday use. Cumulatively, over the many startups of your Mac, the time you'll save could be substantial.
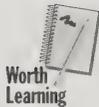
It's well worth remembering that you can *override* this search. For example, suppose your hard drive's System folder is corrupted; every time you start up, and the Mac tries to load the Finder, you crash. How can you force the Mac to start up from your backup Zip drive instead?

By holding down ⌘-Shift-Option-Delete key during the startup process. As you'll read in our upcoming "Startup Secrets," this keystroke makes the Mac ignore its own internal hard drive — and start up instead from whatever the next gadget is in its hunt for a good System folder.

And if you've got *several* bootable drives attached to your Mac — a Zip, a Jaz, and a CD-ROM, for example — you can start up from a specific one by pressing (during startup) a keystroke we'd never even heard of before: ⌘-Option-Shift-Delete-*number key,* corresponding to the SCSI ID number of the disk you want. You may need to invite some friends over to help you hold down all those keys, but as free book winner Denise Conner notes, you'll still save time and gain control in times of troubleshooting or experimentation.

If, after doing all that checking, the Mac doesn't find a *startup disk* (a disk with a System Folder), it checks the internal hard drive again, and then waits for you to insert a floppy disk with a System Folder on it. (That's when the blinking question mark appears.) In that event, go find your system disks or startup CD-ROM. Insert Disk Tools if you want to find out if anything's wrong with your hard disk, or insert your system CD if you want to reinstall the System Folder.

The first programs to run: enablers

The Mac is now turned on. It's passed its own checkup, and it's found a working System Folder. If it's a System 7.1 (or later) Mac, the first programs to run are the enablers, if any. (As described in Chapter 5, an enabler is a file that updates or enhances the regular Mac System software.)

If the enabler is missing from the System Folder on your designated startup drive, that's the end of the startup sequence — even if there's a perfectly good System Folder on another disk. The Mac displays an erroneous error message ("This model Macintosh requires a newer version of the System software") and sits there until you turn it off or the warranty expires.

Get out your original system startup CD and get busy reinstalling the System software.

More startup software: extensions and control panels

After owning a Mac for a while, most people begin to tailor its startup sequence to their specific needs. You do this by adding extensions and control panels to your System Folder (see Chapter 4). Your Mac runs these programs after the enablers, but before it gets to the Finder.

MACINTOSH SECRET

The power of Shift

The Shift key plays a critical role in the startup process. If you press and hold Shift before the "Welcome to Macintosh" message appears on the screen, you prevent your extensions, control panels, and startup items from loading. This, of course, is one of the most important tools in the arsenal of anyone trying to solve a mysterious system-crash problem.

The Shift key also reduces your Disk Cache setting to a bare-bones minimum (see Chapter 9) and turns off virtual memory. Interestingly, though, these changes don't show up in the Memory control panel; if you look there, your settings appear to be unchanged. The Mac's lying, though—virtual memory and your Disk Cache really have been changed.

The Shift key, however, doesn't prevent *all* extensions from loading. It certainly doesn't block an enabler that your Mac requires to run, for example. Nor does it turn off any printer drivers that you need to print.

A single, very sound principle governs Apple's programming in every case: The Shift key turns off all software that isn't *required* for the Mac to start up with its basic functions intact.

Remember that the Shift key is designed for helping you troubleshoot. It's designed to assist in your process of elimination as you attempt to rule out extraneous software influences on your Mac's behavior.

Mac Basics

Normal programs run (get loaded into memory) only when summoned with a double-click. Extensions and some control panels, on the other hand, load at startup. Then they lurk, doing their preprogrammed magic, in the Mac's memory for as long as the computer is turned on. For this reason, they're ideal for—and designed for—customizing the Mac's overall behavior. America's favorite add-on control panels include screen savers (After Dark, for example), Adobe Type Manager, fax software, and so on.

Extensions and control panels: how they load

Extensions and control panels load separately according to the folder they're in, in the following order:

- **System file:** Few people realize it, but some extensions are actually installed into the System file itself, just like a sound or a keyboard layout. You can't put one there—only certain Apple extensions (invisible to you) are stored there.

- The contents of the *Extensions folder,* in alphabetical order. (Overseas Mac fans, beware: What's "alphabetical" varies depending on the international version of the System folder you're using.)

- The contents of the *Control Panels folder,* in alphabetical order. In other words, an extension in the Extensions folder called Zipper actually loads before one in the Control Panels folder called Alpha. It's okay to

put extensions in the Control Panels folder and vice versa, by the way. These folder names are just for convenience; technically, you don't have to put anything particular in one or the other.

■ The contents of the **System Folder**'s main level, in alphabetical order. Yes, it's fine to put extensions and control panels loose in the System Folder.

Your personalized loading order

Armed with this information, you have complete control over the loading order of your extensions and control panels. That's good, because some extensions (such as hard disk drivers, virus checkers, and extension managers) only work if loaded first. Loading order is also important when you're trying to troubleshoot a recurrent system crash or freeze, since the order in which extensions load is often responsible. (More about solving extension conflicts in Chapter 36.)

Here are some examples of things you can do:

■ Make one control panel load before all the others by putting its alias into the Extensions folder. (But leave the original in the Control Panels folder so it'll be there when you need to change its settings.)

■ Take an extension that's supposed to load before all the others and put a space in front of its name. Leave it in the Extensions folder. It loads first because it's first alphabetically *and* in the first folder the Mac looks at.

■ Use Conflict Catcher (or the demo included on the CD-ROM with this book) to simply drag startup files into the order you want.

CD   ■ Take an extension that's supposed to load *after* all other extensions and control panels. Put a Z at the beginning of its name and then put it loose in the System Folder.

Drivers: sometimes invisible, always vital

Among your now-loading extensions, by the way, are the *drivers* for your equipment. A driver is a piece of software that teaches the Mac all it needs to know about a piece of peripheral equipment. *No* Mac add-on gadget — printer, CD-ROM drive, Zip or SyQuest drive, modem — will work without a corresponding driver in your System Folder.

Many of these drivers are invisible to you, built into the system software (like the mouse, keyboard, and monitor drivers). Be grateful; on Windows machines, these drivers are not only visible, but must be maintained and regularly updated.

Most critical of all, of course, is your hard disk driver. (This particular set of software is on its own invisible *partition;* see Chapter 8.) It's important

because you use your hard disk more than any Mac add-on — constantly, in fact. Now you know why Apple's system-software installers make such a big production out of checking your hard drive and its drivers before allowing you to proceed (see Chapter 5).

On most recent Macs, the driver for the built-in Apple CD-ROM drive is built into the Mac's ROM chips. That explains how you're able to start up from a CD in times of crisis — even though the "CD-ROM extensions" haven't, technically speaking, been loaded.

Icon row

As each extension and control panel is loaded, its icon usually appears on the bottom of your screen. We say *usually,* because many control panels have a check box that lets you eliminate the appearance of the startup icon — and some Apple extensions are programmed not to display a startup icon at all. (Control-freak notice: You can use Conflict Catcher to force them to appear; see the appendix.)

The icons appear one-by-one in a horizontal row. Depending on whether or not there's a tiny piece of "wrap the icons!" code in any of the extensions, these icons may even wrap upward to start a second row above the first — and a third, and a fourth, and so on. (One extension freak boasts that he regularly runs 120 system extensions without crashing. We'd like to see it.)

This is worth mentioning, only because it can be a clue when you're in extension-conflict hell. If you're suffering from startup-crash blues and having trouble figuring out which extension is crashing your Mac, watch those icons as they appear. Often one particular icon pops up just before the crash, each time you restart. That icon may represent either the extension that's causing the crash or the one just after it. (For much more on extension conflicts and how to solve them, see Chapter 36.)

CASE HISTORY

The New Jersey computer widow

The owner of Atlantic Computer Systems, a wonderful Mac dealer in New Jersey, told us about one Mac widow who took things into her own hands. (A Mac widow, of course, is a woman whose husband spends more time with his computer than with his spouse. We know a Mac widower or two, too.)

Anyway, this particular woman took a low-tech approach to solving a high-tech problem. She grabbed a hammer and smashed in her husband's Apple 14-inch color monitor.

No report on whether that New Jersey couple now spends more time together.

The Ultimate Startup-Keys List

Mac lore is filled with tales of little-known stunts your computer performs if you press certain mysterious key combinations while the computer is starting up. Here, together at last, are all the different startup key combos. We threw in a couple of other miscellaneous startup Secrets while we were at it.

Startup Secrets

The Shift key (no extensions)

Hold down your Shift key, beginning no later than the appearance of the smiling-Macintosh icon. Release it when you see the words "Extensions off." You've just started up the Mac without any extensions or control panels. You also prevented anything in the Startup Items and Shutdown Items folders from launching, prevented File Sharing from turning on, turned off virtual memory, and reset the Disk Cache to its default setting. (As noted earlier, when you actually *look* at the Memory control panel, all settings seem to be where they normally are. That's because the Mac treats its special Shift-key settings as temporary, and your regularly-scheduled settings are restored the next time you start up the Mac.)

The Shift key (no Startup Items)

If you wait to press Shift until *after* your extension icons have finished appearing on the screen — but *before* the Desktop appears — then you prevent the contents of your System Folder's Startup Items folder from loading without turning off your extensions.

Option (all windows closed)

There's no end to the secret key combinations that do things when you start up the machine. Press Option, for example, if you want to be greeted by a clean, neat Desktop, with no windows or folders open. (Normally, the Mac always reopens whichever windows were open when you last shut down.)

Technically, you only need to press Option at the end of the startup process — from the end of the extension-loading phase to the appearance of the Trash can, for example.

⌘-Option (rebuild the invisible Desktop file)

As you read in Chapter 1, there's an invisible Desktop file on every disk. Over time, the Desktop file becomes bloated with icons belonging to files and programs you've long since taken off your disk.

To make the Mac "forget" all superfluous icons from your current Desktop file, press and hold the ⌘ and Option keys when the Mac is starting up. You don't need to press them right away — the critical moment is just after your extensions have all loaded. You can let go of the keys when the Mac asks you specifically if you want to rebuild the Desktop file (see Figure 7-3).
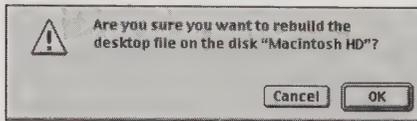
Figure 7-3: The Mac asks if you're sure you want to wipe out your old, invisible Desktop file.

If you click OK, the Mac takes a minute or so to cleanse its Desktop file, resulting in a slimmer, quicker, invisible database (see Figure 7-4). You get a separate message for each disk that's attached to the Mac. (In software versions before System 7.5.3, rebuilding the desktop also erases any comments you've typed into the Get Info windows for your files.)
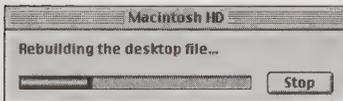
Figure 7-4: The Mac rebuilds the Desktop file. If you grow impatient, click Stop; no harm done. If your icons show up generic, you can always rebuild again later to complete the job.

We should point out that Apple's official recommendation is that you rebuild the Desktop only *after* you've turned off all your extensions and control panels. Frankly, though, we've rebuilt the Desktop plenty of times without turning off other extensions without a hitch. See "Desktop File Secrets" in Chapter 2 for more on this debate.

⌘ *key (turn off virtual memory)*

If you press the ⌘ key during startup, the Mac turns virtual memory off (if it had been on). The Memory control panel still says it's on, but it's showing you what will happen the *next* time you turn on the Mac. *You* know that virtual memory is off by checking out the free space on your hard drive — which has suddenly increased by dozens of megs, thanks to the absence of the virtual memory *swap file.* (See Chapter 9 for details on virtual memory.)

C to start up from Power Mac CD-ROM

When you start a Power Mac or most modern PowerBooks with a startup CD-ROM in the drive, hold down the C key to force the Mac to load from the CD-ROM's System Folder instead of your hard drive—a very handy troubleshooting tip. (This trick also works with some CD-equipped *non*-Power Mac models, such as the Performa 630/640 series.)

If the C key doesn't force your Mac to start up from the CD, your model doesn't accommodate that trick. Read the next secret for the solution.

⌘-Option-Shift-Delete (ignore internal drive)

If, just after you turn on the Mac, you hold down ⌘, Option, Shift, and the Delete key, your Mac ignores its internal hard drive. This is a good way to force your Mac to use a different startup disk, such as an external hard drive that you loaded with a different System version. (This is also a good way to sprain your hand.)

If you have a PowerBook 1400 or another machine that doesn't support the C-key trick described in the previous secret, this keystroke is your ticket to booting off your system CD-ROM in times of crisis.

⌘-Option-Shift-Delete-number (specify startup drive)

Take that previous secret and add a number key, 1 through 6, and you've just instructed the Mac to start up from a *specific* startup drive (instead of the built-in hard drive).

⌘-Option-P-R (zap the PRAM)

Mac Basics

Your Mac has a tiny chunk of memory called parameter RAM or PRAM (pronounced *pea*-ram). This smidgen of memory is where the Mac stores settings it's supposed to retain even when the computer is turned off—like the settings you make using the Control Panels (mouse speed, keyboard settings, monitor color setting, Desktop pattern, choice of startup disk, choice of printer, network setup, and so on).

In times of trouble, you may need to flush this bit of RAM and start over. To do this, you use another hidden key combination at startup: ⌘, Option, letter P, and letter R keys. Keep them pressed until you hear a second startup chime. (On a Mac with PCI slots, you can't zap the PRAM with a restart; you have to turn the computer completely off, press the keys, and then turn the computer on.)

Then use your control panels to reset your settings.

⌘-Option-T-V (use the TV for a monitor)

Hold down ⌘-Option–T-V during startup to make an AV-style Quadra use an attached TV as a monitor. (See Chapter 23.)

⌘-Option-O-F (iMac copyright notice)

As you can read in Chapter 13, the iMac is revolutionary in more than its futuristic design. It's also the first Macintosh to have its ROM (underlying computer code) stored on disk instead of on ROM chips, using a new technology called Open Firmware.

Why should you care? Because now you can understand the significance of the iMac keystroke ⌘-Option-O-F. If you hold down these keys at the very beginning of the startup process (before the screen has even lit up), you trigger the secret Open Firmware Easter egg: a white screen with a little copyright notice and version number.

Strange
But True

We suppose it'd be the right thing to do to tell you how to *escape* this box once you've summoned it. Believe it or not, you type *bye* and press Return!

Space bar (open Extensions Manager)

As described in Chapter 4, press the Space bar during startup to open the Extensions Manager or Conflict Catcher window (whichever you have installed). In this window, you can choose which extensions and control panels will be turned on for the coming computing session.

And while we're at it: Conflict Catcher offers a slew of other useful keys to hold down at startup. Press the Tab key to halt the extension loading so that you can look over the icons that have loaded so far; ⌘-period (.) stops loading extensions and jumps directly to the desktop (only the extensions that have appeared to that point are loaded); R restarts the computer. You can set up any alphabet key to correspond to a particular set of extensions, too, and (in version 8) you can click any loading icon to pop up an information panel about that extension. More on Conflict Catcher in Chapter 22.

Interrupt switch (to hear the Chimes of Death)

On 1994 through 1996 Power Macs, you can hear the "Chimes of Death" car-crash sound whenever you want (see "The Chimes of Death," earlier in this chapter). *Just* after you turn on the Mac—while the monitor is still black—press the Interrupt switch (see "The Interrupt Switch" sidebar later in this chapter). Yikes, what a grisly sound!

Mouse down (eject a floppy)

Suppose that you accidentally left a floppy disk in your disk drive. No problem: when you turn the Mac on, the disk will pop out.

But if the floppy has a *System folder* on it, you might think you're condemned to waiting for the *very* slow floppy-disk startup sequence to finish, so that you can eject the disk and restart from your hard drive.

Speed Tip

You don't have to. As soon as you realize your mistake (or sooner, since this has to happen *before* the floppy's System displays the smiling Mac), press and hold down the mouse button. The floppy ejects itself, and the startup process begins with the hard drive's System Folder.

Startup screens

You can display a picture of your choice when the Mac starts up in place of the usual "Welcome to Macintosh" screen. See Chapter 21 for instructions on creating your own.

Startup movies

If you have the QuickTime extension installed (see Chapter 23), there's a special treat in store. You can designate a particular QuickTime movie to play in the middle of your screen when you start up the Mac!

To do this, rename the movie *Startup Movie.* Put it loose in your System Folder. Then restart the Mac and watch the fun. (Of course, your movie won't *start* playing back until the QuickTime extension itself loads. And once it does start playing, the remainder of your Mac's startup sequence gets put on hold until the movie ends. You can interrupt the flick, though, by pressing the spacebar.)

You can even combine a movie with a still picture, creating a theatrical "stage" for your movie. Create a startup *screen,* as described in the previous Secret. Create it, though, so that it has a nice central hole in which your movie can play (see Figure 7-5). When you restart, the still picture appears first, and then the movie plays in the center of it! Handily, the startup movie always stops on its last frame, where it stays until the Mac is finished starting up.

Startup at a specified time

Your Mac gets along perfectly well without you — or at least it can turn itself on without you.

The Energy Saver control panel (described in Chapter 4) can turn on any recent Mac at a specified time — one day, or every day.
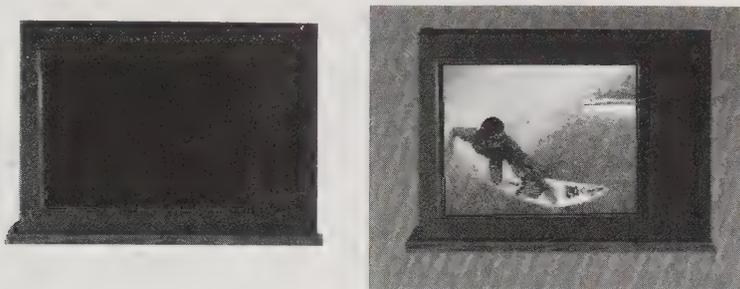
Figure 7-5: Create a startup screen/frame (left). When the startup movie plays, it neatly fills the hollow part of the frame, if you've set it up right (right).

Most PowerBooks can do this, too. It's an option in the PowerBook control panel that lets the computer wake itself up at a specified time.

If you have any other Mac, buy a PowerKey (Sophisticated Circuits, 206-485-7979). It's a surge-protected power strip that turns on all your Mac gear with a touch on the keyboard power key (even compact and LC Macs). It comes with a little software doodad that lets you schedule the Mac's turning itself on and off unattended. The PowerKey Pro version even lets you *call* your Mac by phone — and press certain touch-tones to turn on selected components!

Startup Items to the background

Many people stick an alias of their word processor into the Startup Items folder, so that a blank word-processing screen awaits them shortly after they turn on the Mac. Nothing wrong with that.

Sometimes, however, the program in your Startup Items folder is designed to be a *background* program. Speech-recognition software (such as PowerSecretary), answering-machine programs (such as MegaPhone), and many screen-saver programs fall into this category. Unfortunately, these programs wind up being the frontmost application when the startup process is complete.

Not, however, if you put an alias of your *hard drive* into the Startup Items folder, too. Doing so brings the Finder to the front (at the end of the startup process) and open its window automatically. Just make sure that the item you want to end up in front is the last in alphabetical order (begin its name with a Z, for example).

Beyond the Startup Sequence

CD

Now you know why starting up the Mac takes so long — between checking the hardware and loading the software, some Macs take several minutes to get ready for action. (Want to speed up the startup sequence? Install Startup Doubler, an extension that "memorizes" your standard set of extensions and control panels. All subsequent startups *fly* by in a fraction of the time it would have taken to load all your startup files individually.)

The Mac's next step is to launch the Finder program. Your Finder menu bar (File, Edit, View, Special, Help) appears. Then the computer consults an important, though invisible, file on each disk: the Desktop file. As described in Chapter 1, the Desktop file stores all kinds of information about your disks, folders, files, and their icons. When the Mac knows (from the Desktop file) which icons you have and where they should appear, they start popping onto the screen. Then the Mac looks for disks (such as your hard drive), whose icons it now draws in the upper-right corner of your screen.

OS 8

In Mac OS 8 and later, only then is the   menu built. That's why the   menu appears empty if you click on it before all your desktop icons have appeared!

Startup Items

Inside the System Folder is a folder called Startup Items. Just after the Desktop appears, the Mac opens anything you've put into this folder, as described in Chapter 5.

The Mac launches the items in the Startup Items folder in this order: applications, documents, and then aliases — and alphabetically among each category. You can use this fact to your advantage; by renaming the items in this folder, you control which programs load first for the day. As you'll find out in Chapter 9, controlling the loading order of multiple programs is one weapon you have against *memory fragmentation*.

CASE HISTORY

Startup items, right?

In our work as roving Mac tutors and observers, we sometimes think we've seen it all. But then there was the call from a hysterical, new Mac owner. He claimed that "all hell" kept breaking loose every time he turned on his Mac.

A little visit solved the mystery. As a perfectly logical human being, he had filled his Startup Items folder with, yes, *startup items* — namely, all his control panels and extensions. (Of course, they actually belong in the Control Panels and Extensions folders.) So each day when he turned on the Mac, he got a screen full of error messages (as the Mac "double-clicked" each extension) and control panel windows (as they opened by themselves).

We doubt he was the first.

OS 8 Here's a nice trick for the Startup Items folder: Make an alias of it. Put the alias at the lower-left corner of your screen. At the end of each workday, drag an alias of the document you're working on into the Startup Items folder alias. (That's especially easy to do in Mac OS 8 — just ⌘-Option-drag the document's icon.) Next morning, you'll turn on your Mac and be immersed in exactly the same documents, ready to go.

Shutting Down

Mac Basics Apple strenuously suggests that you never turn your Mac off by cutting off power using the switch on your power strip — or the power switch on the back of the Mac. Instead, you're always supposed to use one of the officially endorsed Shut Down methods:

■ Switch to the Finder (or quit all your programs). Choose Shut Down from the Special menu.

■ On most Macs since 1995, press the power key on your keyboard. You're shown the dialog box in Figure 7-6 that offers three options: Restart, Cancel, or Shut Down. Click Shut Down — or hit the Return key — to complete the shutdown process. (On most Power Macs, you get a fourth option — Sleep. Clicking the Sleep button leaves your computer on, but cuts the video signal to the monitor, causing the screen to go black. See "Sleep Modes" later in this chapter.)

You can also press the R key to restart, or the S key to sleep.

Contest Winner ■ As free book winner Justin Crompton discovered, you can press the little-known Shut Down keystroke: Control-Option-power key. Your savings: one dialog box and one mouse click.

■ In System 7.5 through 7.6, choose Shut Down in the menu, saving you a trip to the Finder to get at it.

■ If you have a remote control for your Mac (5400 owners, you know who you are), press the Off button on your remote. And don't let your coolness go to your head.

■ Let the Energy Saver control panel shut down your Mac (see Chapter 4).
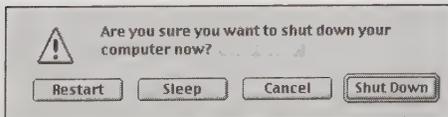
Figure 7-6: Press the power key on any modern Mac to get this dialog box. You can save a mouse click by typing R for restart, S for sleep, C for cancel, or Return for Shut Down.

Why does Apple care how you shut down? The rationale is that the Mac needs to do some "housekeeping" before turning off the machine; cutting off power deprives the Mac of the chance to take care of these tasks. The checklist includes:

- Updating your invisible Desktop file with your current icon and window positions

- Offering you the chance to save your work in any documents still open

- Correctly quitting any open programs, deleting any "temp files" in the process

- Ejecting any floppy disks

We can think of plenty of times when you can't get to the Shut Down command, however. Imagine a system crash or a freeze, for example. In those instances, you have no choice but to cut power to the computer.

We suggest that you use one of the official Shut Down methods as recommended by Apple. We do not, however, endorse the wide-eyed, paranoiac approach of many books and magazines; we say, cut the power when you have to. Particularly in Mac OS 8.5 and later, Apple recognizes that *stuff happens* — including crashes. That's why, when the Mac next restarts, it does a self-check and, if it finds problems, a self-repair. All you pay is the extra time.

The cycle of last chances

The Mac follows a specific series of steps when you've chosen the Shut Down command.

If any programs are open, the Mac quits them automatically, first offering you the chance to save your work in any unsaved documents. If you're connected to a network and other Macs are sharing some of your files, you're warned that you're about to slam the door in their faces (see Figure 7-7). If you click Cancel in any of the dialog boxes that appear during the shutdown process, the entire shutdown cycle is derailed; the Mac stays on.
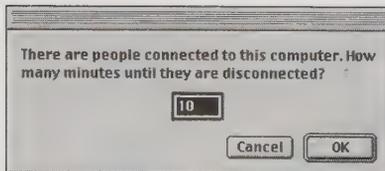
Figure 7-7: If you're on a network, and another Mac has "logged onto" your hard drive, the Mac warns you politely. Grammatically, too; Mac OS 8 finally corrects the run-on sentence that's plagued this dialog box since System 7.

Shut Down Secrets ———————————————————

Automatic shutdown at midnight

Suppose you're downloading some huge file from America Online. Your Mac tells you that it's going to keep downloading until, say, 3 a.m. You want to go to bed, but you don't want to leave your system on all night.

Recent Macs let you use the Energy Saver control panel (described in Chapter 4) to turn off your Mac automatically—at a certain time, or after a specified amount of idle time. (A dialog box appears five minutes before shutdown, offering you the chance to postpone the shutdown for another hour—or to cancel the shutdown entirely. And if you're actually using the Mac at the time of scheduled shutdown—even downloading—the five-minute shutdown gets perpetually postponed until the Mac is idle.)

If you'd prefer your entire system to shut down—printers, CD-ROM drives, everything—then you need a PowerKey from Sophisticated Circuits. Its four or six grounded outlets all cut off at the same time whenever the Mac shuts down.

Canceling a Shut Down or Restart command

Suppose you choose the Shut Down command, only to realize three nanoseconds later that you forgot to copy a batch of important files to your backup disk. Any chance you can stop your Mac from shutting down once it begins the process of closing up shop?

Worth Learning
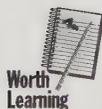
Yes! The moment you realize you don't really want to shut down, quickly launch another application—SimpleText, the Calculator, anything! Simply launching a program forces the Mac to abort its shutdown. (Our suggestion: use OneClick, Speed Doubler, or another file-launching macro program. At moments like these, you can simply slap the key corresponding to some "launch a program" macro.)

And if you have a screen saver, you can activate *that* to bail out of the shutdown, too.

The Restart (Reset) Switch

What it's *called* is the Reset switch. But what it *does* is restart the Mac. Every Mac model has a pair of these funny little switches. One of them, the Interrupt switch, is fairly useless unless you're a programmer. But its twin, Reset, is wonderfully useful.

Where is it?

Before we tell you how handy they are, we'll help you figure out *where* your switches are. On any SE or Mac II-series machine, you got a connected pair of plastic buttons that you were supposed to install by snapping onto the Mac's case.

The next generation of desktop Macs have special buttons for the Interrupt and Reset functions; there's nothing to install. They're located on the front of the 7100, 8100, most Quadras, most Power Computing clones, and the Centris (Quadra) 650 — and on the back of the Centris (Quadra) 610 and 6100 (on the right as you look at the back).

If you have a PowerBook 140 through 180, your Interrupt and Reset switches are two tiny holes on the right as you look at the back. You're supposed to "push the button" by inserting a straightened paper clip.

Virtually all other Macs have *hidden* Reset and Interrupt switches. Or, to be perfectly accurate, they don't have switches at all. Instead, you're supposed to press ⌘, Control, and the power key all at the same time. (That's to restart. For the Interrupt function, it's ⌘-power key.)

If your model has an actual button, switch, or hole (for a straightened paper clip), please note: The Interrupt switch is usually marked by a circle. The Reset switch — the one we want you to notice — has a left-pointing triangle. It matches the left-pointing triangle on the power key on your keyboard. Both have to do with *starting* the computer, get it?

Leaving your Mac on all the time

DP: JS, exactly why do we require an entire topic for *Shutting Down* in our outline?

JS: What do you mean? It's something you do every day. It's worth a topic.

DP: Well, I know plenty of people who don't.

JS: What?

DP: Sure. Lots of people never shut their Macs down.

JS: *What?* They leave their Macs on all the time?

DP: Don't go ballistic. Everybody knows it's better for your Mac's internal circuitry not to be turned on and off all the time. Every time you switch on the power, it's like sending a solid brick wall of electrons smashing through your computer's fragile veins. If you turn your machine on and off all the time, you're going to shorten its life.

JS: That is the *biggest* old wives' tale! Have you *ever* in your life heard of somebody's Mac going in for repairs, where the repair person announces that you did your computer in by turning it on too much?

DP: Well, no.

JS: It's a myth fabricated by the electric companies. They *want* you to leave it on all the time so that you run up your utility bills.

DP: Talk about old wives' tales!

JS: It's not! Look, do the math. I called up the electric company —

The Interrupt switch

We don't often use the Interrupt switch—the virtual switch you "press" by pressing ⌘-power key. (On older Macs, it's an actual plastic button on the computer's case—marked by a dot). But we're told that it can occasionally get you out of a system crash.

When the system crashes, press the Interrupt switch. A special empty dialog box appears on the screen, containing nothing but a > symbol. (This dialog box is the *mini-debugger;* compare with the real debugger, MacsBug, described in Chapter 22.) Here are the various things you can type at this point, and what they're supposed to do.

G FINDER or **G F** (then press Return) is supposed to get you back to the Finder safely.

SM0A9F4 (then press Return) **PCFA700** (Return, again) **G** (Return, again) is another Return-to-Finder sequence. Those are zeros, by the way, not letter "Os."

SM A78 3F3C 0002 A895 (press Return, then) **G A78** (and another Return) shuts your Mac down.

Honestly, we've found that these codes rarely work. On the other hand, when the system crashes and we've got important unsaved work on the screen, we'd jump up and down and say "gigabyte" ten times backward if we thought it would help.

DP: You called up your electric company!?

JS: Hey, I happen to care about the environment. Anyway, you look at your electric bill to see what a kilowatt-hour of juice costs. Mine says 13 cents. Then you figure out how much power your Mac uses—to do that, you multiply Amps by Volts. So, a Power Mac 8500 is 9 amps, 110 volts; monitor is 1.0 amps. That's 1,100 watts an hour. You're paying about 14 cents an hour to leave your Mac on.

DP: Yeah, yeah, so what's the bottom line?

JS: In a year, that's $1,226 down the sewer. Whereas, if I turned the thing off at night (and I work eight-hour days), I only pay $324 a year.

DP: But the wall of electrons . . .

JS: Furthermore, do you realize that the production of electricity in this country is responsible for 35 percent of the carbon dioxide in the atmosphere? Do you understand that New York City is going to be underwater in 150 years?

DP: Under—

JS: From global warming.

DP: New York is . . . ?

JS: Common knowledge.

DP: I stand enlightened.

JS: You see?

DP: From now on, I'll turn off the monitor at night.

ANSWER MAN

The iMac's broken restart sequence

Q: Hey! I followed your book's instructions to restart my locked-up iMac. I pressed ⌘-Control-power key like you said. The machine is still locked up.

A: Ah, that's because the iMac doesn't use the usual ADB (mouse/keyboard) circuitry. Remember, the iMac uses new USB wiring (see Chapter 10). As a result, the ⌘-Control-power keystroke doesn't work in the case of severe crashes.

You have no choice but to push the iMac's physical reset button. Open the plastic cover on the side of the machine. The reset hole is a tiny hole between the Ethernet and modem jacks, marked by a small triangle. Insert an unfolded paper clip and push gently into the hole to make the iMac restart.

And if even that doesn't work, unplug the iMac, wait 30 seconds, plug it in again and turn it on.

What is it?

We really want to impress upon you the convenience and simplicity of the Reset switch. If you're not using it whenever you have a system bomb or your cursor freezes on the screen, you're missing a great thing.

Obviously, you shouldn't use the Reset switch as part of your daily shutdown routine — use it only when your Mac is frozen. Cutting power in this way *can* occasionally damage open documents (although usually only if such documents are right in the middle of being saved).

Sleep Modes

In the name of conserving electricity, Apple seems to enjoy defining new variations of On and Off. There's the Sleep mode on PowerBooks, for example (see Chapter 14). All Power Macs except the original three models (6100, 7100, 8100) offer an even more radical concept: *desktop* sleep.

In fact, today's Macs take the sleep concept a step further, providing independent controls for the sleep behavior of the Mac, the hard drive, and the monitor (in fact, two *different* monitor sleep modes, as you'll read in a moment). In other words, you might choose to have the monitor blink off after 30 minutes, but make the hard drive wait a full hour before spinning down into low-power mode.

So how do you make your Mac sleep? Let us count the ways:

- In the Finder, choose Special ⇨ Sleep.

- Press the power key. In the dialog box that appears, click Sleep (or strike the S key). (This method works on most modern Mac models.)

Speed Tip

- Talk about little known: You can press ⌘-Option-Power key to put your Mac to sleep, thus bypassing a dialog box.

■ You can set your Mac to go to sleep automatically, using the Energy Saver program described next.

To wake up any sleeping Mac, press a key or click the mouse.

System sleep

The command center for making laptops and Power Macs go to sleep is the Energy Saver program (see Chapter 4). As you can see in Figure 7-8, this application-in-your-Control-Panels-folder gives you independent control over each aspect of the Mac: hard drive, system, and monitor. To view these added controls, click the Show Details button.

You'll quickly discover that you can't set the monitor or hard drive to stay awake after the Mac itself has dozed off; in other words, if the Mac sleeps, the whole thing sleeps. (If you examine the "grayed-out" ends of the lower two sliders in Figure 7-8, you'll see what we mean; you can't drag the slider handles farther to the right than the Mac's own slider.)

And one other thing: If there's a dialog box on the screen, such as "Save this document?", the Mac won't go to sleep at all. (Apple once tried an auto-save option, which it implemented in earlier versions of Energy Saver. It put a folder on your desktop containing any documents that were open and unsaved at the time the Mac shut off, stamped with the date and time of the shutoff. Novices couldn't deal. The feature went away.)
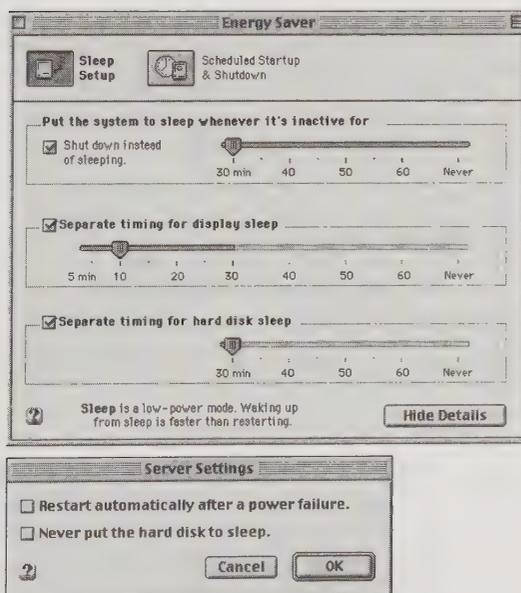
Figure 7-8: Click the Show Details button to expand your Energy Saver "control panel" into its three-panel expanded state, shown here. At bottom: The Server preferences panel.

Hard drive sleep

The spinning of your hard drive is one of the Mac's bigger power consumers. Although making the hard drive sleep is a sure way to make your Mac take *longer* to wake up again — because getting the hard drive up to its precise normal speed requires considerable effort on the Mac's part — it's also a sure way to save power when you're not using the Mac.

There's one circumstance, however, when you might want the hard drive *not* to sleep when the rest of the Mac nods off: when you're on a network and File Sharing is turned on. (See Chapter 35 for more on networking.) If your hard drive is asleep when someone else on the network tries to get at your Mac's files, they'll wait almost forever before getting satisfaction.

That's why you should make the hard drive stay awake full-time if you're networking. To do so, open the Energy Saver "control panel." Choose Preferences ⇨ Server to make the dialog box shown at the bottom of Figure 7-8 appear. Turn on the "Never put the hard disk to sleep" checkbox. (If you're on a serious office network, especially one that people dial into using Remote Access, you might also want to turn on the "Restart automatically" option while you're at it.)

Monitor sleep — and saving power

Although there's not a word about it in the manual, online help, or Energy Saver dialog boxes, your Mac can actually make its monitor sleep in two different ways.

■ **Screen-saver (light) sleep:** The screen simply goes black; you've got yourself a built-in screen-saver. The monitor, however, is still using almost full power. When you touch a key or click the mouse, the picture returns immediately.

■ **Power-saving (deep) sleep:** This is the mode you probably think of when we say "monitor sleep": The monitor goes black *and* it draws only a tiny trickle of power. You save money, energy, and the environment — but you wait longer for the screen to light up again when you wake the thing up. (This is also what you get when, in the Finder, you choose Special ⇨ Sleep.)

So how can you control what your monitor does? Simple: By default, the Mac uses power-saving sleep.

To set up light sleep (which doesn't save power), make sure you've expanded the Energy Saver dialog box (as shown in Figure 7-8) by clicking the Show Details button. Turn on the "Separate timing for display sleep" checkbox, and drag the slider to a shorter time than you've got set for the top slider.

That's it: After the interval you've just specified, your screen will go dark, but it's not fully asleep.

It *will,* however, shift into true, power-saving, deep sleep after the amount of time you've specified using the *system* (top) slider. At this point, you'll have to press a key (not just click the mouse) to wake up the whole system.

Chapter 8

The Disk Chapter

The moment you shut down your Mac, everything in its memory vanishes into oblivion. Every application you launched, every document you created, every file you modified during a work session — they all evaporate into nonexistence as soon as you turn off the juice. This happens because memory chips hold data only when electricity is running through them.

That's why you need disks. Floppy disks, hard disks, and other storage media provide a stable format that can permanently record the data you manipulate in your Mac's memory.

In this chapter, we'll confront all the disk-related technoid terms you hear flogged about in Mac user-group meetings: *initializing and formatting, interleave, defragmenting, optimizing,* and *partitioning.* Impressively, you can do a number of these stunts to your hard drive without spending a penny. You can use Drive Setup or, if you have an older Mac, Apple HD SC Setup — two vastly underpublicized free hard-drive utility programs. We'll show you how.

Disk Basics

The Mac "writes" data to a disk, whether hard or floppy, by sending out a stream of positive and negative electrical signals that correspond to the series of bits (1s and 0s) that make up the data currently in the computer's memory. Based on those signals, an electromagnet in the disk drive's *read/write head* (a moving arm, like the needle of a record player) creates a

pattern of tiny magnetic bands along the surface of the disk as it spins (see Figure 8-1). Because the disk is coated with metallic particles that are extremely sensitive to magnetic charges, the patterns created by the drive remain intact indefinitely. The area taken up by each magnetic charge is so microscopically tiny that a single high-density floppy disk can store more than 11.5 *million* bits of data.

Figure 8-1: The magnetic read/write head moves across the disk surface like the needle of a record player. On a disk, however, it doesn't start at the outside and move in; it jumps all over the disk surface as needed.

Data is read back into the Mac through a reverse process in which the read/write head *reacts* to the magnetic fields on the disk. Then it transfers the positive and negative signals back to the Mac's memory.

With millions of bits of data scattered over the surface of a disk, how does the Mac find a particular string of recorded data?

Sectors, tracks, and blocks

Simply put, it follows a map. The surface of each disk is mapped out into a series of concentric circles called *tracks*. Each track is, in turn, partitioned into smaller segments called *sectors*. The Mac relies on these dividers as guideposts. It keeps track of which bits of data get stuffed into which sectors (or groups of sectors, called *blocks*), so that it can find them again when needed. In essence, the surface of a Mac's hard disk has been divided into thousands of little numbered parking spaces for information.

Mac Basics

When you pop a new, unformatted floppy disk into your Mac, the Mac must *initialize* the floppy disk before using it (see Figure 8-2). Here's the reason: A blank disk fresh out of the box hasn't been mapped out with tracks, sectors, and blocks. During initialization, the Mac inserts those reference points, creating the map it will later use to navigate around the disk, storing and retrieving specific pieces of data.

> This disk is unreadable by this Macintosh.
> Do you want to initialize the disk?
>
> Name: `untitled`
>
> Format: Macintosh 1.4 MB
>
> [Eject]   [Initialize]
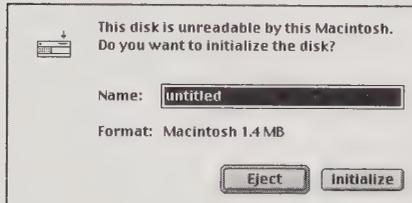
Figure 8-2: You can't use a floppy disk until it's been initialized with the guideposts the Mac needs to find its way around.

The great wasted-space conspiracy

Apple's standard Hierarchical File System (HFS) divides up every disk — floppy, Zip, hard drive, CD-ROM, whatever — into a fixed number of blocks — 65,000, maximum. On a floppy disk, each block is about 1K — there are nowhere close to 65,000 blocks. On a 1-gigabyte hard drive, though, the 65,000-block ceiling kicks in, meaning that each block is 32K. On a four-gig drive, each block is 65K. And so on.

Strange But True

Now comes the strange part: no matter how small a file is, the *minimum* amount of disk space it can take up is *one block.* You read that right — even a *completely empty* SimpleText file takes up 65K on a four-gig drive. Try it yourself — you'll see.

Therefore, some space almost always gets wasted, especially with little files — the Mac rounds up the amount of space taken up by a file to the nearest block. Suppose you've got a four-gig drive. If a file is 70K, the Mac must reserve *130* kilobytes for it. The file won't fit completely in one block (65K), and so a second block gets used up, even though it's mostly empty. Bottom line: the Mac can't subdivide a block.

(Techie note: The situation can be even worse if the file in question has both a *data fork* and a *resource fork,* the two separate chunks of code that can constitute a Mac file. These chunks can't coexist on a block — so that 70K Mac file, if it contained 66K of data and 4K of resources, could consume *195K* of space — two blocks for data and one for resources.)

Want to see this bizarre wastefulness in action? Click a small file's icon and choose Get Info from the File menu. You'll see not one, but two different sizes for it. You'll see something like "65K on disk (9,112 bytes used)." Now you know: the file is actually about 9K in size — but it's using up 65K on the disk (most of which is empty).

Multiply this wasted-space scenario times the thousands of tiny files on your hard drive — think of those hundreds of Web cache files, for example — and you'd almost be tempted to suspect collusion between Apple and the hard-drive manufacturers.

Only one thing calms our Oliver Stone-esque conspiracy theories — the fact that Apple finally eliminated the wasted-space problem. Mac OS 8.1 and later offers an optional hard-drive formatting scheme called HFS+, or Mac OS Extended Format, that makes the wasted-block-space syndrome a thing of the past. We'll discuss this new formatting system later in this chapter.

So why did Apple devise a filing system that wastes so much space? This system was developed in the days when a 20MB hard drive was considered absurdly huge. The tiny amount of space wasted by a 20MB hard drive's partially-filled blocks is, indeed, negligible. But today, where a typical hard drive is 200 times that size, the blocks are proportionally larger — and the wasted space mounts up.

The changing-file-size syndrome

The different-block-size-for-each-disk phenomenon explains another quirk of the Mac universe: the changing-file-size syndrome. For example, on a floppy, an alias is only 1K — but drag it to a 4GB hard drive, and the very same alias balloons to 65K! Similarly, you might drag your important 64K speech onto a floppy and see it shrink before your eyes to 8K. There's nothing bad going on; you're merely seeing these small files occupy a single block on each disk.

Want to make an impression at Silicon Valley cocktail parties? Let this terminology fly: The number of blocks used up is the *physical file size.* The actual size of the file, which is always *smaller,* is called the *logical file size.* The two numbers you see in the Get Info box are the physical and logical sizes of the file. The first number, the physical file size, is always expressed in K; the second number, the logical file size, is always given in bytes.

There's only one more strange aspect of file sizes. We just said that the *physical* file size (the first number in the Get Info box) is always *larger* than the second number because it reflects a certain amount of wasted space. But if you look at Figure 8-3, you'll see an apparent contradiction! The example there says "314K in disk (319,065 bytes used)" — the first number is *smaller* than the second! Right?

Figure 8-3: When is 314 not 314? When it's 319. Which, believe it or not, is smaller than 314.

Wrong! Don't forget that there are *not* 1,000 bytes in a kilobyte, despite your lessons in Greek prefixes. Because a computer can count only in powers of two, there are actually 1024 bytes in a kilobyte! Therefore, the sentence "314K in disk (319,065 bytes used)" is perfectly logical. If you do the math, you'll discover that the Get Info box is really saying 314K in disk, 311K used! And, as we said, the first Get Info number is truly larger than the second number. Always.

What's a volume?

Mac Basics

In the olden days, a disk was a disk. Then there were cartridges. Then there were CD-ROMs, tape cassettes, and Zip disks. The world needed a generic term to cover *any* kind of individual storage unit/disk/disc/cartridge/cassette — you know, something that shows up on your Desktop with its own name and icon.

The term they came up with is *volume*.

HFS+ (Mac OS Extended Format)

OS 8

This new disk format, supported by Mac OS 8.1 and higher, is a modern alternative to the aging Hierarchical File System (HFS) which Apple now refers to as Mac OS *Standard* Format. Under Mac OS Extended format, the maximum number of blocks allowed on a drive swells from 65,536 to *4.29 billion* — so the blocks can be much, much smaller, thus wasting much, much less space.

The bottom line: HFS+ is like a gift of a free hard drive to every Mac owner in the world. It can return to you *hundreds* of megabytes of free storage. When you reformat your current hard drive as an Extended Format disk, your files simply take up less disk space.

Just how much space you reclaim depends on the size of your disk — the larger the disk, the more space you stand to gain — and the sort of files you keep on it. You'll see the biggest impact if you have a large number of small files, rather than just a few enormous files. It's not unusual to gain back 200 megabytes on a drive that holds 2G or more.

Should you upgrade your drive to HFS+?

Converting your existing hard drive to an HFS+ disk can save you a lot of storage space. But if you're not careful, you can end up with plenty of hard drive space for your files — and no way to access them. Before proceeding, learn well the following Rules of HFS+:

■ **Rule 1:** First of all, you can access HFS+ disks only from Macs running Mac OS 8.1 or later.

Suppose, for example, that you format a Zip disk with HFS+. You take it to a friend's house, where the Mac is running System 7.6. Insert that Zip disk, and you'll find it *empty* — except for a Read Me document file called *Where_have_all_my_files_gone?* The file explains that your files are still present — but visible only on a Mac OS 8.1-or-later Macintosh.

(However, Macs running earlier system versions *can* access files on HFS+ disk contents over a *network,* as long as the server is running OS 8.1 or later.)

- **Rule 2:** Furthermore, you can't use an HFS+-formatted drive as the *startup drive disk* in any non-PowerPC Mac. In other words, don't try to format the internal hard drive of Quadras, Mac II-series, or desktop Macs with three-digit model numbers with HFS+. Only PowerPC-based Macs can start up from an HFS+ disk. Nor can hard drives formatted with HFS+ be selected as virtual memory disks (in the Memory control panel) on non-PowerPC Macs.

- **Rule 3:** Also, it's not worth upgrading if your Mac has a smallish hard drive. You can format an 80MB drive using HFS+, but you might only gain a few extra megabytes. Generally speaking, drives smaller than 1GB aren't worth converting; you'll regain very little space.

How to upgrade to HFS+

Converting a disk to HFS+ means completely reinitializing it, which involves erasing all the data on it. So the first step in the conversion process is to back up your entire hard drive. When you're done re-initializing your hard drive, you'll have to copy all your files back.

Start up from a Mac OS 8.1 disk (not, obviously, the one you're trying to erase) — the Apple Mac OS 8.1 (or later) startup CD-ROM is a good choice. So is an external hard drive, a Zip, Jaz, or similar volume. You can also create a Mac OS 8.1 (or later) startup floppy disk, thanks to the Disk Tools *disk image* provided on the Mac OS 8.x CD-ROM. (See Chapter 22 for details on using disk images.)

To initialize your hard drive, select it in the Finder and choose the Erase Disk command from the Special menu. (Obviously, the disk you're re-initializing can't be your current startup disk.) In the Erase Disk window, choose Mac OS Extended from the Format pop-up menu.

Alternately, you can use Apple's Drive Setup utility (version 1.4 or later). First click Initialize, then click Custom Setup and choose Mac OS Extended from the Type pop-up menu (see Figure 8-4).

If you're willing to spend a little cash, there's at least one way to convert to HFS+ *without* reinitializing your hard drive. You can use PlusMaker, a $20 utility from AlSoft. PlusMaker converts a drive to HFS+ without reformatting it, leaving all your data intact. It also runs faster than Drive Setup and can create smaller-sized allocation blocks, for even greater space savings.
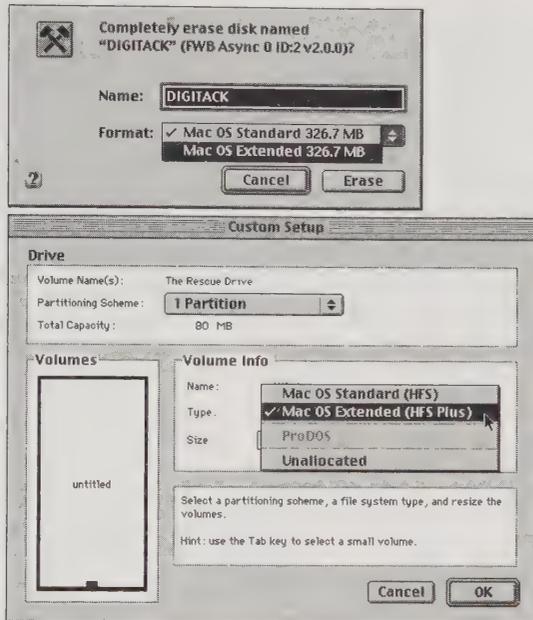
Figure 8-4: Use either Drive Setup or the Finder's Erase Disk command to reformat a drive as an HFS+ disk.

One other warning: If you do opt to reformat your drive with HFS+, make sure any hard disk utilities you use (such as Hard Disk Toolkit, TechTool Pro, or Norton Utilities) are HFS+-compatible. Only the most current versions of these programs can rescue files properly with HFS+ volumes.

Hard Disks

Crack open any hard drive (don't *do* it — we're just being hypothetical), and you'll find not one disk, but a *series* of metal or glass platters. Each is coated with a magnetically sensitive material. These disks spin at 5,400 rotations or more per minute, passing within 10 millionths of an inch of the read/write heads that transfer data to and from the disks.

A hard drive's speed, however, is dependent on more than sheer rotations-per-minute. In the next few pages, we'll cover some of the other factors that determine how well a hard drive does its job.

Two things you don't want to think about — but should

We don't mean to be depressing, but before we get into the nitty-gritty of the hard disk discussion, we feel morally obligated to mention a couple of unpleasant realities.

Mac Basics

First, disks and disk drives are among your Mac's few *mechanical* components. They have motors, gears, levers — parts that actually *move*, parts that can be scratched, get sticky, rattle loose, or require lubrication. Disks and disk drives are much more vulnerable to problems than most other parts of your computer system.

At the same time, disks are among the most important devices you use each day, because they are the repositories of virtually all the work you do on your Mac. For this reason, we suggest that you take especially good care of disks and disk drives. They should be handled with care, maintained using the techniques we'll give you, and not taken for granted.

Which brings us to Depressing Reality No. 2: The day will come when your hard drive grinds to a halt. It will die. This is not a remote possibility; it is your unchangeable destiny. When you lift a brand new hard drive out of its foam packing crate for the first time and proudly place it on your desk, the manufacturer already has labeled that drive with an MTBF — a Mean Time Between Failures rating. This rating represents the number of hours the manufacturer estimates the drive will operate before it fails because of one problem or another. Some drives have an MTBF of just a few years. Others are rated to last a dozen or more years. But they *all* are expected to fail at some point.

When this happens — and it will if you use your Mac long enough — you will probably panic. You will want to tear your hair out in frustration. So plan ahead. Always make backups of irreplaceable work and heed this chapter's tips on keeping your hard drive in good working order.

The device driver

Nestled away in its own little corner of your hard drive is a little piece of software called its *driver* — yet another program that works behind the scenes. Every time you store data on your drive or retrieve data from it, the driver software is called upon to manage the operation. (The driver is also the file that stores your hard drive's *icon* as it appears on the Desktop.)

Most new Mac hard drives come preformatted with driver software included on the drive. Even though you never *see* driver software, you need to think about it if you're interested in coaxing the best possible performance out of your hard drive. Some new non-Apple drivers are faster than others. Some drivers are configured for use with specific drives and Mac models. To get the fastest and most reliable performance, you need an up-to-date driver that is fully compatible with your drive.

That's especially true when you're upgrading system-software versions. Hundreds of Mac fans complained bitterly when they tried to install System 7.5.3, for example, and fell into a troubleshooting nightmare. Had they updated their drivers first, all would have been well. (That's why every Apple system-installer since has *forced* you to update the drivers before proceeding with the installation.)

If you have an Apple hard drive, you can update the driver using the latest version of the drive formatting utility that came with your Mac — Drive Setup. (Older Macs came with Apple HD SC Setup or Internal HD Format; see Figure 8-5.) At least one of these programs is on your system software's Disk Tools disk or system CD-ROM; newer versions can be downloaded from www.apple.com or America Online.
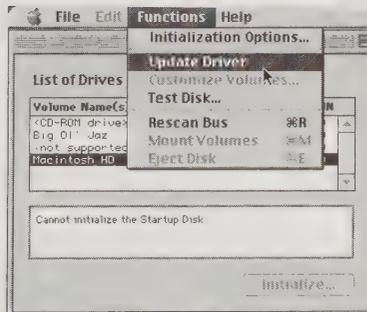
Figure 8-5: Drive Setup, Apple's latest drive formatting utility, lets you update your hard drive's driver.

All about IDE

As you'll learn in Chapter 33, some PowerBooks and lower-cost desktop Mac models these days don't have a typical SCSI hard drive inside (see the "The IDE Macs" sidebar later in this chapter). Instead, they come with a hard drive style known as *IDE* (Intelligent Drive Electronics), popular in the world of IBM PC and clones. On one hand, IDE drives cost less than SCSI equipment and — because you can't connect more than two in a chain — you don't have to worry about address conflicts, cabling, or termination. On the other hand, IDE drives are generally slower and less versatile than SCSI drives.

What does the presence of an IDE hard drive mean to your life? In general, nothing; it's a purely internal component. You still get the standard SCSI jack on the back of your computer, into which you can plug the usual scanners, CD-ROM drives, and so on; they work completely independent of the internal IDE hard drive.

How to update your hard-disk driver

Updating your driver *doesn't* reformat, initialize, or erase a disk. When you update a driver, your data stays intact. Only the software that controls the drive's operation is changed.

Furthermore, you'll rarely need to update your hard-disk driver manually. As we noted earlier, Apple's own system-software installers generally do this whether you like it or not.

If you'd feel better knowing that you have the latest drivers, though, get the newest version of the Apple drive formatting software that came with your Mac. Current Macs come with, and can be updated with, Drive Setup. Pre-1997 Macs came with either Apple HD SC Setup (for SCSI hard drives) or, again, Drive Setup (for IDE drives). Do an online search to make sure you have the very latest. (On America Online, it's keyword: *AppleComputer*. On the Web, start at www.apple.com.)

Once you've got the latest updating program, do the following:

- **Apple hard drives, Drive Setup:** Launch the program, and then choose Update Driver from the Functions menu.

- **Apple hard drives, Apple HD SC Setup:** Launch the program. Click the Update button.

- **Non-Apple hard drive:** The Apple programs (Drive Setup and HD SC Setup) don't work unless your hard drive is an Apple drive. In general, if you have a Macintosh clone such as one from Umax or Power Computing, you were provided with a third-party driver updater, such as SilverLining (LaCie) or Hard Disk Toolkit (FWB). Unfortunately, you've just hit one of the downsides of owning a Mac clone: Whenever Apple releases a new system update (such as Mac OS 8.5), you'll have to hunt down (and possibly pay for) updated versions of those third-party hard drive updaters. The Apple formatting programs, by contrast, are always free and always posted on Apple's Web site.

Interleave

Interleave is a term that's obsolete today. It describes a scheme used to slow down the arrival of data on very slow hard drives, such as those in the Mac Classic, Plus, and PowerBook 100. For details, see Chapter 8 of the electronic version of *Macworld Mac Secrets, 4th Edition* (on the CD-ROM that came with this book).

CD

The *Secrets* hard-drive maintenance schedule

Your hard drive is filled with hidden goings-on and invisible files. Every time you save, copy, or delete a file, all kinds of stressful activities take place: the hard drive must update its internal table of contents (the invisible Desktop DF file), log any new icons or icon positions (the invisible Desktop DB file), and keep track of how the file is fragmented (in the invisible *extents* and B-tree files).

We mentioned backups, formatting, and rebuilding the Desktop. But when do you do all this stuff? Here, for the careful Mac user, is our recommended schedule for hard-drive maintenance. Photocopy, clip, and save.

When you get the drive

Your hard drive came pre-formatted. The only decision to make before you start loading it up is whether or not you want to *partition* it. (See "Partitions," later in this chapter.)

When you change System software versions

Before installing the new System, start up from a different disk (such as the CD-ROM that came with your computer). Run Disk First Aid (on that same CD-ROM) to make sure that the disk's software structures are healthy. Then get the *latest* version of Drive Setup (or Apple HD SC Setup) and update the driver.

(Fortunately, the installers for Mac OS 8 and later do all of that *for* you.)

TRUE FACT

The IDE Macs

Is your Mac's internal hard disk a traditional SCSI drive or one of the PC-style IDE drives that Apple's been popping into selected models? If you have one of these models, you can't use Apple HD SC Setup to format or partition your drive; you need either Internal HD Format or Drive Setup:

Performa or LC 575, 580

LC, Quadra, or Performa 630 series

Power Macintosh 4400

LC or Performa 5000 series

Power Macintosh 7220

20th Anniversary Macintosh

Performa/Power Mac 6000 series (except 6100)

Power Macintosh G3 (except high-end models)

PowerBook 150, 190

PowerBook 1400, 3400, 2400, 5300, G3

iMac

Every day

Back up whatever files you worked on during the day. If it's important work, make two backups — on two different disks — and back up more than once a day. (See "Making pain-free backups," later in this chapter, for tips.)

Once a month

Rebuild the Desktop (press ⌘-Option as the Mac is starting up). See Chapter 1 for unbelievable detail.

Every six months (or whenever flakiness arises)

Reinstall a fresh copy of the System software. Do a "clean install," as described in Chapter 5. (This eliminates any corruption that may have crept into your System file during day-to-day use.)

Defragment your drive if it's more than 80 percent full.

Every two years

Back up your entire drive and reformat it. Among other things, reformatting locks out bad sectors on your disk, so you won't try writing data to portions of the disk that have developed tiny flaws and may not be reliable. Beyond that, we just like the feeling of wiping out any lurking problems that may have wiggled into existence.

Hard Drive Secrets ──────────────────────────────■

All the terminology that's fit to print

Disk storage and RAM are measured in the same units, spelling confusion for anyone who's already having trouble telling them apart.

Mac Basics

A *bit* is the smallest piece of information. It's one single binary signal — on or off — for the computer's billions of electronic switches. (*Bit* is a contraction of *binary digit,* actually, but nobody writes it "b'it," except maybe Klingons.)

On a disk, these two possible conditions correspond to the two possible charges a particle on the disk surface may have: positive or negative.

Eight bits make a *byte.* (Everything in the computer world is a power of two, and things seem to increase in multiples of eight.) A byte is enough information for the computer to specify one character — a W, for example, or a comma. (If an alphabet, as in Asian and Middle Eastern languages, has too many symbols to be specified by a single byte, then *two* bytes are required to specify one letter. That's where the term *double-byte language system* comes from. System 7.1 was the first Mac system software that could handle double-byte language systems — with the installation of a language kit.)

Take 1,024 bytes — that's the closest a power-of-two machine can come to 1000 — and you have a *kilobyte,* or K. Take 1,024 of *those* and you have a *megabyte,* or MB.

And 1,024 of *those* is a *gigabyte,* or GB.

And 1,024 of *those* is a *terabyte.*

And 1,024 of *those* is a *petabyte.*

And 1,024 of *those* is one *huge* hard drive.

Finding a disk's SCSI ID

Every hard drive must have its own personal ID number on your SCSI chain (see Chapter 33 for details on SCSI). If two hard drives have the same ID number, you're asking for crashes and oddball behavior.

But it's no picnic figuring out what a disk's SCSI number *is.* Sometimes the SCSI number is set by the positions of tiny DIP switches underneath the unit. Sometimes there *is* no indication.

Worth Learning

We discovered, however, that you can find any disk's SCSI address much more easily: Simply select its icon and choose Get Info from the File menu (see Figure 8-6). The resulting box shows not only the hard drive's SCSI address, but its driver-software version, too.
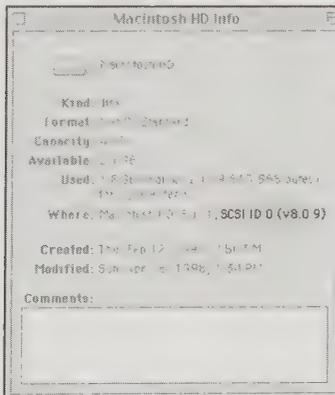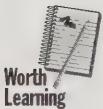
Figure 8-6: The Get Info box for a hard drive gives a wealth of secret information, including its SCSI address. This hard drive, like all original internal hard drives, is at ID zero.

CD

Of course, there's an even easier way to find a disk's SCSI ID number. Just use SCSIProbe, which is included on the CD-ROM that comes with this book. Or, if you have Mac OS 8 or later, you can launch the Apple System Profiler utility from the menu. Then press ⌘-4 (or choose Device Information from the Select

menu) to view even more detailed information about each device attached to your Mac — including its SCSI ID number, manufacturer, capacity, and the number of partitions it contains.

Who makes your drive?

The company who sold you your drive didn't make it.

In fact, very few companies actually *make* the hard-drive mechanism: Quantum, Seagate, IBM, and a couple of others. The 100 companies who *sell* hard drives to you, the customer, buy up these mechanisms. They install the drive into a plastic or metal housing, paint their brand name on the front, throw in a manual and some formatting software, and mark up the price.

The result is that 100 different companies may compete, but they're actually marketing identical equipment. (The term for that handful of companies who make the internal guts of the drive is *OEM*, for Original Equipment Manufacturer.)

(OS 8)   Want to know who made your drive? If you have Mac OS 8, use the Apple System Profiler, as described in the previous secret, and you'll find out.

Making pain-free backups

Because every hard drive is destined to fail one day, your only hedge against disaster is backing up your work. If you're a corporate- or office-type person, we're sure that you've heard the usual advice: Keep *multiple* sets of backup files, made on different days of the week. Keep a copy of the most-important files in a different building. If possible, choose a building located in a different *city*.

If you're working on a home computer, you may not need to be quite as paranoid. For example, you generally don't need to back up your System folder; you've got that permanently backed up on your startup CD-ROM. Nor do you need to regularly back up your *programs*, which you've presumably got on *their* original installation disks, too. Back up your documents, however, and possibly your Preferences folder (inside the System folder).

To make the process easier, here are some tips:

First, you can simply gather up the documents you worked on each day and copy them to a different disk. The Find File command makes this especially easy: At the end of the day, launch Find File, and search for all documents modified on the current date. (Or make a habit of flagging your document or project folders with labels, as explained in Chapter 2 — and then use Find File to round up those *folders*.)

When the list of found files appears in the Items Found window, press ⌘-A to select all the files, and then drag the icons to another disk (a SyQuest, Zip or Jaz drive, a second hard drive, or multiple floppies if necessary) for backup.

(Mac OS 8 and 8.1 note: As noted in Chapter 3, you can't drag a group of items out of the Items Found window except to an *alias.* Until you get Mac OS 8.5, you'll have to make an alias of your backup disk before dragging your items to be backed up.)

But a much less painful strategy is to use a genuine backup program that automates the backup process. They automatically hunt down the files that have been changed since the last backup, instruct you to put in floppies, and do the copying for you. Fastback, Retrospect, and Retrospect Express are some popular backup programs. You might also consider writing an AppleScript to backup all the folders that contain your documents (see instructions in Chapter 22) before the Mac shuts down each day.

Dealing with a hard disk crisis

If your hard drive suddenly won't mount, comes up as "unreadable," or starts behaving erratically, with files appearing and disappearing at random, it might need some minor repairs. Don't worry—these repairs usually are *not* the kind that require a clean room, special microscopic wrenches and a $70-per-hour technician—they're the kind you can do yourself.

First of all, the problem may not be the disk. There are all sorts of little glitches that can make your Mac *think* there's a problem with the hard drive when it's actually just fine. The real problem might be the cable connecting your scanner to your Mac, or a corrupted file in the System Folder, or a conflict between two system extensions, for example. Check out our troubleshooting guide in Chapter 36 to learn how to track down such problems.

If it turns out the disk really is the cause of the problem, take heart: Unreadable disks usually contain readable files; its just the disk's directory information that's become scrambled. In other words, the map that the Mac uses to locate specific files on the disk is gone or mangled. Without a directory map, your Mac loses track of what files are on the disk and decides that it's unreadable.

Your first line of attack should be to run Disk First Aid, the free repair utility that came with your Mac (it's on your system software CD). Disk First Aid isn't as powerful as other commercial disk-repair programs, but it can repair many directory glitches. In fact, Disk First Aid has improved quite a bit over the last few years and has become a pretty decent tool for fixing disk problems. The version of Disk First Aid that comes with Mac OS 8.5 and later, in fact, launches *itself* after a system crash, thus nipping many hard drive problems in the bud.

Except in Mac OS 8.5, a disk-repair program can't fix the disk that contains files that are *open.* So if the problem is on the startup drive, you generally have to start up from another disk (that contains Disk First Aid). This can be an external drive, a Jaz or Zip disk, a Disk Tools floppy, or—most conveniently—the Mac system software CD-ROM. Once you've restarted from another disk, launch Disk

First Aid, select your hard disk's icon in the window and click the Verify button. If the program finds a problem, it will let you know and offer to fix it if it can.

(Fortunately, Mac OS 8.5's version of Disk First Aid is smart enough to bypass those shenanigans. It can analyze the disk it's on — even if it's the startup disk.)

To fix major glitches, you might need a heftier program, such as Norton Utilities or TechTool Pro, which can fix disks beset with even major problems. (These programs can also retrieve files from disks that are so mangled that they can't be fixed.)

One bit of advice: You may think that if you have Norton Utilities, you don't need Disk First Aid. The fact is, Disk First Aid can catch glitches that Norton misses — and vice versa. Your best bet is to run *both* utilities when a big disk problem strikes to make sure you've caught all the problems.

File fragmentation

When you copy files to an empty hard drive, the data is written to contiguous (adjacent) sectors on each disk; think of playing cards being laid end to end. This makes it easy for the Mac to retrieve the information later, because every piece of data is grouped with the data that's supposed to come next. That's why a brand-new drive is the fastest drive.

But things don't usually stay that way. Over time, drive space gets used up. Small files get deleted, leaving little pockets of available space here and there. *File fragmentation* occurs when, after extended use, the only storage space available on your disk is in various unconnected sectors, scattered in various locations. At that point, the Macintosh begins to save files in *pieces,* wherever empty sectors are available.

The Mac can still access such fragmented files. However, reading fragmented files takes longer, because the hard drive's read/write heads must physically move around to find all the pieces.

You can regain the tiny bit of speed lost through file fragmentation by *defragmenting* your hard drive. Defragmenting also increases the chance that you'll be able to recover files after a crash using a repair utility; your files will be in solid chunks and not scattered across the drive in tiny segments.

To defragment a hard drive, you can either buy a disk-defragmenting program or simply reinitialize your disk. Both methods are outlined in the secrets that follow.

Keep in mind, though, that a hard drive must be nearly full — and remain that way for *weeks* or *months* — before defragmenting makes any measurable speed difference. Most Mac users never defragment their hard drives and never notice any appreciable speed loss.

ANSWER MAN

Custom icon beams out

Q. The custom icon for my hard drive has disappeared! Instead of a colorful, smiling Ferengi from "Deep Space Nine," I now have only a generic document icon! I've tried to paste on a new icon, but I got some weird message about "it" not being found. I also tried rebuilding the Desktop, reinstalling my hard disk driver, and correcting the problem with ResEdit, but I'm still stuck with the generic icon. Can you help me?

A. Custom icons are stored in invisible icon files that live on your hard disk. Your hard drive is showing up with a generic icon because the Ferengi icon file is evidently missing. The problem

is, your disk's *custom icon flag* is still set — in other words, the disk still thinks that it has to look for a custom icon and, when it can't find one anywhere, it has no choice but to display the generic icon instead.

To reset the custom icon, use Disk Rejuvenator, a free program from Aladdin that fixes this problem. Once you've used it (it's included with this book) to turn the custom icon flag off, your hard drive's original icon will reappear. Then you can paste on a new custom icon — Ferengi or otherwise — without any trouble.

On the other hand, if you record and play QuickTime movies, file fragmentation can make a big difference. When it comes to digital video, every nanosecond counts. A video clip containing 15 to 30 individual frames per second may stutter and jerk when played back if your Mac must retrieve the movie frames in small chunks scattered all over a hard drive. It's best to record digital video on a freshly defragmented hard drive that can store video data in large solid chunks.

You'll also sometimes hear the term *optimizing* a drive. A disk optimizer program not only defragments the files on the drive — it even tries to figure out where to put them, in their reassembled conditions, so that defragmenting is less likely to occur again. The optimizer may put your applications, which aren't very likely to be modified, at the outside edges of the drive surface, for example.

Defragmenting Secrets

Defragmenting the inexpensive way

You don't need a special hard-drive utility program to defragment files and optimize your drive. You can accomplish the same thing by erasing your drive and starting over.

Granted, this isn't the easiest way to defragment a disk, but it gets the job done. To do this you must (a) back up everything on your drive — either to a stack of floppies or some other drive; (b) reinitialize the drive by using either the Erase Disk command in the Finder or the Drive Setup's Initialize command; and (c) copy all your files back to the reinitialized disk. The files will be written to contiguous sectors of the now-empty disk, on which almost every sector is available.

Defragmenting made easy

You save yourself a great deal of the hassle involved with the previous suggestion by using a hard disk optimizer program; some examples are Speed Disk (part of Symantec's Norton Utilities) and DiskExpress (AlSoft).

Optimizer programs defragment files without requiring you to reinitialize the disk. How? They read large chunks of files into RAM, erase the section of the disk where they lay, and then rewrite the data in a new location on the disk. An optimizer tries to store the data in contiguous blocks, beginning with the first blocks available on the disk.

One warning: Because some optimizer programs temporarily store files in RAM, you risk losing data if there's a power failure — or if you accidentally unplug your computer — while the optimizer is running. For this reason, back up valuable files before you optimize — just in case.

Partitions

Hard drives and removable cartridges can be *partitioned* into smaller minivolumes with the help of a utility program. For example, you can partition a 2 GB hard drive into two distinct volumes of 1 GB each. On the Mac's Desktop, that one hard drive will appear as *two* volumes, each with its own name and icon. In essence, partitioning fools the Mac into thinking that you have two (or more) drives connected instead of one.

Why partition?

We can think of several reasons why you may want to partition a drive in this way:

Defragmenting

JS: I'm sorry to poke my nose into the middle of a chapter, but after rereading our section on file fragmentation and optimizing, I'm more than a little concerned.

DP: Is there a problem?

JS: Well, yes. It almost leaves you with the impression that you should actually go ahead and defragment your hard drive.

DP: And — shouldn't you? Isn't that the whole point?

JS: Surely you're joking.

DP: Why? Everyone knows that defragmenting gives you improved hard-drive performance and speed gains.

JS: Speed *gains*? Look, consider this sobering bit of reality: Last week, I decided to defragment my hard drive so that I could experience this euphoric speed gain everyone's always talking about. Well, to be safe, I first had to back up my entire 2 GB hard drive to a stack of 20 Zip disks. That took an hour or so. Some speed gain!

DP: Well, if you had a Jaz drive, you'd —

JS: Let me finish...

DP: Besides, you should back up anyway.

- By subdividing a large disk into two smaller volumes, you reduce the size of its *blocks* — the tiny spaces mapped out on the disk's surface to store chunks of data. In the long run, smaller block sizes mean more efficient storage and less wasted disk space. For the rationale behind this trick, see "Partitioning for smaller block sizes," later in this chapter. And note that this reason to partition evaporates if you're using HFS+, described earlier in this chapter.

- If you share your Macintosh with other people, you can partition your hard drive into a number of smaller volumes, one for each person. The volumes can be individually password-protected so that users have access only to their own data.

- You can set up one partition as a vault for old files. Later, if you need to search for an archived file, you won't have to waste time searching your whole hard drive for the document in question. You can search only the archive partition. (Of course, even on an unpartitioned hard drive, you can still restrict your search to a single *folder,* as described in Chapter 3.)

- It can confuse your Mac to have two versions of the *same* application on a disk. By partitioning, you can create a separate volume containing an older version of a program that you need to read some older files.

- You may find it handy to have both System 7.6 and Mac OS 8 (for example) available for your work. With partitioning, you can create two volumes on a single drive, one with a System 7.6 folder and another with a Mac OS 8 folder. (On the other hand, there's nothing wrong with keeping both systems on an *unpartitioned* hard drive, as described in Chapter 1.)

Why not to partition

There are also some good reasons *not* to partition your hard drive. As noted above, some of the reasons for partitioning have evaporated with the introduction of HFS+ and other technologies. Partitioning takes time and

JS: Then I spent another few minutes launching my drive-formatting software and scanning my drive to see how badly fragmented my files were. That ate up another six minutes. Turns out that after six months of heavy hard drive use, about 4.6 percent of my files were fragmented. So, I clicked the Optimize button.

DP: And. . . ?

JS: It took nearly nine minutes for the files to be defragmented. Nine minutes. And some optimizing utilities take even longer..

DP: So? Weren't you thrilled by how much faster you were able to open and save files once your disk was fully optimized?

JS: Hardly. After all that work, I now save maybe a *fraction* of a second each time I open a file.

DP: See that? You're already gaining time back.

JS: The speed gain is an illusion. I mean, it's so slight that, at this rate, it will take *months* to make up the time I spent just doing the defragmenting to begin with. Now that I think about it, it may even take years.

DP: Okay, but at least at that point your optimization *will* finally begin to pay off.

JS: Right — and by then it'll be time to optimize again, and I'll be back in the hole.

effort — all that backing up and resetting-up — and can actually reduce the likelihood of recovering files in the event of a hard drive disaster.

Lots of people claim that partitioning speeds up your Mac, too, but that's not necessarily true. In theory, partitioning a big hard drive into three smaller volumes should produce a noticeable speed gain. The Mac ought to be able to retrieve information about your files and their icons faster, because the Finder's Desktop file for each individual volume is smaller.

However, if you access a number of different volumes as you work, partitioning can actually slow you down. Suppose you have QuarkXPress on one volume, but the open document on another. The hard drive's read/write heads have to keep jumping to different parts of the disk surface, fetching pieces of information from one partition and then another. The more a hard drive has to play seek-and-ye-shall-find, the slower it seems. (And we're not even counting the hassle partitions present to you. Every time you're looking at the Open File dialog box, you now have several "disks" to choose from, switch between, and remember the contents of.)

If you must partition, try to avoid making your hard drive's heads jump back and forth frequently between partitions. Try to organize your work so that almost everything you need during a work session is within the same partition.

How to partition a hard drive

Changing partition sizes or adding new partitions almost always means reinitializing — that is, *erasing all your files*. If you want to partition a drive you're already using, you must copy all your data to another drive, set up the partitions, and then copy everything back again.

To perform the actual partitioning, you can use either Drive Setup or Apple HD SC Setup, the utilities that came with your Mac. If you're using Apple HD SC Setup, make sure that you have at least version 7.3.5; earlier versions don't let you create multiple Macintosh partitions.

Using Drive Setup

Launch Drive Setup and choose the name of the drive you want to partition from the list in the main window. Click Initialize, then choose Customize Volumes from the Function menu.

In the Custom Setup window, use the Partitioning Scheme pop-up menu to select the number of partitions you want to make on the drive, as shown in Figure 8-7. The menu lets you create up to eight Mac partitions on a single drive. (The "HFS" that appears next to the partition numbers refers to the Hierarchical File System — the filing scheme used by the Mac OS. The last two options on the menu are for splitting a drive between a Mac partition and one or two *ProDOS* partitions, the filing system used by the old Apple II computers.)
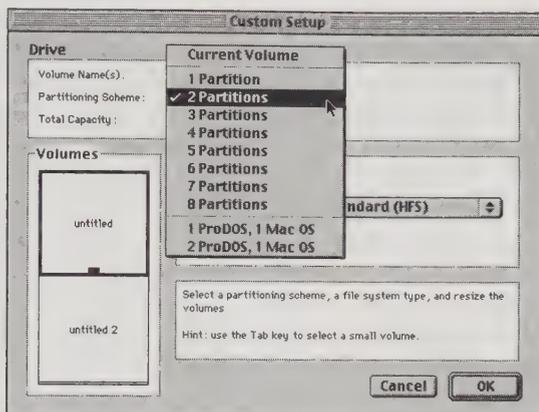
Figure 8-7: Partition a drive into as many as eight separate Macintosh volumes with Drive Setup.

Once you've chosen the number of partitions you want to create, a map of your subdivided drive appears in the Volumes box in the lower-left portion of the Custom Setup window. You can then drag each partition on the map to change its size (see Figure 8-8). When you're finished, click OK and initialize the drive.
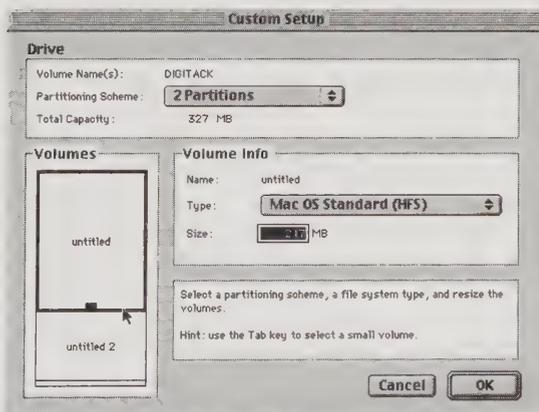
Figure 8-8: Drag the resize handles to change the size of each partition.

Using Apple HD SC Setup

If you have Apple HD SC Setup — the forerunner of Drive Setup — the partitioning process isn't quite as straightforward. Click the Drive button to select the hard drive you want to partition, and then click Partition. The

partition dialog box opens, displaying a map of all the partitions on your drive, including the one reserved for the driver software. Select and delete the other existing partitions using the Remove button. Then drag out a new partition on the map at the size you want. The gray space on the map represents the disk space available for partitioning. When you've dragged out your new partition, the window shown in Figure 8-9 opens, allowing you to select the *type* of partition you want to create.

At this point, you'll notice that most of the options are utterly useless; they create partition types such *as A/UX Root&Usr slice 0* or *Free A/UX slice 3*— formats that appear to have originated on other planets. Ignore these alien terms and instead select Additional Mac Volume from the list. Follow the same steps to create as many other partitions on the drive as you like.
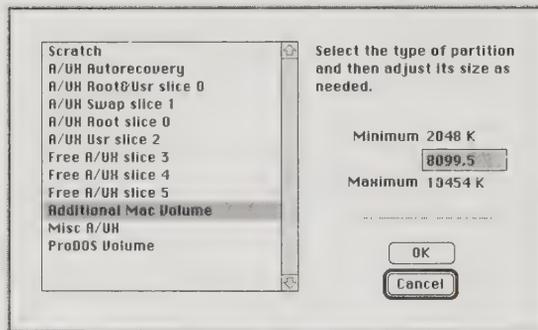
Figure 8-9: Choose Additional Mac Volume from this list of options in HD SC Setup to subdivide your hard drive into multiple Macintosh volumes.

Of course, you can also partition your disks using commercial programs like Hard Disk Toolkit (FWB), or SilverLining (LaCie). In addition to letting you create multiple partitions on a disk, these programs also allow you to assign each volume its own custom icon and password protection.

Partitioning for smaller block sizes

Despite the doubt concerning speed increases, there's one indisputable advantage to partitioning a big hard drive — *if* you're running any system prior to Mac OS 8.1 and can't use the new HFS+ format.

Earlier in this chapter, we pointed out that files on your disk actually waste space if their sizes don't exactly fill up the blocks on which they're stored. Remember, under the Mac's old Hierarchical File System, every drive, no matter what its size, is divided up into a maximum of 65,536 uniformly-sized *blocks* — and therefore, on larger drives, the standard block sizes escalate.

ANSWER MAN

The Partition Family

Q. Wait a minute! It sounds to me like Apple HD SC Setup, Internal HD Format, and Drive Setup all do exactly the same thing — format, initialize, and partition hard disks!

A. Ah, yes. You noticed.

Q. So, what's the deal...?

A. All three do the same job — but on different types of hard drives. Apple HD SC Setup is for SCSI drives only, and came with all but the most recent SCSI drive-equipped Macs. Internal HD Format, on the other hand, works only with a few specific Macs with internal IDE drives.

The newest member of the trio, Drive Setup, comes with all current Macs, offers a few more initializing options, and works on *both* SCSI and IDE drives.

Naturally, there are a few bizarre exceptions to the rule. Some later versions of the Performa 5200 and 6200, for example, can't run Internal HD Format, even though they have IDE drives; they require Drive Setup. And, oddly enough, the PowerBook 150, which also has an IDE drive, *can't* run Drive Setup; it requires the older Internal HD Format.

Therefore, the smallest any file can be on any disk is *one* block. A 9K SimpleText file on a four-gig drive takes up one block — 65K — and *wastes* 56K! When you multiply that space by the thousands of files on your drive, you can see that you wind up wasting a considerable chunk of disk space. (There's only one way to squeeze multiple files into a single block to reclaim unused space — compress them into a *single* file using a program like StuffIt, described in Chapter 22.)

It stands to reason, then, that the smaller the blocks on your disk, the less of it is wasted. If you partition a hard drive into two smaller drives, you *double* the total number of blocks — and they're half the size they used to be. Therefore, less space gets wasted if you have a lot of little files. (See "HFS+ [Mac OS Extended Format]," earlier in this chapter, for more on this phenomenon — including why that reason for partitioning went away with the release of Mac OS 8.1 and later.)

Your hard drive's secret partitions

Even if you don't partition your hard drive into multiple volumes, the one Macintosh volume you *do* have can never equal the total storage capacity of the drive. That's because drive formatters create *secret* partitions on your drive without you knowing it. These partitions don't show up on your Desktop, but they're critical to the operation of the drive.

Deep clean your hard drive

When you format your hard drive using Apple's Drive Setup utility, you get two options that weren't available in the older Apple HD SC Setup utility — *low-level format* and *zero all data*. Unfortunately, Apple provides almost no information about *why* you might choose either of these options. Here's an explanation.

Ordinarily, initializing a disk doesn't erase data; it simply zaps the disk's directories, so that the location of existing data is forgotten and can be overwritten. The low-level format option takes this one step further, obliterating all the directory structures and erasing all the data. Apple doesn't recommend performing a low-level format unless you're formatting a pre-System 7 disk more than five years old.

When you choose the "zero all data" option, the data on your hard drive is actually replaced by a string of zeros. This is a security measure; it makes it impossible to retrieve data from a reformatted disk, even using a disk-recovery program.

You can also perform an initialization with either of these options. The process will take much longer, but you'll end up with one clean hard drive.

One of the secret partitions contains a *partition map,* a directory of all the storage spaces on the disk. This map tells your Mac which blocks are empty and which are occupied by data. Another secret partition (see Figure 8-10) is occupied by the hard-disk driver itself (the software that controls all the Mac-to-drive communications).
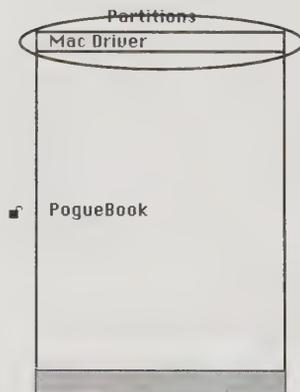
Figure 8-10: One of your drive's secret partitions rears its head in the custom partitions window of Apple HD SC Setup. This partition containing the drive driver shouldn't be resized or deleted; it holds the instructions the drive needs to operate properly.

Reformatting

Reformatting your hard drive erases every last kilobyte on it. This means that you have to back up all your data before reformatting — and then copy everything back to the disk when you're done. With so much hassle involved, why even consider doing it?

Here's one important reason: Over a period of time, a hard drive inevitably develops a few *bad sectors* — sections of the disk surface that are no longer reliable for storing data. A portion of a disk may get slightly damaged through contact with a read/write head or may be marred by a microscopic speck of dirt. Reformatting software is smart enough to watch for these bad spots and, in its private map of the hard-disk surface, denote these bad sectors as "off limits" — they can no longer be accessed by the drive. After bad sectors have been mapped out of a disk, data no longer will be stored in any of the potential danger spots.

By the way, if your driver software does map out a few bad blocks, thereby reducing the amount of space you have available for data, don't feel cheated. Most manufacturers intentionally make drives with a disk capacity slightly *larger* than advertised so that bad blocks can be mapped out without depriving you of the advertised storage space.

There's no particular reason to reformat your drive, except as a last resort, when your drive is acting up and you've tried everything else in our Troubleshooting chapter, Chapter 36.

Floppy Disks

The original Mac's disk drive could read only 400K disks. Eventually, Apple adopted a drive that could read both 400K and 800K disks, maintaining that critical backward-compatibility. By 1989, every Mac was built with a *SuperDrive,* a fancy way of saying that they can read 1,440K high-density disks (*and* 800K disks *and* 400K disks). We suppose that they call it a SuperDrive because — thanks to the PC Exchange control panel — the disk drive can read same-size disks from IBM computers and clones.

TRUE FACT

How big is too big?

In 1984, the largest single volume you could mount on a Macintosh was 400K — the total capacity of a solitary floppy disk. Today it's not uncommon to see Macs equipped with hard drives of several *gigabytes.* Is there any limit to how large a single Mac volume can be?

Yes. Until System 7.5, the Mac organized data using a 32-bit (32-digit) number to identify each byte on a volume. This allows the Mac to specify a total of 2,147,483,648 different bytes — that's

two gigabytes. That's as large as a single volume could be before System 7.5.

Time and technology march on, however. System 7.5, in recognition of the increasing number of jumbo-disks on the market, introduced a new scheme that boosted the maximum-size limit to 4 gigabytes. System 7.5.2 pushed the upward limit even more — to 2 *terabytes* (that's 2,048 gigabytes). The introduction of HFS+ paved the way for even larger future increases in drive capacity.

As you probably noticed, no disk *ever* holds the amount of information it says it does. A 400K floppy may only hold 388K of data, for example. The rest of the space is filled with invisible files, such as the disk driver and directory map (on hard drives) and the Desktop file we discuss in Chapter 1 (both hard and floppy disks).

How they work

Floppy disks operate on the same magnetic storage principles as hard disks. But the disk inside a floppy is made of an extremely thin, floppy sheet of Mylar instead of glass or plastic. Floppies don't spin as fast as hard disks, and consequently provide slower access to data.

Floppies are also a lot less reliable than rigid disks. They go bad all the time. If you need to transport an important file to, say, an important presentation, copy the same file to different floppies and take them all. Your cheerful authors swear by this one.

The obligatory "floppies-are-fragile" discussion?

This would be the appropriate paragraph in which to expound on the fragility of floppies. Every manual and Mac book does, after all. We're supposed to say that dropping a floppy is bad for it, and that you have to watch out for deadly invisible magnetism, like that emitted from telephones. We're supposed to raise the dire specter of disk failure if you slide open the shutter on a floppy disk.

Truth is, we've never seen a floppy disk die from any of these harsh treatments. David drops his floppies all the time. And Joe snaps the shutter open and closed while he's on the phone. Both of us regularly carry floppies through airport metal detectors. None of these floppies have ever become unreadable as a result.

We're not suggesting that floppies *don't* go bad. We're just pointing out that to suppose that we, as mere mortals, have some control over the destiny of our floppies is utter arrogance. In truth, floppies go bad when they're ready to go bad. Some microscopic piece of pollen lands on the disk surface, heat warps the Mylar, a cosmic ray shoots completely through the disk in a fraction of a nanosecond, and it's gone. It's the little, invisible things that kill a disk — not the grosser effects of human handling.

On the other hand, we don't actually encourage *touching* the brown shiny disc inside the floppy's shutter, which computer techno-dweebs (definitely not us) refer to as "the cookie."

The end of the floppy drive?

You read that right: Despite the fact that floppies are a very *part* of the definition of "personal computer" to many people, they've actually become increasingly irrelevant in recent years. Few software programs come on floppy anymore—heck, it's actually cheaper for a software company to mail you a CD! Few people back up onto floppies these days, now that you can get a Zip drive for well below $100. And as for shuttling data between computers—well, only a handful of documents fit on a single floppy anyway; e-mail, networking, and infrared beaming are used far more frequently for transferring data.

Seeing the writing on the wall—and hoping to save some dollars—Apple caused a searing controversy in 1998 by releasing the first desktop PC in 10 years to ship without a floppy-disk drive: the futuristic-looking iMac (see Chapter 13). Of course, you can buy an external floppy drive for it. But our guess is that the rest of the industry will follow Apple's lead, gradually making a floppy drive an added-cost option—and finally, five or ten years from now, eliminating them altogether.

Floppy Disk Secrets ━━━━━━━━━━━━━━━━━━━━━━━━━━━■

Locking a floppy

Locking a floppy disk prevents you or anyone else from accidentally (or intentionally) modifying or trashing the files stored on it. When a floppy is locked, you can still read its contents. You can open folders, rearrange icons, launch applications, open documents, and even copy files *from* the locked disk to another drive—but when you eject the disk, all will be as it was before you started. A locked floppy disk can't be renamed, either. Come to think of it, a locked floppy behaves exactly like a CD-ROM.

Mac Basics

To lock a floppy, turn it over so that the disk's circular hub is facing you. In the upper-left corner of this disk you see a little black tab; push it upward, opening a tiny rectangular window, as shown in Figure 8-11. That's it; the disk is locked.

This is the same principle as that plastic tab on the top edge of audio cassettes, which audio fans for years have learned to break off in order to prevent the cassette from being rerecorded. The nice thing about floppies, though, is that you don't need a piece of Scotch tape to paste over the hole to unlock it again afterward, as you do with a cassette.

It's smart to lock floppies that contain important files. The contents of a locked disk can't be trashed, changed, or infected by a virus.

Tab up/slot open   Tab down/slot closed

Locked floppy   Unlocked floppy
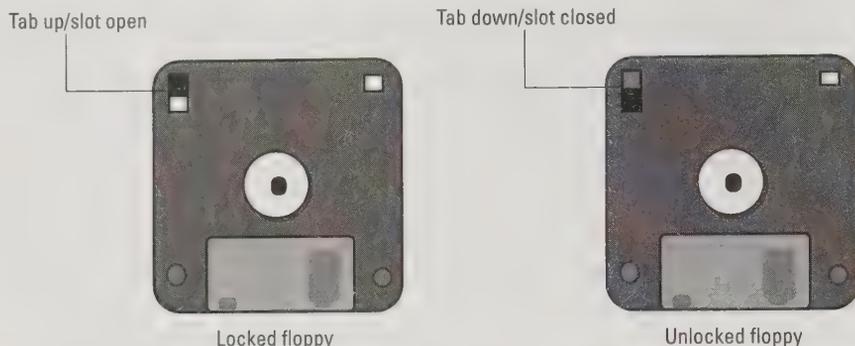
Figure 8-11: Lock a floppy by sliding the little black plastic tab up to open the tiny rectangular window at the corner of the disk. Don't confuse this window with the *other* rectangular hole — on the right side — which simply identifies the floppy as a high-density disk.

Ejecting a disk

In Mac OS 8 or later, you eject a floppy (or CD, Zip, Jaz, SyQuest, and so on) by selecting its icon and then choosing Special ⇨ Eject Disk. (Pressing ⌘-E is the equivalent.) The disk pops out of the drive, and its icon vanishes from the desktop.

If you're running any variant of System 7, however, we discourage using the Eject Disk command. Doing so leaves a ghosted image of the disk on the desktop. Worse, any of the disk's open windows remain on the screen even after the disk is gone. If you try to drag the phantom icon into the Trash, you may be asked to *reinsert* the disk you just ejected! It's better to avoid these problems by using one of the following alternatives (which work in Mac OS 8 and later, too):

■ Drag the disk icon straight into the Trash. The disk pops out of the drive and its icon disappears.

■ Select the disk icon. Use the File menu's Put Away command or the ⌘-Y keyboard shortcut. Again, the disk ejects and the icon disappears.

Eliminating ghosted icons and windows

If you *do* eject a disk using the Eject Disk command or ⌘-E under System 7, how do you get rid of that annoying ghosted icon? Just drag the disk icon to the Trash. You see a message asking you to reinsert the disk. *Don't do it.* Instead, press ⌘-period. This dialog box goes away. The icon vanishes from the Desktop and so do any of its windows that are open on the Desktop.

Creating ghosted icons and windows

We mentioned earlier that Apple finally fixed the Eject Disk command in Mac OS 8, so that it no longer leaves behind a ghosted icon whenever you eject a disk.

Strange But True

But what if you *want* the ghosted icon? You can do it. Just hold down the Option key as you choose Eject Disk from the Special menu. The menu command changes to say "Eject and Leave Behind" (see Figure 8-12). Using this command, ejected disks of any kind—not just floppies—leave phantom icons remaining on the desktop.
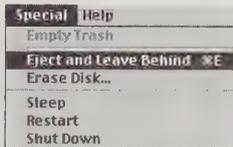
Figure 8-12: Mac OS 8 finally got rid of the ghosted icon problem, but you can bring it back by holding down the Option key as you eject a disk, evoking the hidden Eject and Leave Behind command.

The big question, of course, is *why* you'd ever want to do this. We admit there aren't many good reasons. But a *Mac Secrets* reader found at least one, involving the use of multi-CD game playing. Check out "CD-ROM Secrets" in Chapter 32 for details.

Ejecting shortcuts

Apple has built in three other keyboard shortcuts that let you eject a disk, whether or not it has been selected.

- ⌘-Shift-1 ejects a floppy disk from an internal drive. (The floppy drive connected to a PowerBook 100, Duo, iMac, or PowerBook 2400 counts as the internal drive, oddly enough.)

- ⌘-Shift-2 ejects a floppy disk from an external drive (or the second drive if your Mac has two built-in floppy drives). Obviously, we're referring here to the eight people still merrily using their Mac Pluses and SEs.

- ⌘-Shift-0 ejects a floppy disk from a *third* drive if you have one connected. (Now we're addressing a *really* small group.)

Even though these commands save you the trouble of selecting a disk icon before ejecting, they also leave ghosted icons on the screen under System 7-point-anything. But we've seen more than one case in which ⌘-Shift-1 managed to eject a disk that otherwise refused to come out. So while it's still best to select the disk you want and use ⌘-E (Mac OS 8) or ⌘-Y (System 7), keep these little-known alternatives in mind for when all else fails.

Where are the comments?

The *comments* box (where you can record such tidbits as "Downloaded from www.shareware.com on April 3") appears when you highlight a file, folder, or disk and choose Get Info from the File menu.

When you try to type anything into the comments box for a floppy disk, or any file or folder it contains, however, you may be alarmed to discover that the Comments box is inaccessible. It's there, all right, but nothing happens when you click inside — and it most definitely doesn't accept anything you type.

MACINTOSH SECRET

Floppy lies

You've probably heard it a thousand times: Absolutely *never*, under any circumstances, put floppy disks near a telephone or any other item that generates a magnetic field. This can obliterate your data.

To this we respectfully respond: Baloney.

We took several of our floppy disks — some containing chapters of this book, as a matter of fact — and put them directly on a *ringing* telephone. We stuck the disks under the phone, next to the phone, between the handset and the phone unit. We waved the handset to and fro, millimeters away from the disk. We *rubbed* a disk against the phone. We tried a few different telephones. No matter what we attempted, it didn't result in the destruction of a single file or even a bit of data.

Our curiosity aroused, we kept experimenting. We waved a few kitchen magnets across the surface of a disk. *We fastened a floppy disk to David's refrigerator using a magnet — all day!* Still, no problems.

Our conclusion: Yes, a strong enough magnetic field probably *can* mess up the information on a floppy disk. But we're not talking about refrigerator magnets here; more like the kind they stick on the end of a 75-foot crane to pick up scrap automobiles, or those bulk tape erasers they use to erase audio- and videotapes.

One of our tech editors insists that he's seen floppies go bad that were left on the front left corner of an ImageWriter I, where a magnet lurks. All we know is that we couldn't make it happen, no matter what we tried.

P.S.: We feel vindicated by the following e-mail from reader Thom Fries concerning this sidebar:

I have a Ph.D. in physics. My area of research dealt with the effects of high magnetic fields on certain types of semiconductors. Part of my research was done at the Francis Bitter National Magnet Lab at the M.I.T. Until very recently, the strongest magnetic fields in the world were generated there.

All the data acquisition is computerized. In the areas around the magnets, nobody can use color monitors because they become unreadable at high fields. The colors all blend into one, and the image on the screen begins to rotate away from vertical.

We were very careless with our floppies. They were routinely sitting on the monitors, or the metal cases of the PCs. Other than actually putting the floppies on the magnets themselves, we made no attempt to protect the floppies. Turns out the floppy-failure rate was no higher for lab disks than for any other floppy ever used.

Thought you might want to know.

OS 8 Explanation: You're using Mac OS 8 or later. Given the tiny amount of under-the-hood storage space on a floppy disk, Apple programmers were running out of places to store such information as how windows are arranged and which icon view you've selected. An executive decision was made: comments on floppies have to go.

It's not your imagination, then: In Mac OS 8 and later, you can't store comments for the icons on 1.4-meg floppies. And on 400K and 800K floppies, you can't store comments for the floppy's icon *or* for any of the files on it!

Resorting to the paper clip

Mac Basics No discussion of disk ejection would be complete without at least mentioning the paper-clip trick. If a floppy disk, Zip, Jaz, or CD simply refuses to be ejected after you've tried all of the aforementioned eject commands, you can force it out manually. Poke a straightened paper clip, slowly and firmly, into the tiny hole on the front panel of the drive (see Figure 8-13) until the disk pops out.

Figure 8-13: A time-honored solution to jammed disks: Poke a straightened paper clip into the tiny hole beside the disk drive slot until the disk is forced out.

If a floppy disk is physically jammed inside the drive, the shutter may be bent, or the sticky disk label may have unpeeled and grabbed something inside the drive. In both cases, forcing the disk may damage the drive unless you first free the obstruction. Try sliding an index card in on top of the caught label or shutter, then pulling them slowly out together. You should also try pushing the disk back into the drive a little bit, then gently try to pull it out again.

Automatic disk erasing

Speed Tip Here's a little-known shortcut for erasing floppy disks: If you hold down ⌘-Option-Tab while inserting a disk into the floppy drive, the dialog box asking if you'd like to erase the disk pops up as soon as the disk mounts, saving you the trouble of choosing the Erase Disk command from the Special menu.

Turning Mac disks into PC disks

Here's a feature Mac users tend to take for granted, but that constantly amazes PC users: You can create Windows-ready floppy disks right on your Mac, without leaving the Finder—no special software or utilities required.

To do this, you must have the File Exchange control panel (see Chapter 4). Select a floppy disk icon in the Finder and choose Erase Disk from the Special window. From the Format pop-up window, choose DOS 1.4 MB, then click OK (see Figure 8-14).

A minute or so later, you'll have a blank PC disk mounted on your desktop. (If you have Mac OS 8.1 or later, in fact, the files you see even have their Windows 95-savvy long file names instead of the pathetic LTR2MOM.DOC-type names of bygone versions.)
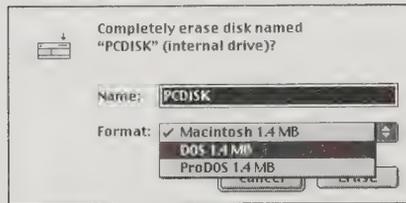
Figure 8-14: Transform a Mac disk into a PC disk using the Erase Disk command.

This is an important tip to remember when it comes to sharing files with PC users — because while any Mac can read PC disks, any PC can't read Mac disks. If you want to pass a file on floppy disk to a friend with a PC, it's not enough to simply save the file in a PC-compatible format; you also have to put the file on a PC floppy. (See Chapter 16 for more about sharing files between Macs and PCs.)

Turning 400K disks into 800K double-sided disks

Today's youth — how carefree, how innocent! "400K disk? What's that?"

We agree. Nobody's seen 400K or 800K floppies for years, and even high-density floppies are becoming scarcer (having been replaced by CD-ROMs and Zips). Although we have much to say about converting 400K floppies to 800K ones, 800K ones to 1.4MB ones, and 1.4MB ones back to 800K ones, we won't bore you with it here. You can read these discussions in Chapter 8 of the electronic edition of *Mac Secrets, 4th Edition* (on the CD-ROM that comes with this book).

Fixing good disks gone bad

It happens to everybody sooner or later: You insert a floppy disk, and you get the "This disk is unreadable" message.

Three times in ten, the floppy works if you (1) try inserting it again; (2) try inserting it into another Mac; (3) remove the disk, manually turn the silver hub with your fingernail, shake the disk around a little, and put it back in. Restart the Mac, thus clearing the floppy drive port — the Mac equivalent of blowing your

nose. (Item 2 has a very high success rate with PowerBook disk drives, which are somewhat more finicky than regular drives.)

If the problem with the disk appears to be that the protective metal shutter is jammed, bent, or broken, try this radical-but-effective trick: Carefully pull the entire shutter off the disk; it can be broken off quite easily. Be careful not to touch the Mylar disk material. Immediately insert the bare disk into the drive. Your Mac will have no trouble reading the disk, despite the missing shutter.

Obviously, this technique ruins the floppy disk, but it might enable you to access files from a broken disk that otherwise could not be inserted into a drive.

Fixing good disks that have really gone bad

If you tried the steps in the previous secret with no success, and you're sure that the disk has really gone bad, all hope is not lost.

There are ways to recover files from a damaged disk. Most often, in fact, your files have not been damaged; the problem lies with the disk's *catalog* of your files. In other words, your precious files are still intact, but the Mac's instructions for *finding* them have gotten mangled.

Your Mac comes with a repair program called Disk First Aid. It's on the Disk Tools disk (or on the System CD-ROM) that came with your Mac. Disk First Aid can scan a disk, check for problems and then offer to make the needed repairs. If necessary, it rebuilds the disk's catalog file, which may be all that's needed to make your files readable again.

To recover a bad floppy, first eject the floppy disk and launch Disk First Aid. Then pop the fussy floppy back into the disk drive. Select the floppy's icon in the Disk First Aid and — here's the important part — *don't* click Repair. Instead, click Verify (see Figure 8-15). In a minute or two, after scanning the floppy, Disk First Aid will probably report the disk needs repairs — as if you didn't know. *Then* click Repair; if all goes well, you'll end up with a working disk.
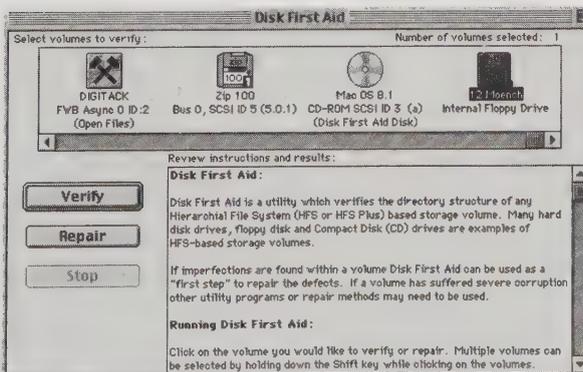
Figure 8-15: Disk First Aid, Apple's free disk-fixing utility, doesn't always work, but it's worth a try when a floppy comes up unreadable.

For some reason, if you *don't* run the Verify function first, Disk First Aid has a much lower success rate.

Recovering files from damaged floppies

If you insert a floppy disk and get a message that says the disk is unreadable, and the previous secrets don't work, you still may be able to recover the files on it. Leave the disk in the drive and open the *application* in which the files were created. Use the Open command from within the application to open the file, and then resave the file to a new disk.

If this doesn't work and the disk is truly ruined, there's still a glimmer of hope. A file-recovery program such as Norton Utilities may be able to locate the file — even on a fairly mangled disk — and allow you to copy it to another location. As a last resort, a little program called RescueText by Abbott Systems lets you search for text strings on a disk block by block. The process may take a while, but if you're trying to hunt down a precious bit of data that you can't live without, the search may be worthwhile.

CASE HISTORY

When all else fails—WD-40?

When a disk comes up as "damaged" or "unreadable" you might assume the problem is the result of some deep, dark technical mishap — corruption of the catalog b-tree, or some such error. In fact, you may be the victim of a far more mundane — and easier-to-fix — sort of problem.

Reader George Waugh, for example, wrote us describing a floppy drive nightmare in which his Mac reported that every disk inserted into the drive was damaged — even brand new ones and commercial software disks he knew were OK. He finally resigned himself to the fact that his drive was dead; he'd have to buy a new one.

Then, in a final, crazed, desperate effort, he tried something that we *in no way* recommend: He sprayed WD-40 directly into the floppy drive. When he again inserted a disk, it came out dripping with the oily lubricant. So he dried it off and put it back in, ejected it and dried it off again. Still no success.

But after a few more rounds of insertion and ejection, he noticed an oily, crumpled, discolored shred of paper peeking out from the drive slot. At once he realized what had happened: A floppy disk he had inserted days earlier had lost its label inside the drive and had been jammed in there ever since. The WD-40, however, had made the label sticky enough to cling to another inserted disk so it could be fished out. Once the old label was removed, the floppy drive worked perfectly.

Obviously, spraying WD-40 into your Mac isn't a great idea. We relate this account to remind you to be on the watch for little things — like a peeled-off label — that can lead to big problems.

Removable Disks

Hard drives and floppy drives are by far the most frequently used storage devices. But other storage options offer unique advantages over hard drives and floppies.

Most of the following drives take *removable* disks that act like giant, super-reliable floppy disks. As with floppies and hard drives, data is recorded on spinning platters — but each of *these* disks can hold megabytes or gigabytes of data, sealed into a cartridge that can be ejected from the drive.

With removables, you don't have to start shopping for another drive every time you need additional storage space; you just buy another cartridge (they run about $12 to $150 each, depending on type and capacity) and pop it into the drive. For a relatively low price, you get virtually unlimited storage.

- **SyQuest drives:** These older cartridge systems, available in 5.25-inch and 3.5-inch versions, are usually formatted to hold 44, 88, 200, or 270 megabytes each. They were the first removables to reach critical mass; in the eighties, every service bureau on earth had SyQuest drives to accept clients' files to be printed. By today's standards, these old drives are slow, low-capacity, and expensive.

- **Zip drives:** These sleek, slender disk systems from Iomega were introduced in 1995 and became immensely popular. It's not hard to figure out why. Zip disks look like extra-thick floppies, but hold about 100MB each. The Zip disks offer quiet, super-reliable performance at nearly the speed of a hard disk. Best of all, they're incredibly economical. The Zip drive itself costs only about $90 — or you can get one *built into* many Mac models — and disks run about $12 apiece. If you're looking for a cheap, reliable way to transport lots of data or make backups, you just can't beat a Zip drive and a stack of disks. (Thanks to the VST Zip 100, even PowerBook fans can now have built-in Zip drives, providing a quick way to transfer a week's worth of work from your desktop Mac.)

- **SyQuest EZ Drive:** These miniature SyQuest cartridges are SyQuest's answer to the Zip disk — they're similarly priced and sized. In fact, the cartridges hold slightly more (135MB) than Zip disks, and are slightly faster. Unfortunately, the awkwardness of loading and ejecting these disks — and the fact that SyQuest has filed for bankruptcy — put the EZ Drive at a distinct disadvantage.

- **Jaz drives:** Also from Iomega, and also wildly popular, these high-capacity removables are a multimedia glutton's dream. The original Jaz drive itself costs about $400 and holds 1.2 gigabytes on each 3.5-inch, $100 cartridge. In 1997, Iomega introduced a second-generation Jaz drive that runs even faster and uses 2 gigabyte disks, which cost about $150 each. The beauty of the $600 Jaz 2G drive is that it's backward-compatible with the original cartridges.

Jaz drives aren't just capacious, they're fast — as fast as hard drives, and, therefore perfectly suited for QuickTime movies and other speed-intensive tasks. Despite a discouraging reputation for unreliability — both the drives and some cartridge batches — they quickly became a standard for storage among graphics and multimedia professionals.

- **SyJet**: Once again, SyQuest has tried to imitate Iomega's success, this time by developing a Jaz-drive wannabe. The $300 SyJet drive holds $80 cartridges that contain 1.5 gigs apiece — better specs than the Jaz. But once again, the SyJet runs a distant second in popularity; whereas your local service bureau, for example, is sure to have a Zip or Jaz drive to accommodate your files, the odds of finding a SyJet drive are slim indeed.

- **Orb**: Castlewood Systems' 1999 creation, the Orb drive, promises to send Iomega and SyQuest, Inc. scrambling back to their board rooms. The Orb is along the same lines as the Jaz 2G drive — but faster (they transfer 12 megs per second), more capacious, and *much* cheaper. At $200 for the drive and only $30 for the cartridge, the Orb makes Jaz and SyJets look like luxuries for the rich.

- **SuperDisks:** Imation's $130 SuperDisk drive accepts both normal floppies *and* its own Zip-like 120MB disks, making it ideal for such floppyless machines as the iMac. Saving onto these disks is slow, but the two-for-one nature of this translucent plastic doodad makes it especially appealing.

- **CD-R and CD-RW:** Stand for CD *recordable* and CD *rewritable*. Unlike traditional CD-ROMs, which are *read-only*, CD-Rs and RWs are compact discs on which you can record your own data. For details, see Chapter 32. For now, we'll just point out that a Jaz drive holds twice as much, is erasable, and is many times faster. Although blank Jaz cartridges cost more, we suspect CD-R's time on Earth is limited — especially with recordable versions of DVD compact discs, which can hold up to 26 times as much, on the drawing boards (see Chapter 32).

- **Magneto-optical (MO) drives:** These are rewritable optical disks that come in cartridge form. The smaller cartridges, which resemble standard-size floppy disks, can hold up to 256MB. The larger, 5.25-inch square cartridges contain up to 1.3 gigabytes of data; a finely-focused laser records your data onto a double-sided spinning disk. Magneto-optical disks aren't as popular as SyQuests, but they've been catching on, especially with graphic artists; PowerBook owners can buy snap-in MO drives when they want to transport and archive hundreds of megabytes at a time. Magneto-opticals are slower than removables, and the drives themselves are more expensive, but they're economical for large-capacity storage. Blank 1.3 gigabyte optical disks cost about $70, — about on par with the Jaz drive.

- **Tape drives:** These are designed primarily as backup devices, because they don't provide *random access*. In order to find a specific block of data, you have to fast forward or rewind through tape, which takes time. All that winding and rewinding takes its toll on the tape's life expectancy, too; some tapes stretch and wear out if accessed more than a few dozen

times. Really, tape backups aren't meant for repeated use. The idea is to store the backup tape in a vault or a safe-deposit box. If an earthquake swallows your house, or a satellite falls on your office building and wipes out your network, you can restore your data from the tapes and carry on with your life. Some tape drives record data on the same 8mm tape cassettes used in video recorders. Others write the data to *DAT* (digital audiotape). Tape drives are great for large-network backup because they can archive a huge amount of data — as much as 16 gigabytes on a single tape! They're also the least expensive form of mass storage. A tape cassette capable of holding 16 gigabytes of data costs under $30.

■ **Worm drives:** Worm stands for Write Once, Read Many, but forget it: These you-can-only-record-on-it-once CDs are already technological dinosaurs. We've never even seen one.

Removable-Disk Secrets ─────────────── ■

Why can't I eject my cartridge?

Mac Basics

There's a famous bug involving removable cartridges and file sharing prior to System 7.5.1. You can't remove a removable — a Zip, Jaz, CD, or SyQuest — if it was in the drive when file sharing started up.

Solutions:

■ Wait to insert the cartridge until after file sharing has started up.

■ Turn file sharing off while you eject the disk (with the Control Strip, for example; see Chapter 4).

■ Use the shareware program UnmountIt, which quickly turns File Sharing off and on again when you eject a cartridge. It is included on the CD-ROM with this book.

CD

My cartridge doesn't show up

On certain Macs, with certain SCSI-chain setups, on certain days of the week, you may insert a SyQuest, Zip, or Jaz cartridge (after the Mac is already on) and discover that its icon doesn't appear on the Desktop.

The solution is simple: restart your Mac with the cartridge or disk already inserted into the drive. The Mac will pull it onto the Desktop even if the necessary extension wasn't installed at startup!

Don't feel like restarting? Install SCSIProbe, included on the CD-ROM with this book. Then, whenever you're nipped by this won't-mount problem, just press ⌘-space. SCSIProbe wakes up and forcibly brings your cartridge onto the Desktop. (You can change this keystroke in the SCSIProbe control panel.)

CD

If you're using a Zip or Jaz drive, of course, the solution is even easier; run the little Iomega Guest program included with your drive. No extension needed.

The Surgeon General's warning

Smoking is bad for your lungs, and it also can spell disaster for removables. If even the tiniest bit of tobacco smoke manages to worm its way into a Zip, Jaz, or SyQuest cartridge, a microscopic smoke particle can damage the disk surface and cause the drive to crash. Maintaining a smoke-free office will help keep your data safe—and probably prolong *your* life, too.

Using a Zip or Jaz on a PC

Want an inexpensive way to transfer larger-than-a-floppy batches of data to a Windows machine? Don't feel like spending hundreds of dollars for a network between them?

Your Mac can read PC-formatted Zip and Jaz cartridges, just as it can read PC-formatted floppies. As long as you've got the PC Exchange control panel installed, those PC-originated cartridges show up on your desktop just as though they're regular Mac disks.

That's how you *read* PC-formatted Zips and Jaz disks. But how do you *create* them? How do you turn a Mac-formatted Zip or Jaz drive into a Windows-readable one? By using the Iomega Tools program that came with the drive. (The Mac's own Erase Disk command doesn't offer a choice of Mac/PC formats, as it does for floppies.)

Cash in on those disk guarantees

Worth Learning

What's the first thing you should do when you unwrap a fresh Zip, Jaz, or SyQuest disk? Write down the date—preferably right on the disk label! Many of these disks carry a reliability guarantee of three, four, or five years (the same is true of many hard drives). If, at any time within the warranty period, a disk becomes unusable, you can return it to the manufacturer for a *free* replacement.

The key is to have the purchase date and receipt available. Make it a point to keep such records on file. We've seen companies return cartridge after cartridge for free replacement, even when the disks were damaged by a faulty drive.

Chapter 9

Memory

In This Chapter

▶ What memory is and where it goes

▶ 32-bit addressing and all that

▶ Allotting memory to programs

▶ The Disk Cache, RAM disks, RAM Doubler, and virtual memory

When you double-click a document or a program icon, your hard drive spins furiously at up to 7,200 rotations per minute. Like an audio CD player, the Mac reads the information contained in your file off the disk. The Mac doesn't send this data to a speaker, however — it copies the information into memory. (By the way, we don't belong to the "disks are memory" school. Disks are disks. Memory is memory. There's no such thing as "disk memory.")

By the time your memo (for example) appears on the screen, you have two copies of it — one copy on the disk and another in memory (RAM) on the screen before you. (For a discussion of what happens next, see Chapter 15.) Keep this distinction between *disk storage* and *RAM* in mind, and much of computing becomes clearer.

RAM: the Chips

RAM comes on tiny circuit boards called *SIMMs* (for *single* in-line memory modules) or, on most Power Macs, *DIMMs* (for *dual* in-line memory modules). A SIMM is a bunch of memory chips (memory modules) carefully fastened, in a neat row (in-line), to a small epoxy board. With your permission, from now on, we're just going to use *DIMMs* when we mean "SIMMs or DIMMs, depending on your Macintosh model."

If you've ever held a DIMM in your hand, you know that RAM looks pretty unimpressive. RAM stands for random-access memory; *random-access* implies that the computer can jump directly into any part of it to fetch a piece of information. Contrast this random-access device with, say, a VCR, which is a *sequential*-access device; you can only get to a certain spot in the movie by waiting while it fast-forwards or rewinds to the appropriate spot.

Mac Basics

Despite its humble appearance, *memory is about 1,000 times faster* than a disk at sending information to the Mac's brain. This critical fact accounts for almost everything you're about to read, because programmers deliberately put something into RAM whenever speed is an issue. When you're editing your memo, of course, you don't want to have to pause for ten seconds each time you scroll to a new paragraph, which is what would happen if your memo wasn't in memory. As owners of the PowerBook 5300 can tell you, the Mac can be slow enough as it is.

If you examine a DIMM, you'll note that the little black memory modules are connected to the board with tiny legs. The board portion is constructed of impossibly thin layers of epoxy resin. In between layers, computers and acid have arranged and etched circuitry. The legs of the memory pods make contacts with this internal circuitry with extreme precision and specific depths.

These minicircuit boards (the DIMMs) can be snapped, with some difficulty, into corresponding receptacles inside every Macintosh model. Various models have various numbers of DIMM slots, usually in multiples of two or four.

The number of DIMM slots doesn't necessarily affect how much memory your Mac can have installed, however. The DIMMs themselves come in different capacities, from $1/4$ MB to 128MB or more on a *single* DIMM! Needless to say, the technology required to cram 128MB of RAM on a three-inch piece of board makes them expensive — at the moment. Like all high-tech products, however, prices of memory chips will forever plummet. (Were you around during the Great RAM Price Crash of 1996? Ah, it was a great time to be alive.)

CD

We've figured out precisely how much memory your particular Mac model can accept. Rather than bore you by listing it all here, we'll direct you to Chapters 12 and 13, where you can read about your model and ignore the others. You may also wish to spend some quality time with GURU, the amazing storehouse of model-by-model RAM information included on the CD-ROM with this book.

Where your memory goes

We once heard an Apple engineer discussing the design of the very first Mac. It seems that, in the early '80s, Apple decided to break the bounds of personal computers. Costs be damned, Apple was going to absolutely *pack* memory into its flagship machine: a whopping 64K!

Of course, even in the time it took the Mac to reach market, 64K began to look paltry; the first Mac actually contained 128K of RAM.

The Fundamental Law of Software Glut dictates, however, that the amount of memory considered the crudest minimum doubles about once per year; at this writing, a Mac OS 8 Power Mac feels memory-cramped unless it has at least 32MB of memory. Some of the latest Macs can handle a hearty 768MB. (Even paradise has its inconvenience, though: the more RAM your Mac has, the longer it takes to start up.)

Where does it all go? Here's how the math goes on a typical 32MB Power Macintosh. Remember that one megabyte of anything isn't 1,000 kilobytes — it's *1,024* kilobytes. So our 32MB machine has 32,768 kilobytes of RAM.

In our tests, a Mac OS 8 system with all extensions *removed* from the System folder (not just turned off) takes up 6.5 megs of RAM right off the top. Set your Disk Cache (we'll get to this) to the recommended setting for a 32MB machine, and you're out another meg.

Furthermore, *every single feature* of your Mac saps away a little more memory. Internet extensions ... CD-ROM extensions ... AppleTalk, virtual memory, speech — each sucks away more RAM all the time your Mac is on (unlike programs, which you can quit when you want to). The CD-ROM extension grabs 225K, AppleTalk wants 107, File Sharing takes 484, QuickTime wolfs down 768, and so on.

In other words, turn the basic Mac OS 8 extensions on, and you're out another 1.7MB. Add a few extensions of your own, and you rob even more memory: QuicKeys (530K), a Global Village modem (318K), and StuffIt Deluxe (768K) — and we won't even *begin* to talk about RAM gobblers like ATM and Apple's speech software.

The bottom line: on a typical 32-meg Mac with a moderate number of extensions, you lose 12 megs of RAM — 38 percent of your machine's memory — just by turning on the computer!

No wonder the standard RAM allotment doubles every year.

What to do about a RAM shortage

If you're running short of RAM, you have three choices.

- Run fewer programs simultaneously. That is, quit Photoshop before launching Netscape Navigator. It won't kill you, but you won't be getting as much out of your Mac as you can.

- Use virtual memory or RAM Doubler. We'll cover both of these shortly.

- Buy more memory. Upgrading that 32MB machine to 64MB costs about $60 (at this writing, anyway). Go this route for maximum speed and minimum hassle.

If you do decide to install more RAM, the following section provides some pointers.

How to buy SIMMs/DIMMs

Memory upgrades come from three sources. First, you can take your machine into a computer store. They will provide the memory, install it, and test it. Having a dealer do the job certainly provides peace of mind, but it costs you much more than what it would cost to do the job yourself. You'll also have to do without your Mac while it's in the shop (depending on how friendly your dealer is).

The second possibility is to buy the RAM from a general Mac-merchandise mail-order company, such as Mac Connection, and install it yourself. We like this option because your purchase, if not your Mac, is well protected. Mac Connection (or another of the major Mac mail-order companies) guarantees everything, frets over your satisfaction, may include a how-to-install video (or at least a good manual), and ships overnight for $5. The drawback is that each chip costs close to 50 percent more (say, $45 instead of $30 each) than it would if you bought it from a chip company.

The third option entails ordering your DIMMs directly from a chip company (like The Chip Merchant, 800-808-CHIP). This, too, is mail order, and it's the cheapest way to get RAM. You pay more for shipping; you may not get instructions; and you may not be able to pay by credit card.

Both of the mail-order sources we mentioned carry ads each month in the back of each issue of the Mac magazines (*Macworld, MacAddict, Mac Home Journal*). They all have toll-free numbers for advice and information.

Types of DIMMs

CD

You'll hear a few different terms bandied about in your efforts to buy memory. First, there's speed. Typical speeds are 70, 80, and 90 nanoseconds (ns). Getting a faster speed chip than your Mac needs *doesn't* speed up your Mac. However, getting a chip that's too slow for your Mac *can* cause trouble. See Chapters 12 and 13 (or the program on this book's CD-ROM called GURU) for model-by-model listings of the memory speeds required in each Mac. As a general rule, though, the slowest Macs use 150 ns chips; the fastest need 60 ns.

Mac Basics

Each model family requires a different kind of RAM board. For example, you can't use memory from your old Mac IIci in a Power Mac; nor does PowerBook memory work in a desktop model.

Again, this information is listed in Chapters 12 and 13; the point is to mention your Mac model when ordering memory upgrades.

Installing memory

If the thought of installing memory makes you a little queasy, you can have either a dealer or some local guru do it. Do *not* upgrade a PowerBook with a three-digit model number yourself. If you have a Plus, SE, or black-and-white Classic, you need an $8 set of special tools, including a long-shafted Torx screwdriver, to open the case. And to upgrade some tower-style Macs (such as the 800 and 8100 series), you must practically dismantle the machine to get at the RAM slots. For these models, once again you may want to go the local-guru route.

For the remaining models, installing RAM isn't difficult. (In fact, on the tower-style Macs that unfold like a Hostess Ho-Ho unrolling — the G3 towers, for example — getting at the RAM slots is child's play.) But because different models require chips in different multiples (two or four, for example), and because every model's slots are in a different place, we won't attempt to walk

you through the process. The video or manual provided by some mail-order companies does an excellent job of explaining the task, as does Apple's manual for most models.

Speed Tip

When you're finished with the installation, here's a tip: Don't bother hooking everything up again. Leave the Mac opened up, and try turning it on. If all went well, you'll hear the usual start-up ding or chime; wait a moment to make sure that the Mac has completely finished starting up — even if the monitor isn't connected — and then turn it off manually.

If, on the other hand, you hear the Chimes of Death (four single notes, the Twilight Zone theme, a flute or drum solo, or a car-crash sound — depending on your model), then one of the DIMMs is faulty or, more likely, not seated right. All of its contacts aren't correctly mating with the leads in its slot. Don't freak out; this happens fairly frequently, and it's easy to fix. Remove the DIMMs you just put in and start over.

Finally, when everything starts up okay, turn off the Mac and put it all back together.

RAM: for Programs

The Mac uses RAM for all kinds of things before you even run a single program. But, sooner or later, you're going to use your RAM for running *applications*.

Mac Basics

The most important thing we can convey is that *you* control how much memory appetite a particular program has. If you're working on an especially large ClarisWorks file, for example, you may want to give ClarisWorks more memory. Or if you're working on a PowerBook with limited RAM, and you're just writing memos, you may want to give WordPerfect a smaller memory allotment.

To change the program's memory allotment — its *memory partition* — go to the Finder. (The program can't be running yet.) Highlight its icon and then choose Get Info from the File menu (see Figure 9-1).
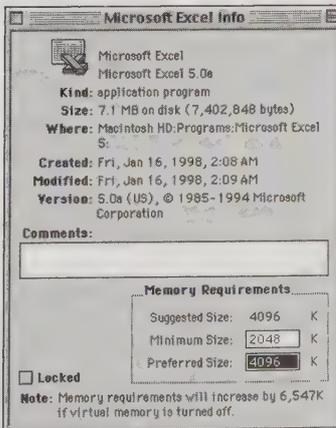
Figure 9-1: Change a program's memory appetite using the Preferred box.

32-Bit Addressing: More than you wanted to know

A Mac can't use more than 8MB of memory without *32-bit addressing*. Fortunately, this technical feature is automatically, and permanently, turned on in all Mac models since about 1993. Look in your Memory control panel. Do you see a switch for 32-Bit Addressing? If not, you've got 32-Bit Addressing turned on forever.

But many owners of older Macs — the LC or Mac II-series models, for example — get zapped by the 32-bit addressing problem when they upgrade their Macs from, say, 8MB to 20MB of memory. When it's all over, the About This Macintosh command reveals that, sure enough, 20MB are installed — but the *System* is using 12 of them!

Making the Mac aware of its new memory is easy. Open the Memory control panel and turn on 32-bit addressing (you must have System 7 or later). Then restart the Mac.

Why is this feature called 32-bit Addressing? Deep down, a computer's primary job is to shuffle around zillions of tiny pieces of information into zillions of corresponding pigeonholes. Each little data mailbox is numbered, so that the Mac will be able to find the information again later. The programmers call the data location's number its *address*.

As you can imagine, the computer needs a very long number to express a certain address if there are millions of possible locations. (Especially because the computer counts in base *two* instead of base ten, like us.) In fact, to put this in an understandable context — it takes a number *24 digits long* to be able to pinpoint every memory address in 8MB of RAM. Some letter "W" you've typed, for example, might be stored at RAM address 10010110101101000 1101010.

But now we're asking the Mac to store information in *more* than 8MB of memory! It's exactly the same problem the phone company had as the U.S. population grew. Simply put, Ma Bell was running out of phone numbers. Pretty soon, seven digits just weren't enough for every citizen to have a different phone number! Area codes were born. Suddenly, every phone number was *ten* digits long instead of seven.

In the same way, Apple Computer had to give the Mac some extra digits to play with, starting in System 7. Because it has more memory and more places to stick information, the Mac can use *32* digits in its addresses. Hey — it's *32-bit addressing*, get it?

With 32-bit addressing on, your Mac can address huge amounts of memory: up to *four gigabytes* (4,096MB) of RAM, although there's no Mac yet made with enough slots to hold that many DIMMs!

Now then: Suppose you have a program that was written when Macs had a maximum address length of 24 bits. Suppose that the programmers didn't leave room for potential expansion. Any time the Mac tries to look for a RAM location whose address is higher than the 24-bit maximum, a system error will result. A program that properly handles 32-bit addressing is called *32-bit clean*; otherwise, it's *32-bit dirty*.

How can you tell if a program is 32-bit dirty? There's no easy way. If it crashes when you turn on 32-bit addressing, that's one good sign. Combine that information with the program's age, and you'll have a pretty good idea.

Funny thing is, some *machines* weren't written to Apple's guidelines, either — the Macintosh II, IIx, IIcx, and SE/30 models. Their internal circuitry prevents them from ever using more than 8MB of memory. Go figure.

Fortunately, two extensions — Mode32, from Connectix, and Apple's own 32-Bit Enabler — make these models 32-bit clean. If you have a Macintosh II, IIx, IIcx, or SE/30 model and want to upgrade the RAM beyond 8MB, install one of these free extensions; Mode32 is the only one that works with System 7.5 and later.

Finally, change the number in the lower-right corner of the Get Info box. If you set this number below the program's suggested or minimum size, the Mac will notify you that you're inviting System crashes.

The two out-of-memory messages

Your Mac may show you either of two different "not enough memory" messages. Ironically, the one you see most often doesn't mean what you think.

When a *program* you're running gives you an "out of memory" message, it's *not* because your Mac doesn't have enough memory! Even a Mac with 768MB of RAM may give you the message shown in Figure 9-2.
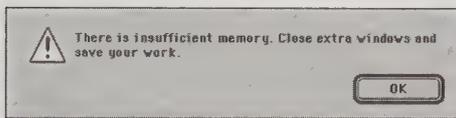
Figure 9-2: You see this message when the program you're using hasn't been assigned enough memory. Give it some breathing room!

This message appears because you haven't permitted the program to use *enough of* the Mac's memory. Your program is gasping for RAM within the puny amount you've given it. Use the Get Info method just described to increase the program's memory partition. Those out-of-memory messages will go away.

If, on the other hand, you get one of the messages shown in Figure 9-3 as you're launching a program, then it *is* your Mac that's short on memory. (Actually, your Mac is short on *contiguous* memory, as described later in "See where your memory's going.") Quit some of the programs you're running and try launching the new program again.
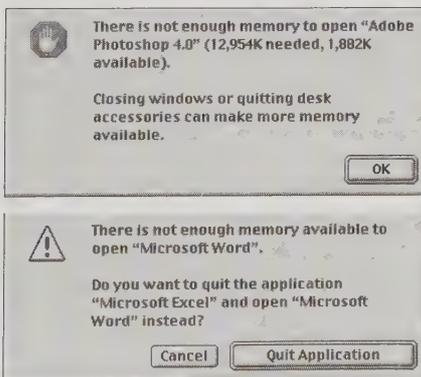
Figure 9-3: These messages mean that your Mac simply doesn't have a large enough block of unused memory to launch the new program you're opening. If the Mac sees that quitting one of the open programs would free up enough memory to complete your launch, it even offers to do so (bottom).

Three different memory sizes per program

The Get Info box has three different boxes showing memory sizes (see Figure 9-1). The *Minimum* size is the programmer's opinion of the least RAM the program needs to run at all. If you set this number below its factory-set number, you'll be warned that "this program may crash." And if you set the *Preferred* number (described below) to the Minimum number, the program will open, but it will run slowly.

The *Suggested* size is the amount the software company thinks the program needs to run comfortably and at full speed. And the *Preferred* size is the number that you're allowed to change. We like to think of it as *actual size;* it's the amount that will be set aside for the program — *if* that much RAM is available. If not, the Mac will launch the program, using up a RAM chunk as close to that size as possible (provided, of course, that the available RAM is higher than the Minimum number).

The Preferred box is very important. Many programs' pre-set Preferred size is unrealistically low, reflecting the input of marketing directors who want their company's products to appear to have a modest RAM appetite. As a result, boosting this number by 20 percent or more frequently makes a program run faster and stabler. If you're having trouble with cranky behavior in one specific program, one of your first troubleshooting thoughts should be to bump up its Preferred memory size.

Worth Learning

By the way: As you'll read in the sidebar "Why Power Mac programs are RAM hogs," on any PowerPC Mac, you can cut a program's Preferred and Suggested memory appetite by as much as 50 percent by turning on virtual memory or RAM Doubler.

The Finder's memory partition

In Chapter 1, we insisted that the Finder itself is a program. Like any program, the Finder has a specific amount of memory allotted to it. And like any program, the Finder can run out of memory in its partition. The more windows you have open, or the more icons displayed on the screen, the more RAM the Finder needs. Sometimes it says, "There is not enough memory to keep this window open" or "...to open that control panel right now." That's a clue that the Finder is gasping for RAM.

In theory, the Finder is supposed to be self-adjusting — but we still get out-of-memory messages from it. Yet you can't change its memory allotment using the same Get-Info-while-it's-not-running method described previously; the Finder's Get Info box *has* no memory-size boxes in the lower-right corner.

Fortunately, you can use ResEdit to achieve the same result. See Chapter 21 for details.

ANSWER MAN

Why Power Mac programs are RAM hogs

Q: Why do Power Mac programs need so much more memory than their non-Power Mac equivalents?

A: To follow this discussion, recall the basics of how a program runs. When you double-click a program's icon, the hard drive spins, and your Mac reads the program's *code* — the computer instructions that constitute a program — into memory.

The Power Mac processor — the PowerPC chip — is completely different from the chips in non-Power Mac (680x0) models, and software tailored to run on it ("native" PowerPC programs) is completely different from 680x0 programs. A 680x0 program reads pieces of its code from the hard disk, and gets rid of that code, as necessary. For example, when you print, your program reads the printing code on the hard disk and loads it into RAM; when the printing is finished, those instructions are dumped out of memory. This swapping process is known by the geeks as *file mapping.*

"Native" PowerPC programs, on the other hand, don't have the luxury of being able to read and dump code fragments as necessary. Their code is stored on the disk as one giant chunk. Therefore, a PowerPC program requires much more memory than its 680x0 counterpart; it must load *all* of the program code into RAM when you launch it. As you can imagine, this also means that a PowerPC program takes longer to load.

Fortunately, there is a quick and easy solution to this problem — a simple mouse click that permits a Power Mac to use file mapping, just like non-native programs. Just open your Memory control panel and turn on Virtual Memory. Adjust the setting so that the amount is only about one or two megabytes more than your actual installed memory. (This option was turned on when you bought your Mac. It should still be on, unless you've turned it off.) You'll find a complete discussion of virtual memory later in this chapter.

Because virtual memory, at heart, is simply a method of rapidly swapping information between the hard drive and RAM, it works beautifully on a Power Mac. Microsoft Excel 5, for example, requires *6,500K less* memory when virtual memory is turned on! FreeHand requires 7 megs of RAM on a Power Mac — but only 3 megs when virtual memory is turned on. In fact, it's easy to find out how much memory savings you'll get: Highlight a program's icon and choose Get Info from the File menu. As you can see in the message at the bottom of Figure 9-1, the savings are easy to spot.

In other words, when it comes to a Power Mac, turning on virtual memory not only doesn't slow down your machine — it actually speeds it up.

RAM Doubler, as you'll hear us mention several times in this chapter, is a particularly sweet blessing on PowerPC-based Macs. In addition to its namesake stunt (letting you launch two or three times as many programs as before), it also lets you turn on file mapping for PowerPC-native programs, exactly as virtual memory does. (Figure 9-5 shows this option in the RAM Doubler control panel.) Unlike virtual memory, however, RAM Doubler doesn't use up any hard drive space.

See where your memory's going

Memory Central is the About This Computer command in the menu. (Depending on your system-software version, it may also be called About This Macintosh or even About the Finder.) Choose this command at any time to get some great statistics on how your memory is working (see Figure 9-4).
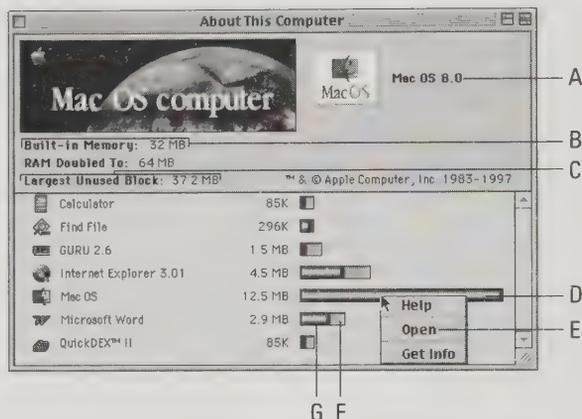
Figure 9-4: Your memory-usage resource.

The About This Computer box lists all the programs you're currently running, including the System and Finder. Here's how it breaks down.

A Here's where you find out what system-software version you're using. (See Chapter 6 for details on various system-software versions.)

B This indicator shows how much *real* memory is installed in your Mac — not "fake" memory like virtual memory or RAM Doubler memory, but actual chips.

If you're using virtual memory, your About This Computer box shows both the Built-In Memory, which is how much actual RAM you have, and the Total Memory. That's how much memory you have, *including* the disk-based virtual memory. (For details on virtual memory, see the remainder of this chapter.)

(OS 8) If you have RAM Doubler installed, the number shown here is twice or three times your actual installed RAM (even though, as we'll discuss shortly, that's not really what RAM Doubler gives you). In Mac OS 8 and later, this box is a little smarter — it shows a second line that says "Ram Doubled to" (the new, artificially doubled or tripled amount), as shown in Figure 9-4.

C This is a biggie. The Largest Unused Block *isn't* how much memory you have free in the Mac. Instead, it's the *largest* block of unused memory — but there may be several others. If the Largest Unused Block is 1,200K, then you may have other free blocks of 1,000K and 400K: a total of *2,600K* free!

Why does the Mac track this statistic? Because whenever you open a program, it can't open unless there's a block of *contiguous*, unbroken memory (see "A calm discussion of memory fragmentation," later in this chapter, for details). This gauge helps you figure out why your 2,500K program won't open, even though your own personal math says there should be a total of 2,500K free.

D Ever wonder why this bar of the graph — the one for System Software — is often the longest?

The System Software bar of the graph represents that 6,000K (or whatever) that the System actually requires, *plus* every extension and control panel you have installed. That includes big chunks of memory required by the Disk Cache, a RAM disk (see Chapter 14), Speed Doubler, QuickTime, QuicKeys, networking and CD-ROM software, and so on. It all gets tallied in this bar of the graph.

OS 8   **E** Mac OS 8 and later lets you turn this memory-statistic dialog box into a handy program-launching bay. Control-click any bar of the graph to view the pop-up menu shown here. Choose Open from this pop-up menu, and you bring that program to the front, no matter how deeply it's buried in your nest of open programs.

MACINTOSH SECRET

Getting the detailed memory specs

Most people think of Balloon Help as a crutch for beginners. In this instance, however, it can be a sophisticated tool for the power user who's trying to do some memory sleuthing.

As you know, the About This Computer command shows you how much of your memory is being used by which programs. But only Balloon Help shows you how much each program is using of its allotted total RAM. Just turn on Balloon Help and point to each bar of the graph, as shown here, and you'll see what we mean.
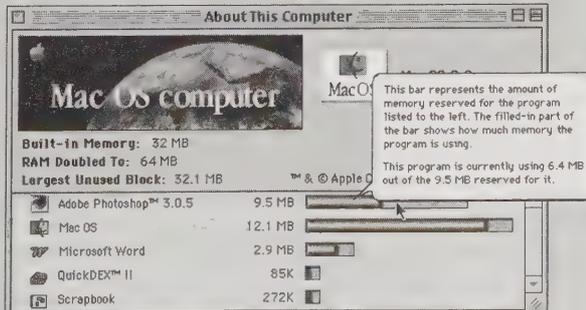
F In the previous section, we mentioned that you can set the amount of memory a particular program uses when launched. That's the amount of memory that program grabs; that's also the amount shown by this graph, including the lighter-colored end portion.

G However, a program may not actually *need* as much memory as you give it. If we change ClarisWorks' memory allotment to 12,000K, it still only really needs the 1,400K the programmers designed it to use. The dark part of this memory bar indicates how much of a program's memory partition it's actually *using*.

If the light-colored portion of this bar is consistently large, the Mac is signaling you that you're wasting your RAM by allotting too much to that program.

RAM Doubler to the rescue

RAM Doubler is an incredible idea that's been executed extremely well. It's software — an extension sold by Connectix. You drop it into your System Folder ('030, '040, and PowerPC Macs only), and it apparently doubles or triples the amount of memory installed in your Mac.

RAM Doubler uses some clever schemes to achieve this feat. For example, iif you're running three programs simultaneously, it *compresses* all but the frontmost program, just as, say, StuffIt might do. But StuffIt compresses a file on the disk into a smaller file on the disk. RAM Doubler, on the other hand, compresses something in *memory* into a smaller amount of *memory;* as a result, RAM Doubler's compression takes place nearly instantaneously. If there's not enough RAM left to perform this quick compressing, RAM Doubler may also store some of the background programs on the hard drive, just as the Mac's virtual memory feature does.

Current versions of RAM Doubler are mostly immune, in our experience, to the slowdowns and extension conflicts associated with the earliest versions. However, RAM Doubler isn't magic. It doesn't actually double or triple your RAM; instead, it doubles or triples the *number* of programs you can open simultaneously. In other words, RAM Doubler is for opening more small programs, not for giving a single big program more memory. Each individual program you want to open must fit into your genuine installed RAM.

Bottom line: If you can't open that RAM-hungry program *now,* you won't be able to open it with RAM Doubler installed. If you want to run three programs simultaneously instead of just one, however, RAM Doubler is an inexpensive, pain-free solution. Furthermore, RAM Doubler offers special advantages for PowerPC-based Macs, as discussed earlier in this chapter (see "Why Power Mac programs are RAM hogs," earlier in this chapter).

RAM Doubler Secrets

RAM Doubler versus Photoshop

Few topics generate so many questions as the Photoshop versus RAM Doubler issue. Photoshop, of course, is an amazing program that gets more amazing the more RAM it has. RAM Doubler would seem a natural for it. However, as we've said, RAM Doubler can't give any one program more RAM than you've actually got installed, as chips, in your Mac.

Therefore, use the Get Info method described in this chapter to give Photoshop as much real memory as you can — don't include any of the "RAM Doubler" memory. In other words, choose About This Computer from your menu. Subtract the amount of RAM your system is using (for example, 8 megs) from the "built-in memory" amount (for example, 24 megs). That leaves 16 megs of real RAM, which you can allot to Photoshop. It makes no difference that RAM Doubler has made your "total memory" figure, say, 48 megs, 72 megs, or whatever.

If you get greedy, and you allot to Photoshop more RAM than you physically have available (anything above 16 in this example), you'll pay the price — system crashes and unbelievably slow performance.

The RAM Doubler launching pad

Contest Winner

RAM Doubler 2 and later takes the form of a control panel. In many ways, it resembles the Get Info box shown previously in Figure 9-1. As free book winner and Connectix employee John Malm points out, however, the bars shown in this dialog box are more than a pretty interface (see Figure 9-5). They're a launching bay for your running programs. Just double-click a program's name to make it the active program. (Alas, RAM Doubler 8 lacks this feature.)

(Is it fair that an employee of Connectix wins a free book by submitting an undocumented secret about his *own product?* You better believe it. Let's have more *Secrets* contest submissions from software-company employees!)
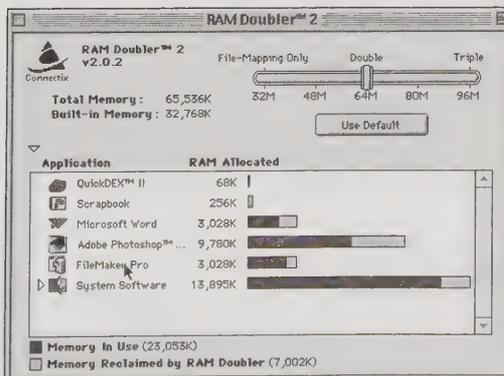
Figure 9-5: RAM Doubler 2's control panel features double-clickable bars for quick application launching.

Extensions no, RAM Doubler yes

You're pressed against the wall. You need every last shred of memory you can eke from your Mac. Your natural inclination, of course, is to turn off your extensions — all those RAM-hungry, gluttonous extensions — by pressing the Shift key as the Mac starts up. Yet you'd be silly, under these circumstances, to turn off RAM Doubler itself, right?

Right. So hold down the ⌘ *and* Shift keys during startup; you'll turn on RAM Doubler even though all your other extensions are off.

Extensions yes, RAM Doubler no

Interestingly, you can do the opposite of the previous Secret, too: you can start up the Mac without RAM Doubler, yet permit all your other extensions to load. The trick is to hold down the ~ or Esc key (usually in the upper left corner of your keyboard) while the Mac is starting up.

This technique has a distinct advantage over turning RAM Doubler off with an extensions manager like Conflict Catcher or Extensions Manager, by the way: the next time you restart the Mac, RAM Doubler will be on again. Turning RAM Doubler off with an extensions manager generally requires restarting the Mac *twice* afterward to make RAM Doubler happy.

A calm discussion of memory fragmentation

Imagine that you're trying to park in Manhattan. Your car is 10 feet long. You come upon a city block where there actually is 10 feet of curb space left for your car, but some jerk has parked so that the 10 feet is broken into two pieces. There's 5 feet of empty curb on either side of his car. Obviously, you can't park unless he moves his car.

The guy we're talking about has *fragmented* the parking space.

Programs using your RAM are as much like cars on a curb as this analogy will allow. When you launch a program, it seeks empty RAM not being used by programs you've already opened. But if your free RAM has been broken up by the presence of other programs, that new program can't open at all.

So, what fragments RAM? Here's the scenario. Your Mac has 32MB of memory, let's say. At noon, you start the Mac. Your memory usage looks like the map at the top of Figure 9-6.

At 12:05, you open America Online. For this example, let's say that its memory requirement is 4MB. When you then launch Navigator, your Mac's memory map looks like the second map in Figure 9-6.

Total Memory: 32 Megs

| System (8MB) | | free memory | |

Total Memory: 32 Megs

| System (8MB) | AOL (4) | Netscape (16MB) | free (4) |

Total Memory: 32 Megs

| System (8MB) | free (4) | Netscape (16MB) | free (4) |
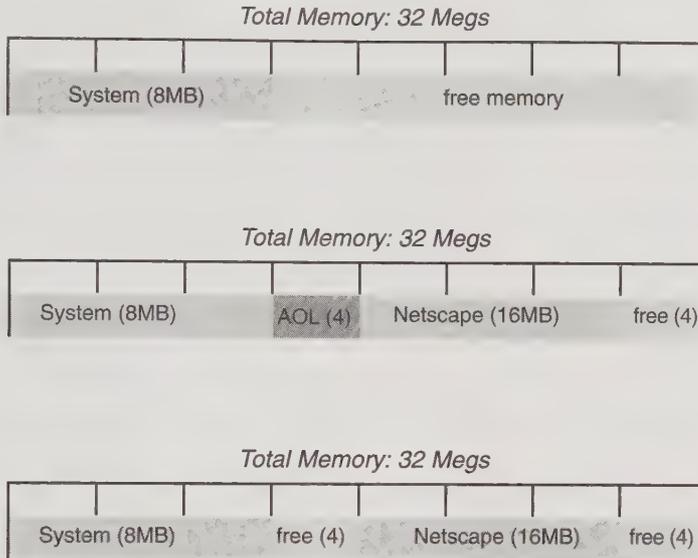
Figure 9-6: Your memory usage when you start out (top); after launching two programs (middle); and after quitting AOL (bottom).

At 12:15, you quit America Online. Your memory map now looks like the bottom map in Figure 9-6; technically, you have 8MB of unused RAM at this moment. And yet, if you look at this last drawing, you'll see that you can't launch Claris Home Page now (it needs 6.5MB) — there aren't 6.5MB of *contiguous* memory left! Because of the sequence, you've fragged your RAM.

The only way to defragment your RAM is to *quit* all your programs, so that only the Finder is running. When you relaunch them, in sequence, they'll use up consecutive chunks of RAM, and they'll all fit.

Actually, there's a good way to *prevent* memory fragmentation, if you're that much of a careful planner. Launch the programs you'll want to leave open all day *first.* Launch programs you think you'll be quitting last.

Memory leaks — and shared libraries

Our e-mail brings this question nearly once a month: "Help! During the day, my memory seems to disappear! My available RAM creeps invisibly away the more I use my Macintosh. Even when I quit all my programs, the Largest Unused Block never returns to the huge number it should be. What's going on?"

There is such a thing as a *memory leak,* which results from buggy software. Such programs munch down more RAM the longer they're in use — RAM that they don't give back to the Mac's pool of available memory when they quit.

Much more often, however, the "creeping memory loss" syndrome results from a much more benign source: *shared libraries.*

You may have read about shared libraries in Chapter 4. They're small hunks of program code that may be shared among several different programs. Microsoft is one of the foremost users of shared libraries — after all, most of its customers use some combination of Word, Excel, PowerPoint, and Internet Explorer. Why should Microsoft clutter your hard drive with four copies of the computer instructions for printing, font management, Internet connectivity, and so on? Microsoft programs are big enough already!

Microsoft solves the problem by breaking these chunks of your applications off and dumping them into your System folder. There they sit, with names like Microsoft Component Library, Microsoft Dialog Library, and Microsoft OLE Library: re-usable chunks of computer code that may be *shared* among the various Microsoft applications. (Apple has written a number of shared libraries of its own; scan your Extensions folder for files whose names end in *Lib* or *Library,* and you'll see what we mean.)

So how do shared libraries contribute to "memory leaks?" When you launch Microsoft Word, it copies all of Microsoft's shared libraries into memory. But when you quit Word, you don't "quit" these libraries! They remain in memory — the theory is that if you subsequently launch Word *again,* or launch any other Microsoft program, these pieces of common code will be there waiting, ready to use. (That's one reason launching a Microsoft program a second time is much quicker than the first.)

In other words, the Macintosh thinks it's doing you a favor by keeping these chunks of program hanging, invisibly, in memory. The only way to release the shared libraries from memory is to restart the Macintosh.

The Disk Cache

Cache, pronounced *cash,* is French for *hide.* When a computer caches some information, it tucks it away into a protected, private part of its head, separate from the rest of its memory and circuitry.

The Disk Cache is a feature that speeds up your Mac. And we can all use *that* kind of feature.

Setting the Disk Cache

You access this feature by opening the Memory control panel, as shown in Figure 9-7. To adjust the amount of memory you're willing to dedicate to the cache, click the up/down arrow buttons and then restart the machine. (If you're using Mac OS 8.5 or later, you must click the Custom Settings button — and acknowledge the warning that you're better off using the default setting — in order to make the arrow buttons appear.)
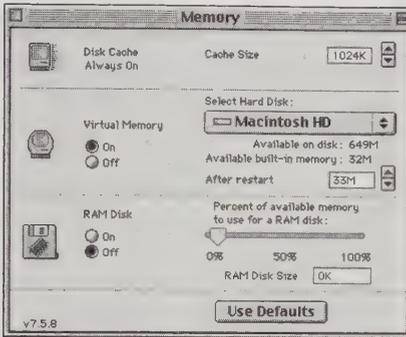
Figure 9-7: The Disk Cache, the Mac's built-in speed feature (shown at the top of the control panel), eats up a percentage of your RAM but gives you a nice speed boost.

Mac Basics

The disk cache attempts to sock away frequently used information from the hard drive into RAM. The Mac thereafter can grab this important data from memory, instead of having to find it on the hard drive — and the overall effect is a jump in your Mac's speed. When you switch to Palatino font in your word processor, when you open a folder in the Finder, when you launch a program — the necessary program code for each of these tasks is crammed into your disk-cache memory (new information pushes out the oldest). The *next* time you perform that action, the Mac is ready (and avoids "hitting the disk" to retrieve the necessary information).

Try it yourself: Double-click your System Folder and see how long it takes to open. When you try this a second time, you should see it really fly open.

The correct disk cache size

So what's the right setting? The basic rule: Set the Disk Cache to 32K for each megabyte of RAM in your machine.

In systems before 7.5, don't set it higher than 512K. Because of the Disk Cache anomaly, a glitch in the *pre-System 7.5* Memory control panel makes the Mac's performance get *worse* if you set the cache higher than 512K.

In System 7.5, Apple reworked the Disk Cache to make much better use of the memory you give it. In this case, the more RAM you can afford to surrender to the Disk Cache, the faster your Mac will go.

OS 8

Setting your disk cache properly is especially important in Mac OS 8, by the way. Did you notice that Finder operations (such as opening windows) seemed slower after you installed Mac OS 8? Crank up your disk cache and restart to alleviate the problem.

(An improved disk cache is one of the components in Connectix Speed Doubler, by the way; using more-sophisticated algorithms, it ekes a few additional percentage points of speed from your day-to-day Mac operations.)

RAM Disks: High-Speed Imaginary Drives

A *RAM disk* is yet another fun way to use memory. In this scenario, you use a sophisticated program that sets aside a block of RAM and convinces the Mac that it's a *disk.* The RAM disk even shows up on your Desktop as an icon, as shown in Figure 9-8.

Figure 9-8: The phantom of the disk drive — a RAM disk.

A RAM disk is a wonderful and underused invention. Think how much time Mac users spend in the quest for *speed:* They shop and compare hard drives and CD-ROM drives, trying to identify the fastest one; they try shareware speed-testing programs; and so on. Imagine having a drive with almost *zero milliseconds* access time!

Why set up a RAM disk? Consider these amazing tricks:

- Any program copied to this disk launches almost instantly when double-clicked. And why not? It's *already* in memory. Saving huge, complex PageMaker files takes only a fraction of a second. QuickTime movies play with effortless smoothness.

- Web browsing gets a huge speed boost if you direct the Mac to store its cache files on a RAM disk instead of your hard drive (see our secrets in Chapters 22 and 26).

- Starting up from a RAM disk takes only seconds (instead of two minutes). Furthermore, you may recall from Chapter 8 that if something goes wrong with your hard drive, you must start up from a *different* disk in order to run Norton Disk Doctor. Starting up from a RAM disk is a quick, convenient way to do so.

What's wrong with RAM disks

Of course, the RAM disk subtracts its size from the amount of RAM you have available for programs — as always, it's a trade-off.

The more serious concern used to be that a RAM disk was a dangerous place for your data. If a file is on a RAM disk, it disappears forever when you turn off the Mac. There are three reasons why this doesn't bother us anymore:

- You can do very well just copying your System Folder and programs onto a RAM disk. These items are easily replaceable. If your power goes out, you've got the originals safely on your hard disk.

What's an L2 cache?

Some Mac models are advertised as having an optional "onboard cache," "Level 2 cache," or "L2 cache."

This special kind of cache is a cousin to the disk cache. But instead of being a set-aside chunk of your Mac's main memory, like the disk cache, a Level 2 cache is a special RAM *chip* on your Mac's main circuit board. And instead of storing data from the *hard disk* that the Mac may be needing again shortly, it stores information from the Mac's main RAM. (The cache card has its own private RAM chips in which to do this storing — usually between 512K and 1MB worth.)

What exactly is the point of storing RAM in RAM? The cache card's RAM is extremely *high-speed* RAM. It's so fast that, by storing frequently used information in the fast cache-card RAM instead of regular RAM, your Mac's overall speed increases between 10 and 20 percent.

And speaking of cache cards, several readers have asked us, after installing a Level 2 cache DIMM into a Power Mac, if there's any way to check to see if it's working properly. According to Apple, no. According to us, yes, you can just run Cache-22, included on the CD-ROM with this book. It tells you promptly whether or not your cache card is being acknowledged by the Mac.

- Even if you do put your data files onto the RAM disk, you can just copy them back to a real disk, like your hard drive. (Some of the RAM disk programs discussed below actually do this for you.) If you do this at regular intervals, you still get the speed gain of the RAM disk without losing the safety of having your data files on a disk.

- On most Macs manufactured after 1992, the contents of a RAM disk *don't* disappear when you restart the Mac. They vanish if you turn the Mac *off*, but not when you restart.

  So even if you have a system crash, you can just hit the reset switch on your Mac's case (as described in Chapter 7), and your Mac restarts — with the RAM disk intact. (G3 desktop machines are the exception, as noted in the sidebar "G3 Macs: The silence of the RAMs.")

Where a RAM disk comes from

A RAM disk is created by a RAM-disk *program*. We italicize this because the terminology can be confusing. Someone may say to you, "Hey, I got a great shareware RAM disk." What they mean is a RAM-disk *program;* a RAM disk exists only on a single machine (the one whose memory it's using), and it can't be handed to friends.

Anyway, all recent Mac models, both desktop and laptop, come with a built-in RAM disk program; you'll find the On/Off switch in the Memory control panel. (The inclusion of a RAM-disk program on the PowerBook may strike you as odd, because PowerBooks are traditionally *strapped* for memory, not blessed with it. As you'll find out in Chapter 14, however, you can use a RAM disk to very clever advantage in doubling the life of a battery charge.)

ANSWER MAN

G3 Macs: The silence of the RAMs

Q: Hey! I tried starting up my G3 Power Mac from a RAM disk like you said. But instead of starting up from it, the darned thing erased my RAM disk!

A: It's true. Here's Apple's explanation:

"These systems make use of faster, industry-standard memory called synchronous dynamic random access memory (SDRAM), which adds to both their economy and their availability. The Power Macintosh G3 incorporates a new memory controller called "Grackle" that can support both extended data out (EDO) and SDRAM which have different refresh cycles."

Here's our translation: Somebody at Apple screwed up. The G3 Macs take longer to initialize their RAM chips than a RAM disk can sustain its contents without power. Tests showed that desktop G3 machines could sometimes scramble the contents of your RAM disk — so the engineers turned off the boot-from-a-RAM-disk feature entirely, much to the dismay of RAM disk and speed fans.

But the Memory control panel isn't the only game in town. The RAM disk alternatives described in the following secrets have a great advantage over Apple's built-in RAM disk: you can launch, resize, or quit them without having to restart the Mac. Their one *disadvantage* is that, because they're applications, you can't start up the Mac from the RAM disks they create. (On the other hand, if you have a G3 Mac that can't start up from *any* RAM disk, you've got nothing to lose.)

RAM Disk Secrets

How to destroy an Apple RAM disk

Creating a RAM disk is easy. Just open your Memory control panel. Turn on the RAM disk option, set the slider, and restart the computer. (See Figure 9-7.)

Getting *rid* of the RAM disk is more difficult. None of the obvious ideas — dragging the disk to the Trash, using the Erase Disk command — work. (Apple set this up so that you can't accidentally turn off your RAM disk, thus losing everything on it.)

Strange But True

The key is that you must first get *everything* off of it. Throw it all into the Trash and then empty the Trash. (Or use the Erase Disk command in your Special menu — wow, is erasing fast when the disk is made of RAM!) Only then can you open the control panel and turn the RAM disk off or resize it.

Better RAM disks

Wouldn't it be nice if you could create, resize, save, and delete RAM disks without having to restart? You can, thanks to a great program not usually associated with RAM diskage: Aladdin's ShrinkWrap (included on this book's CD-ROM).

CD

These programs are normally associated with opening *disk-image files*, such as the Disk Tools.img file that comes on every Mac OS 8-or-later CD. But as you can read in greater detail in Chapter 22, where these two programs get their own section, they're also terrific RAM-disk programs. You can create or delete your RAM disk on the fly, save and even compress its contents between shutdowns, create multiple RAM disks simultaneously, and so on.

Free book winner Ken Rothman first brought these programs' RAM-disk features to our attention. He notes that although ShrinkWrap has more features, Apple's own DiskCopy, version 6.1.3 or later, is free (from www.apple.com, or this book's CD).

To create a RAM disk using DiskCopy, start by creating a folder that contains whatever you'll want automatically copied to the RAM disk. (If you simply want an empty RAM disk, create an empty folder.)

Launch Disk Copy. Choose Image ⇨ Mount Image From Folder. An Open File dialog box appears; select the folder you created. In the next dialog box, you're allowed to name your RAM disk and select its size. Choose Read/Write from the first pop-up menu and then click OK. Now check out your desktop: there's your RAM disk!

(For similar instructions using ShrinkWrap, see Chapter 22.)

Interference by TrashBack

If you use Norton Utilities' TrashBack feature, you'll have a hard time getting rid of your RAM disk. That control panel is designed to let you recover files you've trashed — when you choose Empty Trash, TrashBack simply *hides* your Trash-bound files instead of actually deleting them.

Because you must completely empty your RAM disk before you can resize or remove it, you can see the problem: Because TrashBack doesn't let you truly erase your RAM disk, you won't be able to remove or resize your RAM disk until you turn off TrashBack.

Virtual Memory: Instant, Free RAM

A RAM disk is when a Mac gets fooled into treating a hunk of memory as a *disk*. Virtual memory is the opposite — it's when the Mac gets fooled into thinking that a hunk of disk is *memory*.

At first glance, this doesn't seem to make sense. Haven't we been spending this entire chapter figuring out how to get more data *off* the disk and into memory (to gain speed)? Why would we consider storing stuff on the disk that rightly belongs in memory? Wouldn't virtual memory slow things down instead of speeding them up?

There are two reasons virtual memory is becoming increasingly important. First, virtual memory offers yet another speed-for-money tradeoff. In a pinch, virtual memory lets you run more programs at once than you could

with your Mac's real RAM alone. Second, on Macs with PowerPC chips, virtual memory turns on the *file-mapping* feature described earlier in this chapter, whereby PowerPC-native programs can run in as little as *half* the RAM they'd need otherwise.

(Virtual memory requires System 7 and later and an '030 processor or better. That rules out the Plus, SE, original Classic, original Mac II, and original LC.)

How it works

When you turn on virtual memory, the Mac sets aside a chunk of hard-disk space. (If your hard drive is full, forget about virtual memory.) This area — an invisible file, actually — is called the *swap file*.

Strange But True

Strangely enough, the Mac sets aside a swap file of a size equal to *both* your built-in RAM *plus* the amount of extra virtual memory you want. If you've got 16MB of real RAM, and you want 32MB total, you can't just create a 16MB swap file. Your Mac will suck away a full 32MB of hard drive space.

No program on Earth can *run* from the hard disk. Every program must be copied into RAM before it can run. Virtual memory works by rapidly shuffling data between the disk and RAM. This shuffling — and the corresponding delay — occurs mainly when you *switch* from one program to another. While you're working in a specific program, however, you'll notice very little slowdown. (As with RAM Doubler, however, this doesn't mean you can get greedy. You're still essentially limited to running programs that you have enough *real* memory to run — don't expect to run Microsoft Office on a 4-meg Mac, even with virtual memory on.)

How to turn on virtual memory

Open the Memory control panel (see Figure 9-9).
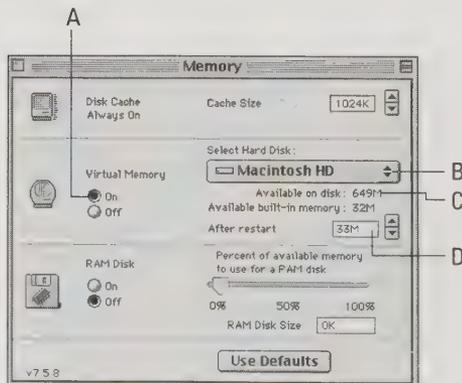
Figure 9-9: These are the controls you need to turn virtual memory on and off.

Click On (that's A in the illustration). If you have more than one disk large enough to store the virtual memory swap file, select the one that you want to use from the pop-up menu (B). *All* your hard drives are listed here; the Mac tells you, as you select each, whether or not there's room for a swap file. If there is, you'll be shown how *much* room there is (C). In general, the Mac doesn't let you put the swap file onto a removable disk. (The exception: If you have Mac OS 8.5 and the latest Iomega driver, you can use Zip or Jaz disks for virtual storage.)

Finally, based on that figure, set the amount of total memory, real + virtual — you'll want (D). Restart the Mac.

Remember that the higher you set this number, the more virtual memory slows things down. The crunch gets critical if you set the Mac's total memory to more than twice the amount of real RAM it has.

Virtual Memory Secrets ────────────────────────■

Virtual memory and PowerPC PowerBooks

If you read that all-important sidebar called "Why Power Mac programs are RAM hogs" earlier in this chapter, you'll remember that native Power Mac programs require much more memory than their pre-Power Mac counterparts — unless you turn on virtual memory. If you are the owner of a PowerPC-based PowerBook, such as a 5300, 2400, 3400, or G3, you probably winced. "Ooh, turn virtual memory on — on a PowerBook? What, and run through my battery charge in 15 minutes?"

That's a legitimate concern; after all, virtual memory relies on the hard drive, and the hard drive is an enormous battery drainer. That's why RAM Doubler is a natural for a PowerPC-based PowerBook; it achieves the same effect — making PowerPC-native programs require half as much memory — without touching your hard drive.

(Much as you might suspect that we're being paid by the RAM Doubler company, by the way, we're not. We're merely recommending the least expensive of the three options facing a PowerPC PowerBook owner — use non-native [slow] programs; buy more RAM; or use virtual memory and carry extra batteries.)

Speed up virtual memory

Remember that virtual memory works by shuffling data between the hard drive and RAM. It shuffles a lot. It stands to reason, then, that the faster your hard drive is, the better virtual memory works. And that's why some people argue that you can speed up virtual memory by regularly defragmenting your hard drive. (See Chapter 8 for more on this topic.)

But frankly, we believe that members of the Defragment-for-Speed movement are somewhat deluded. Unless you've been working with a totally full disk for weeks, defragmenting your hard drive doesn't produce any perceptible speed increase in your virtual memory at all.

ANSWER MAN

Virtual memory is dragging me down

Q: You said, "While you're working in a specific program, you'll probably notice very little slow-down." I'm using Photoshop, and I have virtual memory turned on, and my Mac has the speed of an anesthetized turtle. Are you guys lying?

A: Not per se. We haven't, however, mentioned the exceptions to our statement.

First, we're correct that you won't notice much slowdown when you're in a program — *if* it's a program that would have run within your real RAM *anyway*. That is, if your Mac has 16MB of RAM, and you run a program that requires 5MB of RAM, you'll encounter no slowdown whatsoever. But if you use virtual memory to run scanning/OCR software that requires 16MB to run at full speed, you're in for some waiting. That's because of all the massive copying of information back and forth from the hard drive the Mac is forced to do.

The other exception: programs such as Photoshop, which are equipped with their own proprietary virtual-memory schemes. Photoshop creates its own private, huge, temporary file on your hard drive. If you compound all the disk-thrashing that *that* entails by using virtual memory and *its* disk-thrashing, you're in for a seriously slow-working setup.

Chapter 10

Keyboards, Mice, and USB

In This Chapter

▶ ADB and USB — chains for the rest of us

▶ The extended keyboard: What all those keys *do*

▶ Making the dead keys come alive

▶ A few mouse tricks

▶ Ergonomics basics

Keyboards and mice are known by geeks as *input devices* — they're the mechanical gadgets by which you communicate with your machine.

Apple has designed some weird ones in its day. It has redesigned the mouse at least four times — not including the iMac's confusingly circular mouse. Apple has put two different trackballs and two different touch pads on PowerBooks — plus the Mac Portable's trackball, which you could put on either side of the keyboard. The keyboard on the PowerBook Duos is slightly bowed upward into a subtle curve. The wonderful, strange, discontinued Apple Adjustable keyboard breaks in half right down the middle of the keys, and its space bar isn't a bar — it's a pad.

About the ADB Chain

As we mentioned in Chapter 7, the Apple Desktop Bus (ADB) is designed to be a chain of equipment, just like the SCSI chain. You can plug one ADB device into the next, as many as 16 in all — and you don't even need a terminator at the far end!

What to plug in

This scenario presents some interesting possibilities. Some Mac keyboards have two ADB jacks, for example, letting you plug your mouse into either side. Others, such as the delightful AppleDesign keyboard, have a permanently attached ADB cable in the middle; that's where the mouse jack is, too.

The ADB jack accommodates more than just mice, by the way; we've seen ADB-based modems, remote-controlled mice, and other kinds of substitute mice. Nor are keyboards, mice, and Macs the only ADB-equipped gadgets; many Apple monitors, such as the AppleDesign series, have ADB jacks and cables, too. You plug your mouse and keyboard into the monitor, and then plug the monitor into the Mac's ADB jack.

About the ADB power

Actually, the ADB jack is more than just a connector; it's also a power outlet. Your keyboard and mouse get their juice from the feeble drool of electricity it provides. In fact, some *modem*-port devices — digitizing tablets, headset microphones, and so on — have a secondary, "pass-through" connector that's supposed to plug into your ADB jack just for this power. (You're then supposed to plug your keyboard cable into the back end of your gadget's ADB connector.) At least one modem we know of — the SupraExpress FAX modem — uses *only* the ADB jack's power; you don't plug it into the wall at all.

Strange But True

The fact that electricity runs through your keyboard jack explains a couple of interesting Mac phenomena. First, have you ever noticed your mouse suddenly becoming incredibly sluggish — but been unable to fix the problem by fiddling with your Mouse control panel? What actually happened was that your mouse became unplugged and then plugged again (either by you or by a barely noticeable jiggle). In the process, the electricity flow was interrupted, and the Mac no longer remembers what control panel setting was established at startup.

Contest Winner

You can restore normal mouse behavior by restarting your Mac, of course, but as free book winner Jeff Bates points out, it's much easier to use shareware programs such as Mouse Jolt 1.0 (included on the CD-ROM with this book). Either of these utilities can reset the ADB chain *without* a restart.

Another side effect of the ADB power stream is our fervent advice: *Turn off the Mac* before plugging or unplugging any ADB device. We mean it this time. When you, an imperfect human, unplug the mouse, you're not detaching all of the pins at the same instant. The damage is done in the split second when the juice is flowing through some pins but not others as you do the unplugging. We have actually seen ADB ports fried because mice were attached or removed while the Mac stayed on.

This risk is one of the reasons we're delighted about the arrival of USB on the Mac, described next — you can *hot-swap* those devices (plug and unplug without turning the Mac off) all you like.

USB Hits the Mac

As far as Apple is concerned, the 14-year-old ADB technology is on its way out. Beginning with 1998's iMac model, the standard keyboard-and-mouse circuitry is a thing of the past. It's replaced by a new, industry-standard technology called Universal Serial Bus (*USB*).

TRUE FACT

Where did the ⌘ symbol come from?

If you're an Apple designer, what symbol do you choose to mean command?

According to one of the Mac's original designers, the Mac's space bar-nestling key originally had a hollow apple graphic on it, as the Apple III and Lisa computer keyboards had had. But as the Mac was readied for release, some people at Apple felt that using the corporate logo on a key was somehow trivializing the logo—using it for something it wasn't designed for.

At the last minute, Mac graphic artists Susan Kare and Barbara Koalkin were asked to come up with a new symbol for this special key. The symbol had to be small, easily represented in a screen font, and unique. Oh—and it had to mean "command."

The artists pored through books and sources until they found the familiar cloverleaf (or propeller, or flower, or freeway) symbol. It came, of all things, from a book of Swedish campground and trail markers.

It meant "remarkable feature."

Ironically, when Apple started selling the same keyboards for both Mac and Apple II, it had to put the hollow apple symbol *back* onto the keyboard *with* the ⌘ symbol, defeating its entire original purpose.

The only visible difference between USB and the keyboards and mice you've always known is the jack—instead of the round plug we're used to, the USB connector is rectangular (see Figure 10-1). But the *in*visible advantages are numerous:

- If you buy a hub box, you can connect up to 127 USB devices to a single Mac—with no need for SCSI-style ID numbers or termination plugs. (The iMac itself is a USB hub, and so is its keyboard, offering a total of two free jacks into which you can plug other USB doodads.) Hubs offer various numbers of free jacks—and can be plugged into each other, letting you multiply your free jacks. For example, at this writing, ADS Technologies, Inside Out Networks, Macally, and Philips each sell four- to seven-port hubs from $80 to $200.

- You can hot-swap USB devices, safely plugging and unplugging them while the Mac is still on.

- USB can accommodate lots of different kinds of "moderate-speed" doodads: printers, floppy drives, modems, joysticks, scanners, speakers, digital cameras, and, of course, keyboards and mice.

- As with the ADB chain, USB chains can draw power from the Mac's USB connector, sparing you the ugliness and hassle of plugging those external devices into the wall outlet.

- Unlike ADB, the USB technology is cross-platform (translation: available to Windows machines too). As a result, there are hundreds of USB devices already available—although most don't work with the Mac until the manufacturer writes a Mac software driver to go with its products.

Dozens of companies have already done so. A partial list of USB Mac-ready products includes the Logitech QuickCam, the Iomega Zip drive, the SyQuest SparQ, some Umax scanner models, the Imation SuperDisk floppy (which accepts both floppies and 120-meg SuperDisk disks), trackballs from Macally and Itac Systems, joysticks from Advanced Gravis and ThrustMaster, keyboards from Cherry and MacAlly, and mice from MacAlly.

Figure 10-1: The newest gadget connector to hit the Macintosh: USB.

We must admit: USB sounds pretty sweet. Not only is the technology vastly superior to ADB in convenience and flexibility, but we look forward to the day when it solves our not-enough-jacks problem. (If you've ever had to try sharing your one modem port between a PalmPilot, modem, and MIDI synthesizer, you know what we're talking about.)

So what about the Mac owner who's got older-style keyboards, digital cameras, or other pre-USB gadgets — and wants to buy an iMac (or another model that has only USB jacks)? And what about the jealous 1997-era Power Mac owner who wants to use one of the new USB gadgets, like the USB Zip drive?

No big deal; adapters are available that go both directions. For example, Griffin Technology sells a $30 adapter that lets you plug ADB-style gadgets (mice, keyboards, and so on) into the iMac's USB jack. Newer, Momentum, and Inside Out make adapters that let you plug modem-port gadgets (like modems, PalmPilots, or digital cameras) into a USB jack. And if you have an older Mac, you can buy a PCI card (from Keyspan, ADS, and others) that adds two or more USB jacks to your pre-USB Mac.

Your printers should be in good shape, too; Epson, HP, and Alps all have adapters that let you use their older printers with USB Macs, and Farallon and Asanté both make adapters that let you use USB-based Macs with LocalTalk printers (usually laser printers).

The Keyboard

Apple's smaller "standard"-style keyboards have 81 keys. The "extended" keyboards have 105 keys, including a numeric keypad, a bank of page-control keys (Home, End, and so on), and a row of function keys at the top. Only 62 keys actually *type* something; the remaining 40 percent of the keys are used either to modify what those 62 keys *do*, or to control the computer itself.

Apple was forced to come up with the extended keyboard in order to be taken seriously by the DOS-dominated corporate world, where keyboards of this layout were the norm. The silly thing was, however, that the Mac didn't *need* these specialized keys; then and now, most of these extra keys do absolutely nothing.

Today, the F-keys — F1, F2, and so on — *still* do nothing in most Mac programs. And it wasn't until Mac OS 8 that the Control key was put to any good use (see Chapter 2).

Fortunately, most Mac programs nowadays respond to the navigation keys like PageUp and PageDown. And beginning in System 7.5.1, the F1, F2, F3, and F4 keys automatically "choose" Undo, Cut, Copy, and Paste from the Edit menu in most programs (including the Finder). Beyond these simple examples, however, only a few applications — notably Microsoft products — make use of the full suite of keys.

CD

However, you *can* do something with these keys if you have a macro program, such as OneClick, QuicKeys, or KeyQuencer. The glory of macro software is that you can *make* these keys do things — in fact, anything you want. Make F1 type out today's date; F2 can type your name and return address; F3 can shut down the Mac; and so on. We've included OneClick on the CD-ROM with this book so that you can see what we mean.

We recommend using the Control key as the basis for your own custom macro combinations. The Control key is a safe choice for triggering macros because almost no programs come with preprogrammed keyboard shortcuts involving it. Make Control-C open your Calculator; Control-E empty the Trash, and so on. See instructions for OneClick in Chapter 22.

A Few Odd Keys and What They Mean

In the programs that do respond to presses on the bank of six page-control keys, here's what they're supposed to do:

- **Help:** Brings up the on-line help for your software, if there is any.
- **Home, End:** Scrolls the document to the very first or very last sentence in your document.
- **Page Up, Page Down:** Actually scrolls you a *screen* up or down.
- **Del:** Deletes the letter to the *right* of the insertion point. (The regular Delete key nukes the letter to the left.)

Fortunately, those navigation keys work in a refreshing number of today's programs — including the Mac's own dialog boxes, Finder windows, Claris programs, and so on.

We're sure that you know these others, too, but here they are for the sake of completeness:

■ **Return** and **Enter:** In years gone by, these keys served identical functions in most programs. Today, an increasing number of programs distinguish between the two. For example, in Excel, FileMaker, and many word processors, Return and Enter don't do precisely the same thing. (In FileMaker, for example, Return begins a new paragraph within a record, and Enter deselects all fields.)

In general, though, both keys can end a paragraph in a word processing program, and pressing them is the same as clicking the heavily outlined button in any dialog box, as shown in Figure 10-2.
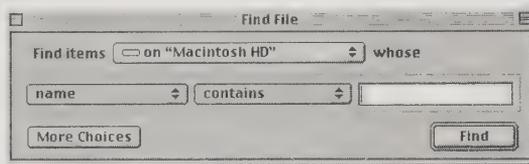
Figure 10-2: Whenever you spot a heavily-outlined button in a dialog box, dispense with the mouse and just press Return or Enter.

■ **Esc:** This means Escape, which really means Cancel. This key, too, originally did absolutely nothing and was included solely to soothe the psyches of IBM lovers and telecommunications nuts who were making the switch to Mac. However, today a number of programs let you press Esc instead of clicking on-screen Cancel buttons with the mouse. All Microsoft and Apple software works this way, including the System software.

■ **Command (⌘):** This is, of course, the most frequently used modifier key of them all. It's the one most listed in menus to indicate keyboard shortcuts for menu items.

When the Mac first appeared, and even today, the glorious simplicity and mnemonics of its keyboard shortcuts made us rejoice. What can be more natural than ⌘-P for Print, ⌘-O for Open, ⌘-C for Copy?

We even forgave Apple for making Paste be ⌘-V, Cut be ⌘-X, and Undo be ⌘-Z, because of the natural adjacency of the Z, X, C, and V keys on the keyboard. And you can justify X for Cut (sort of like crossing it out, or a pair of scissors). ⌘-Z is okay, too, because it is directly next to the ⌘ key itself. And ⌘-V is obviously necessary for Paste, because ⌘-P is already used for Print.

Anyway, compared to the complex and arbitrary keyboard command sequences in the IBM world, we love this stuff.

The Option key

The Option key is sometimes used as just another modifier key, pressed in conjunction with the Shift or ⌘ key. When it's used in conjunction with the mouse, however, it consistently does one of three things. In the Finder, it's almost always used to close windows; see Chapter 1 for the Golden Option-key Trick.

In graphics programs, Option changes the function of a drawing or painting tool. It might change the magnifying glass's effect, for example, to "zoom out" instead of "zoom in."

But the Option key's most famous function is to turn the entire keyboard into a symbol generator for creating symbols like the ones shown here:

To get this . . .	Press Option and type this
©	g
™	2
ç	c
¢	4
¡	1
ß	3
•	8
®	r
†	t

It's nice to know that you have a complete built-in cheat sheet that shows the locations of these characters on the keyboard: the Key Caps desk accessory, as described in Chapter 3. For more on hidden Option-key characters, see Chapter 29.

The Power key

For years, this key—at the top of the keyboard, with a left-pointing arrow—was the Mac world's biggest mystery. It did nothing at all. To this day, it's a useless appendage on computers like the Classic, the original LC series, and even the Power Mac 6100.

In such cases, we highly recommend the Sophisticated Circuits PowerKey. Not only does it make your power key actually work—on *any* Mac model that has a power key—but it makes it work twice as well, switching on all your equipment (monitor, printer, modem, and so on) instead of just the Mac.

TRUE FACT

The circa-or-approximately key

One of the best parts about writing a bestseller in the computer world is getting feedback from our readers. What are we to make of this comment, for example, which reader Stephen Randall Carnefix e-mailed to us about this chapter?

"A correction: the tilde key is not a tilde key. Unless the keystroke is altered by a superscript option with an overstrike, the ~ symbol means 'circa' (chronology) or an 'approximately' (mathematics) — it prints and displays in the middle of the text line. A *tilde* is a phonetic modifier that appears *over* the letter N in Spanish to change an 'enay' (n) to an 'enyay' (n with a tilde over it)."

Well, Stephen, you're absolutely correct on every point. Heck, you could have gone even further, pointing out that to produce an *actual* tilde, you press Option-N — a key with *nothing* to do with the "tilde key."

Problem is, *everyone* calls that key (usually the upper-left key on the keyboard) the tilde key, not just us. Every book, every article, even Apple itself. Hey, if it were up to us, we'd call it the "circa key" or the "approximately key" . . . but the rest of the world wouldn't know what we were talking about.

A word or two about Caps Lock

Any self-respecting Caps Lock key gets locked down in its depressed position when you press it, just as the Caps Lock has for decades on typewriters. However, when locked down, the Mac's Caps Lock key doesn't really work the same as when you hold down the Shift key. The letter keys produce capital letters, but the number keys still produce numbers.

In any case, the Caps Lock key on most PowerBooks doesn't lock down. The only indication you have that you've engaged the key is that a hollow up-arrow symbol appears on your menu bar, *if* the Caps Lock extension was installed when you installed your PowerBook System Folder (see Chapter 4).

On Duos and modern PowerBooks, the situation is slightly better. The Caps Lock key still never stays down, but at least a little light comes on within the key itself. This way, at least, if you tend to look at your hands while you type, you won't inadvertently fill your screen with all-capital typing.

A guide to the strange keyboard symbols

We all know and love the ⌘ key. You're never in doubt as to which key it is — it's painted right onto your keyboard, for heaven's sake.

All too often, however, in program manuals and menus, they've started using symbols to represent *other* keys, too. But these symbols, unlike the ⌘ symbol, give no hint as to which corresponding key they refer to on your keyboard. There's even some disagreement among software developers and manual

writers as to which symbol should properly represent which key, and some manuals blatantly contradict each other. To clear up the confusion, here's the actual list, with the best mnemonic suggestions we can come up with.

⇧ This is the **Shift** key. *Mnemonic:* It makes capital letters. *Taller* letters, so there's an up arrow, see?

⌥ Here's the **Option** key. It looks like a side view of a key being pressed. Of course, this doesn't exactly specify *which* key it is, which is why we have trouble remembering this one. *Mnemonic:* Maybe you can tell yourself it looks like one key being held down while another is about to be pressed, which is how you make those special symbols like ¢ and ©, as we discussed earlier.

⌃ Both of these symbols represent the **Control** key, believe it or not.
or *Mnemonic:* It actually has a pretty good mnemonic, if you're a modem
^ junkie. In the olden days of IBM-ish telecommunication programs, this caret symbol meant *break* — as in, "Listen, you remote mainframe computer, stop." (Something like the Mac's ⌘-period keystroke.) Anyway, this was called a *control character*.

⇥ This is the **Tab** key. *Mnemonic:* Pressing it jumps the cursor to the right until it hits the next stop.

⏎ If you need a mnemonic to help you figure out why this is the **Return** key, you've never used a word processor.

⌦ This one's pretty easy; it's the **Delete** key. Don't confuse it with the rarely-used **del** key, which, in most programs, deletes characters to the *right* of the insertion point. *Mnemonic:* The "X" stands for delete, and the arrow points to the direction the key pushes your cursor.

␣ Weird, huh? It means the **Space bar.** *Mnemonic:* It looks like a bar that's being pressed below its usual level.

MACINTOSH SECRET

How to fix three pages of accidental ALL CAPS TYPING

It happens. You hit Caps Lock by accident, continue to type, and notice three minutes later that all your text is capitalized, looking like a Western Union telegram.

There's an easy way to fix what you've typed without having to retype anything. Launch Microsoft Word. Open the file, highlight the problem text, choose Change Case from the Format menu, and select Sentence case.

(WordPerfect, and various shareware text processors have similar features — including Tex-Edit, included on the CD-ROM with this book.)

After you convert the text, you'll have one additional task. You'll have to change each occurrence of the word *I*, as well as any proper nouns and acronyms, back to capitals. That's because Word and its ilk automatically lowercase *any* word that's not at the beginning of a sentence.

↻   Here's one you almost never see. It's the **Esc** (Escape) key found in the
upper left corner of the keyboard. As we mentioned earlier, more and more
Mac programs are starting to employ the use of this mostly-for-Windows
key. **Mnemonic:** The arrow is escaping from the confines of the circle.

Incidentally, you can type these and other symbols into your very own
documents. Use the Chicago font (the TrueType version that comes with
System 7 and later) or the Charcoal font that comes with Mac OS 8. In some
cases, you might have to type these characters using Key Caps and then copy
and paste them into your document.

To get these symbols	Press these keys
⌘	Control-Q
⌥	Control-G
⌅	Control-D
⇥	Control-B
⌫	Control-W
⌃	Control-F
⇧	Control-E
↻	Control-Esc
🍎	Option-Shift-K

Keyboard Secrets

Copilots of the same Mac

Our little trick about stringing multiple ADB devices together can be handy when
you're training somebody, when you're collaborating two-on-a-Mac, or when
you're playing a two-person game.

The secret is that you can plug *two* keyboards and a mouse into the same Mac.
And all of it works! (One person can type the vowels, or something.)

On a Mac model with two ADB jacks in the back (a IIcx or IIci, for example), you
can have two complete ADB chains — that is, a keyboard and mouse. On a Mac
with only one ADB jack, you can only have one ADB chain. Because the mouse
has no ADB jack, you'll discover that you can have two keyboards, but only one
mouse in such a setup. The mouse must always end the ADB chain. Or must it?

Actually, you *can* have two mice, if you get an ADB cable with a Y-jack. And they
do make such a cable; Sophisticated Circuits sells one, for example.

ANSWER MAN

The Num Lock Mystery

Q: I have a weird green light on my keyboard labeled Num Lock. Sometimes this light stays dark and sometimes it flashes on, but it doesn't seem to mean anything. What's going on?

A: Actually, most extended Mac keyboards have *three* odd little LEDs — Num Lock, Scroll Lock, and Caps Lock. The Caps Lock indicator, of course, simply tells you when you've engaged the Caps Lock key. If you have, the light turns on to remind you.

Num Lock is more mysterious. How many *Mac Secrets* readers have written us over the years, frustrated and tormented by this key's apparent pointlessness? After all, this key does nothing in *any* program — and yet it's important enough that it has a corresponding light on the keyboard that comes on — sometimes — when the Num Lock key is pressed.

The precedent was set in the hostile world of DOS, when there was no such thing as a mouse. When the Num Lock light (and mode) was on, the number keys on the keypad typed numbers, just as you'd expect. But when Num Lock mode was off, the numeric keypad numbers functioned as *cursor keys,* so that you could move the insertion point up, down, right, or left in your text without a mouse.

WordPerfect and Microsoft programs are among the few we could find in which the Num Lock key

still does its thing, toggling the numeric keypad between its two personalities. In Word 5.1, just press Num Lock to switch from number-typing to cursor-moving modes. In Word 6, Excel 5, and later versions, you must press *Shift*-Num Lock (or Shift-Clear, if your keypad has Clear instead of Num Lock) to toggle these two modes.

Furthermore, if you run a PC emulation program such as Virtual PC or SoftWindows, the Num Lock light flashes to life, because some DOS and Windows programs might require you to turn Num Lock off.

Then there's the Scroll Lock key (on the F14 function key), another carryover from the DOS world. It's even more vestigial than Num Lock; it harkens back to the days when data from a mainframe computer would scroll down the screen of a terminal in one continuous stream. Hitting Scroll Lock let you pause the relentless scrolling so you could digest the information one screen at a time.

Few current Mac programs use Scroll Lock for anything. The one notable exception is Microsoft Excel: there, pressing F14 jumps you into Scroll Lock mode (and lights up the Scroll Lock indicator). In this mode, you can use the arrow keys to scroll the window without losing your current cell selection. (Contrast with Num Lock mode, which actually changes which cell is *selected.)*

Extend your ADB

Feel the need to lean back a little farther from your desk? Then you may need an extra-long keyboard cable. You can buy one from Kensington, of course. Or, you can go to a Radio Shack store and buy an *S-video cable*.

It's designed to hook up expensive VCRs, but, amazingly, it works as a keyboard cable!

Shave 25 percent off your typing efforts

If you could see how much of this book we actually typed ourselves, it would be so skinny you'd demand a refund.

In reality, we made extensive use of TypeIt4Me, a terrific *typing-expander* program. You teach it to recognize certain typed abbreviations — *kb* for *keyboard*, for example. Thereafter, whenever you type one of your abbreviations, in any program, TypeIt4Me instantly expands it to its full form.

Y can see th in ts sentence, fex, we let h mc do h work!

(You can see that in this sentence, for example, we let the Macintosh do the work!)

If you do much writing at all, we encourage you to try TypeIt4Me and see if you love it as much as we do. We've made it easy for you; it's included on the CD-ROM with this book. (For full instructions, see the appendix.)

CD

Type ahead

Speed Tip

You may have noticed that the Mac is especially forgiving about premature typists. That is, you can type on several keys before there's anyplace to type. The Mac will store this typing in a piece of memory called the *keyboard buffer*, and deliver it to the screen when the time comes.

Here are some examples: Choose Print from the File menu. If you're sure you don't want to change any of the Print dialog box settings, press the Return key before the Print dialog box even appears. You'll see the dialog box — or, rather, its empty *outline* — blink onto the screen for an instant and then disappear as your previously-typed Return message hits it. In some programs, you can carry this technique to extremes: If you've arrived at one dialog box by clicking some button in another, you can close both dialog boxes and return to your document by pressing Return twice in rapid succession.

Or try launching your word processor. You can actually begin to type during the latter half of its launching phase. When a document finally appears on the screen, the typing you've done will suddenly tumble into place.

(This magical phenomenon breaks down if you have something happening in a background program — downloading or printing, for example. In those cases, you might see only a random *few* of the letters you typed appear.)

How to avoid typing "Made in the U>S>A>"

We hope you know what we mean by that title: You're trying to type capital letters, and there's a period in the phrase, but you don't think to lift your pinky off the Shift key for each letter. Unfortunately, you wind up creating > symbols (Shift-period) in place of periods.

CD

This is incredibly easy to fix; here are a couple of methods. First, you can use ResEdit to edit your keyboard layout. (Instructions are in Chapter 21.) Second, you can use the glorious SmartKeys, a program included on the CD-ROM with this book, to turn them off. (SmartKeys can also join double hyphens into the more correct long dashes, prevent you from typing a double space after a period, and automatically curl your straight quotes. See the appendix for details.)

The dead keys and how to make them alive

Certain Option-key strokes are *dead keys:* When you press them, nothing appears on the screen. The Mac waits for you to type a *second* letter, which will appear beneath the first. With this method you can create symbols such as ü and ñ.

However, there *is* a way to create the symbol by itself without requiring a letter below it: Press Shift, too. To create the ˜ or ´ or ¨ symbol by itself, press Shift-Option N, E, or U. (Alternate: Type the dead key followed by a space.)

Dead keys that aren't supposed to be dead

You don't realize how much you take a fully operational keyboard for granted until that moment when a key suddenly stops working. If the deceased key is fairly insignificant (such as the bracket or backslash key), you might be able to limp along — but try writing a report without a W or an A key. Or try doing *anything* with a nonfunctioning Return key.

There are a few ways to get around such a dilemma. You could, of course, simply copy the dead letter from an existing document and paste it every time you need it. You could use a stand-in character like a % or # and then, later, use your word processor's Find/Replace function to paste in the actual letter.

CD

Here's the best solution: Use ResEdit to remap your keyboard. Assign a *working* key to type the broken letter. For example, if the Return key dies, remap the keyboard so that pressing the backslash key (located directly above the Return key) generates a Return character instead of a backslash. (For complete instructions on how to do this, see Chapter 21.) This arrangement will tide you over until you can have the keyboard repaired (as we've discovered through painful experience).

The tale of the Dvorak layout

You may have heard this story: The arrangement of the keys on today's keyboard was never designed for efficient, accurate typing. Quite the opposite: According to legend, typewriter maker Charles Sholes designed the layout to be as *inefficient* as possible, because fast typing made the keys of his prototype machine jam. (For the benefit of his sales staff's demonstrations, he also put all the letters necessary for the word *typewriter* in the top row.)

How the keyboard works

Q: How does the keyboard work?

A: Incredibly, the keyboard is practically its own minicomputer. It's got a processor and even memory! The keyboard's processor inspects each key periodically (once every 3 milliseconds) to find out whether or not you're pressing it. Then it checks the suite of modified keys — Shift, Option, ⌘, Control, and Caps Lock. Based on what it finds out, it transmits a keyboard code to your Mac.

The keyboard driver (yes, even your keyboard has a driver) consults its table of codes and letters, and then informs the Mac what the appropriate character should be. Finally, the typing appears on your screen.

August Dvorak, decades later, designed a better layout, in which the most commonly typed keys are all directly beneath your fingers on the "home row." Your fingers travel only a fraction of the distance during the course of a day; Dvorak-layout converts swear that they type faster, more accurately, and with less fatigue than they do on standard ("QWERTY") keyboards.

CD

If you'd like to try the Dvorak layout, the Mac makes it simple to do so. Just drop the Dvorak keyboard layout, included on the CD-ROM with this book, onto your System Folder to install it. From now on, whenever you want to switch from your old QWERTY layout to the new one, use the Keyboard control panel (as described in Chapter 4) or the Keyboard menu (see Chapter 2). And, to see where the keys are, consult your Key Caps desk accessory (or print out a copy of its screen). Relearning your keyboard takes about two weeks; let us know how you fare.

The unknown "Crash Lock" indicator

Has all activity ceased on your screen? That could mean one of two things: either (a) your Mac has frozen, or (b) your Mac is taking forever to do something.

Contest Winner

Free book winner Harold Tessmann III has come up with a quick way to test whether his Mac has truly crashed: He taps the Caps Lock key. Because the little Lock lights on Apple's keyboard are software-activated, they won't come on if the computer has hung. They will light up, however, if the computer is just lagging.

The Mouse, Trackball, and Trackpad

The mouse — and its practically identical upside-down successor, the trackball — are neat. Grab yours right now and follow along.

Journey to the interior

This is perfectly, 100 percent safe, and you don't void any part of any warranty by doing it. Turn the mouse upside-down in your hand. First, check out the strip of waxy stuff at the front end of the mouse and on the retaining ring. Know what it is? Sure you do — you cook on it every day. It's Teflon.

With your other hand, push counterclockwise on the round ring, through whose center you see the mouse ball peeping out. It should rotate a quarter-turn or so and then stop. If your mouse's retaining ring doesn't rotate, then it's the newer style that just slides away from the mouse cable. (Opening a PowerBook trackball is exactly the same.)

Turn the mouse right-side up, dumping the retaining ring and the mouse ball into your waiting palm. Look at the mouse ball first. Its color varies, depending on the Apple manufacturing plant that created it.

TRUE FACT

When the Mac takes dictation

For slow typists, repetitive-strain sufferers, and bad spellers, the day has finally arrived: The Mac can take dictation.

All you need is a $400 program from Dragon Systems called PowerSecretary. Once installed, you can actually speak into a headset microphone (which comes with the software) and your words are transcribed onto the screen — in any program where you can type. Yes, it really works.

There are all kinds of caveats, though. The program needs 13MB of RAM all to itself. You — must — talk — like — this, with a tiny pause after each word. The program never does improve much at discerning homonyms (*too* versus *two*, for example). Actually, it's not very accurate discerning *any* words when you first start using it; only if you correct its errors (by voice), word by word, over the weeks, does PowerSecretary's accuracy and speed improve.

But improve it does. If you keep at it, after a few weeks, PowerSecretary starts to seem like science fiction. One of your cheerful authors, a tendinitis sufferer, has had to use nothing but PowerSecretary for two years (including while working on this book). He gets about 55 words per minute (and would get more if he didn't stop to correct errors). Since the program has solid connections with QuicKeys and AppleScript, you can easily control your Mac's functions by voice ("Edit: Cut," "Style: Italic," "Launch Excel," and so on). (Cheaper versions, which only type into a specific word processor or database program and don't actually *control* your Mac, are available for about $200.)

In the Windows world, you can get *continuous-speech recognition* programs called things like Via Voice and Naturally Speaking. These programs purport to let you speak continuously into the mike (not with gaps like PowerSecretary) and transcribe what you're writing. However, these programs make many errors per paragraph; we're not convinced that the resulting speed is dramatically better than the slower, but less error-prone, word-by-word method.

Still, a Mac version may one day become available; both Apple and some former PowerSecretary programmers are hard at work on a continuous-speech Mac dictation program. Meanwhile, speech recognition is still an infant technology — and the prices keep dropping. Twenty years from now, maybe *keyboards* will be the most expensive optional equipment.

Set the ball and ring aside. Then peer into the cavity of the mouse. You're about to see why the movement of this thing on your desk controls the pointer on your screen. See the three little wheels that make contact with the mouse ball? (On most newer mice, these are made of white plastic.) As you roll the mouse across the desk (or spin your trackball), the ball makes these wheels turn.

One of the wheels is spring-loaded; it's just a shock absorber. The other two, however, usually at the 9:00 and 12:00 positions, are on shafts connected to *other* wheels inside the mouse's body. These hidden wheels have spokes. Incredibly, your mouse/trackball has tiny *lights* inside shining through these spokes. An optical sensor on the other side of each little wheel measures the rate of flashing from the little lamp. By comparing the light-flashing rates from the two perpendicular rollers, the Mac calculates how fast your mouse is moving in each direction. That's how it moves the cursor across the screen.

Cleaning the mouse or trackball

Any time your cursor's movement becomes sticky, chances are high that the mouse or trackball is dirty. After all, you spend all day dragging the mouse through invisible dust and paper crumbs, or handling your PowerBook trackball with oily fingers. If you've got a pet, forget it — that angora cat hair just loves to cuddle up and wrap itself around the roller shafts inside the mouse.

Mac Basics

Open the mouse or trackball, as described above. Take out the ball. Run it under the faucet for a few seconds. Shake off the excess water and blow it dry. You've just solved half the sticky-cursor problem.

The other source of trouble is the rollers and the shafts. Gunk tends to accumulate in a sickening stripe right down the center of your rollers. Tiny threads and strands of hair get wound around the shafts, too. We've seen mice so clogged up with debris that they'd stopped working completely.

You can scrape stuff off the rollers with a fingernail, toothpick, or a Q-tip dipped in alcohol. Or, try pressing an inside-out ring of Scotch tape against the stuff to pull it away. Take care, though, not to let the detritus fall anywhere but directly into the center of the cavity, so that you'll be able to tap it out of the mouse/trackball completely when you're done.

To reassemble the mouse or trackball, just drop the ball inside and replace the ring. Anyway, now you know why Apple switched to touchpads for all its PowerBooks; that cleaning-the-trackball routine was just too much of a drag.

Mouse alternatives

About a million mouse replacements flow across the desks of reviewers every year. There are trackballs, joystick-like deals, touch screens, and even head mice and foot-pedal controlled mice (so you can move the cursor without using your hands at all).

Few of them are as good as the good old Apple mouse. Many graphic designers have embraced *digitizing tablets*, such as the popular Wacom line, which work beautifully with programs like Photoshop — but most use the regular mouse for regular mousing. A few people prefer trackballs to mice, since a trackball takes up less desk space. Most trackballs today come with two, three, or even four programmable mouse buttons, which you can set to perform specific actions that would normally require more than a mouse click. On the popular Kensington TurboMouse, for example, you can program one button to double-click. Another can be set to do a click-and-a-half (down-up-down), so that you can take advantage of Mac OS 8's spring-loaded folders with a single click.

Still, we bet the total number of people using those other wacky mouse replacements don't amount to one percent of America's Mac-using population. (The one really valuable mouse replacement/enhancement is the digitizing tablet, such as those from Wacom, which are beloved by graphic designers everywhere. These electronic pen-and-pad arrangements become more like their real-world equivalents every year, even offering an "eraser tip" on the opposite end of the stylus.)

By the way, we couldn't think of *any* mouse secrets. For some track*pad* secrets, see Chapter 14. As for the mouse, you already know how to control the rate of movement across the screen (Mouse control panel, Chapter 4) and that you can do without the mouse completely (Easy Access, Chapter 4, again). And now you know how to clean it.

At this point, there's nothing left but to reflect gratefully on the fact that you don't live in the age when the only way to control the cursor was by pressing arrow keys.

Ergonomics Basics

In the interest of fending off lawsuits from carpal-tunnel sufferers, Apple now includes in every Mac manual extensive instructions for creating a comfortable ergonomic computer setup. To recap: Feet flat on floor; knees higher than seat of chair; shoulders relaxed; minimize glare; occasionally focus on distant objects; blink often (no joke, this is what it says); take frequent short breaks; and consult a physician if chronic arm pain develops.

To this we'd like to add the following secrets, which we've developed through painful experience:

■ Spend money on your chair. If you work in an office that's already sprung for a nice ergonomic full-back-support chair, no problem. But otherwise, heed this advice, for your short-, medium-, and long-term comfort. Really decent, well-designed desk chairs cost $300 or more. Trust us, it's worth it.

■ Don't put the monitor in front of a window. It turns out that if bright light is coming in from *behind* your monitor, your pupils contract, adjusting to the light. Trouble is, what you're *trying* to focus on is the screen, which is relatively dim. The result, by the end of the day, is a burning, painful eye strain. Put your monitor at right angles to the light source, on the other hand, and you'll be much happier.

- In terms of height and position, you'll read all kinds of wild measurements and statistics. As far as we're concerned, though, there's only one big rule: Your elbows can't be lower than your wrists! If they are, then the angle of your wrists, cocked down to grab the mouse, is a surefire repetitive-strain inducer.

One final ergonomic thought — on typing. Avoid joining the surprisingly well-populated ranks of repetitive-strain injury sufferers (carpal-tunnel syndrome, tenosynovitis, and so on) by using some common sense when you type. Specifically: (1) Take breaks. *Never* just keep typing madly all day. (2) Don't rest your wrists on a wrist pad (or even the PowerBook wrist rests), except when you're *resting*. If you put them there when you're *typing,* you bend your wrists back at an unnatural angle and invite problems.

Chapter 11

Monitors

Monitor Basics

In terms of our attempt to explain monitors, the good news is that a computer screen works essentially like a TV screen. The bad news is that even a TV screen is hard to explain.

How a CRT works

The *CRT* (cathode-ray tube) is your normal desktop monitor. TV sets use something called a *cathode* (electron gun) to spew streams of electrons from the back of the set. That's why standard TVs and computer screens have to be so deep; the gunner has to be back far enough to be able to hit the entire screen surface.

Mac Basics

The screen itself is coated, on the inside, with phosphors. When phosphors are excited by those electrons, they light up. (Remember the glow-in-the-dark Crunchberry stickers from boxes of Cap'n Crunch? Same idea.)

Of course, if the electron gun were left on its own, it would continuously fire into the center of the glass screen, giving you nothing but a very bright dot, making it exceptionally difficult to do large spreadsheets. To counteract this drawback, the electron beam is surrounded by electromagnets. These magnets, with incredible precision, turn on and off exceptionally fast, bending the electron stream in this direction and that. If you saw a map of the beam's path, you would see that it was a zigzag pattern, starting at the top of the screen, painting each row down to the bottom.

The electron stream actually illuminates only one screen dot (*pixel,* short for *picture element*) at a time. But it fires so quickly — painting the screen 60 times per second — and each pixel takes so long to fade after being struck, that you perceive a continuous, solid image. (*Usually* that's what happens. If you want to prove our zigzag, phosphor-painting theory to yourself, chew a Lifesaver while watching the screen from 15 feet away. Because the vibrations make your skull move out of its stationary position, you'll see, for the first time, a decided flicker in your screen. The image breaks up a little, as you catch only parts of each beam's journey down your screen.)

Flicker

The larger a monitor is, the longer it takes the electron gun to paint the inside of the glass. (The speed of this painting process is called the *refresh rate.*) If the gun paints the screen 60 times per second, the techies would say, "The refresh rate is *60 hertz.*" In general, the larger the monitor, the more expensive the electronics needed to maintain a high refresh rate, which is desirable.

Unfortunately, typical room lighting, especially fluorescent, interacts with a typical monitor's refreshing process, and the result is what we know as *flicker.* If you want less flicker — not to be confused with the entire picture shaking, which is often caused by another appliance on the same circuit — turn out the lights.

About VRAM

We're especially proud to discuss VRAM in this book because we hear about it all the time, and it's actually very important. However, no one ever seems to define it or explain it.

VRAM stands for "video RAM." It refers to the memory that stores the current screen picture at any given moment. Every Mac must have VRAM, or it wouldn't have any screen picture at all. Every single pixel on your screen has a corresponding bit of memory that stores its color.

What gets tricky, though, is that each Mac model stores its VRAM in different places. VRAM may be hidden in the following three places:

■ **Scenario 1:** The Mac's VRAM can be a chunk of regular memory (your system RAM) that's earmarked for video.

■ **Scenario 2:** The VRAM can be a separate bunch of memory chips built into the Mac circuitry and devoted exclusively to the screen picture.

■ **Scenario 3:** The VRAM can come aboard a video card (a NuBus or PCI card into which you can plug a monitor), in the form of specialized memory chips.

In a few older models (IIci, IIsi), the VRAM was just a chunk of regular system memory (Scenario 1). While they don't require a video card (Scenario 3), these Macs didn't draw the screen as efficiently as Scenario 2 Macs — those

with built-in, separate video memory, which almost all subsequent models have (Quadras, LCs, most Power Macs, and so on).

On the other hand, many old Mac models (such as the II, IIx, IIcx, and IIfx) came with *no* video RAM, either as dedicated chips or as system memory. Even one recent model, the tower-of-power Power Mac 9500, comes with no VRAM at all. Instead, these Macs *require* a video card (Scenario 3), which is an extra purchase.

And then there are the Power Macs that have *two* monitor jacks (the non-AV 7100 and 8100, for example). One jack is a high-speed version of the Scenario 1, in which some of the Mac's regular system RAM is used as VRAM. The other jack is driven by a little video card.

Deeper colors, bigger screen: more VRAM needed

We said that for each pixel on the screen, there must be 1 bit of VRAM. That's true for the black-and-white monitors of your ancestors' day: The 1 bit of memory has to say either "on" or "off." (Remember, a *bit,* the computer's basic thinking unit, is an on/off switch. Therefore, 1 bit can adequately describe the condition of a screen pixel: either black or white.)

However, if each pixel can be one of *four* colors, then it requires *2* bits of memory (each of which can be either on or off, for a total of *four* possible combinations).

A palette of four different colors for your whole screen isn't exactly what you'd call photorealistic color, however. That's what led to the invention of *8-bit* color; for several years, this was the most common Mac video setup. If you count up all the possible combinations of on/off that those 8 bits of VRAM can be, you find out that there are 256 possible combinations. Therefore, in 8-bit color, there can be 256 *different* colors displayed on the screen at the same time.

Then there's *16-bit color,* provided with all Mac models today, and ideal for showing QuickTime movies. In the professional world, *24-bit color* is the norm for photo retouching, scanning, and so on. Grab the calculator, and you find out that if each screen dot's color is determined by the precise status of 24 bits, then it can be one of 16,777,216 different colors. This may seem silly, since the average 15-inch color monitor only *has* 480,000 pixels. True, in 24-bit color, you can't even *see* all the different colors at once on the screen. But because each pixel *can* be any one of 16 million colors, the result is a very, very realistic picture.

We read in a recent magazine that the *really* fussy video and photo professionals are pushing for the Mac to support *48*-bit color, which would mean an *extremely* realistic color picture. We doubt the naked eye could tell the difference between 24- and 48-bit color, however.

At this point, we're talking about a sizable amount of RAM for each pixel. We're also talking about a sizable delay while the Mac computes the correct color for each dot on the screen. *The more colors on the screen, the slower the screen picture is updated.*

Each of these memory arrangements (1-bit, 8-bit, 24-bit, and so on) is called a color depth. You change color depths (to change from black-and-white to color, for example) by using the Control Strip (System 7.5.3 or later) or a control panel like Monitors & Sound.

Incidentally, the Control Strip, Monitors control panel, and Monitors & Sound control panel do not use the bit terminology that we (and Mac magazines) use. Instead, the Monitors control panel shows only the result — the total number of colors that the Mac can show at once (see Figure 11-1). Beyond 256 colors or grays, it doesn't give the exact number; it just says "Thousands" (for 16-bit color) or "Millions" (for 24-bit).

Figure 11-1: The Monitor Bit Depth control strip module, like the Monitors & Sound control panel, shows only the *result* of each color depth. More often, however, you'll hear the terms listed on the right when people talk or write about the Macintosh.

How much VRAM do I need?

How much VRAM do you need? Well, you can pretty much do the math yourself. Just remember these three golden rules. (1) The more pixels there are on your monitor, the more VRAM will be needed to remember their colors. (2) The greater the number of potential colors a pixel can be, the more VRAM it requires. (3) Today's monitors may be switched (zoomed in or out) among different "sizes" (such as 640 by 480 pixels), as you'll read later in this chapter. While one monitor may *work* with a Mac that's low on VRAM, you might never be able to switch it all the way up to its largest screen-area setting (such as 1600 by 1200).

Here are some examples of what VRAM can do for you:

- **256K** — Early PowerBooks had only this much VRAM, just enough to handle 8-bit color (256 colors) on a 13- or 14-inch Apple monitor. (As you'll find out in a moment, 13-inch and 14-inch are the same thing.)

- **512K** — Such models as the LC III use this much VRAM to display 256 colors on a *16*-inch Apple monitor. Interestingly, some Mac models can also consolidate this 512K of VRAM into displaying *16-bit* color on *part* of a 14-inch display. That is, the bottom 80 pixels are just blank, but you get much more realistic color on the remaining part of the screen. It's a perfect example of the trade-off between screen size and color depth. (See the Macintosh secret in the following section.)

ANSWER MAN

Color versus Black-and-White

Q: All I do with my Macintosh is design black-and-white flyers. Where can I buy a black-and-white monitor to save money?

A: Black-and-white monitors, when they were available, were clearer, crisper, and easier to read than color monitors. The reason is that a black-and-white monitor has only one color per pixel to think about. A color monitor, on the other hand, has three dots — red, green, and blue, arranged in a triangle — that constitute a single pixel. It's no wonder that color is a little bit blurrier.

Color is also slower than black-and-white. We've seen Mac users turn their color monitors to black-and-white mode for the first time and positively *shout* about the speed increase. Their Mac seems to be twice as responsive — and no

wonder; instead of having to compute and display *three* dots for every screen pixel, it only has to manage one.

But the demand for black-and-white dropped off to nothing, just as it did in the TV-set racket. Today, about the only black-and-white monitors you can buy are used ones.

If this weren't the '90s, we'd simply advise you to get a cheapo color monitor and *set* it to black-and-white, using your Monitors control panel. Unfortunately, you *can't* change modern Mac models to black-and-white. "256 colors" is the lowest setting available on both PowerBooks and Power Macs these days.

We guess you're going to have to get used to living in a colorful world.

- **1MB** — At the dawn of the 1990s, 1MB of VRAM was considered enviable. It can fill a standard 14-inch monitor (640 by 480 pixels) at the "Thousands of colors" setting (or lower). However, 1MB is not enough to show color *at all* on larger monitors, such as a 15-incher set to 800 by 600.

- **2MB** — Two megs of VRAM can fill a monitor all the way up to 832 by 624 pixels at the top-of-the-line, Photoshop-happy "Millions of colors" (24-bit) setting. Only at jumbo monitor sizes, such as 1024 by 768, does this VRAM run out of steam (16-bit, or "thousands"). And at 1280 by 1024, which is the absolute max for a 17-inch monitor, you get only 256 colors.

- **4MB** — If you've got a monitor the size of a Cineplex Odeon looming over your living room, this is a decent VRAM quantity. Even at 1024 by 768 pixels, you're still getting 24-bit color ("millions"). You drop to 16-bit color ("thousands") if your monitor is any bigger.

- **6MB** — Some Power Macintosh G3 models actually come with six megs of VRAM, which let you coast all the way to 1280 by 1024 pixels at the "millions of colors" setting. God help the legs on your desk.

- **8MB** — You don't often hear of Macs with 8MB of VRAM. But a few models, such as the highest-end clones from the now-defunct Power Computing, actually came with a video card packed with this much VRAM. Trust us: there's no monitor big enough to exhaust the "millions of colors" capacity of this much VRAM. Even at 1920 by 1020 pixels (and we've never yet met a monitor that could *show* that many pixels), you're in photorealistic nirvana.

Remember, too, that your Mac's VRAM endowment doesn't merely control the *color depth* it can display; it also controls what *size* monitor it can drive. It's perfectly possible to buy a brand new cheapo Mac and a $2,000, 21-inch monitor, only to discover that the monitor won't work with the Mac. (Or, more likely, that all you get is a hugely magnified 640 by 480-pixel image on the monitor.)

Switching modes

Speed Tip

Because fewer colors translates to faster screen display, our advice is to switch color depths regularly, depending on what you're doing. Work in 256 colors (or whatever your lowest setting is) for word processing. Switch to a higher color setting for Photoshop work or visiting Web pages that feature color photos.

Grayscale

When you use the "256 Grays" setting in your Monitors control panel or your Control Strip module, the color vanishes from your screen. You're not in black-and-white, actually; you're now viewing *shades of gray,* like a "black-and-white" TV set. (All the pictures in this book are grayscale. No need to thank us for the $50 you saved in color printing costs.)

Strange But True

Interestingly, there's no such setting as "thousands of grays" or "millions of grays" on a Macintosh; 256 different shades is, apparently, enough to depict any image.

MACINTOSH SECRET

16-bit color, for free

The LC III came with 512K of video memory. That's enough RAM to handle 8-bit color on most Apple monitors.

Like such other Macs as the Duo 270c, 280c, and the PowerBook 540c, however, this model (along with its equivalent, the Performa 450) has a unique feature: It can also dedicate that same VRAM to giving you more realistic color at the expense of screen size. That means that you can have 16-bit color — approaching photo-realistic — if you're willing to work with a smaller picture-tube area.

Here's how you do it. Open your Monitors control panel and click Options. You'll see two choices: Macintosh Hi-Res Display and 640 by 400 Hi-Res. Select the second option and restart the Mac.

When you restart, the picture is shorter from top to bottom. Your screen area, instead of being 640 by 480 (standard 14-inch monitor size), is now 640 by *400* pixels. The colors are much more vivid and realistic, as you'll notice if you try to play a QuickTime movie or look at a scanned photo.

Unfortunately, several readers have alerted us to the fact that this secret seemed to stop working in System 7.5.3.

As with black-and-white, grayscale-only monitors have gone the way of the dodo bird. But don't forget that any color monitor is *also* a grayscale monitor. The Monitors control panel (or equivalent) lets you switch between color and grayscale.

A Word About DPI

You've probably heard the term *dpi,* meaning dots per inch, used primarily in conjunction with printer quality. That's because, for years, the Mac's monitor resolution (the number of pixels per inch) was always the same: 72. In other words, every Mac monitor had 72 screen dots per inch.

And 72 was a clever choice — not only did it ensure crisp, readable text, but there are 72 points to an inch. A *point* is a unit of typographical measurement. In other words, Mac fonts could be designed so that each increase in point size corresponded perfectly to the addition of one pixel to the character shape. Furthermore, text on the screen would always be actual size.

Today, however, resolutions of monitors vary, even among Apple monitors. The Apple 21-inch color monitor packs in 79 dpi, whereas the discontinued 12-inch color monitor had only 64 gigantic dots per inch.

How big is your monitor — really?

Inches-versus-dpi isn't the only thing that's confusing about monitor sizes. For one thing, the Apple 13-inch and 14-inch color monitors are actually the same size! For years, computer companies tried to fudge with the facts to make their monitors seem larger than they actually were. IBM, for example, would measure from corner to corner of the *glass* of the monitor instead of the *image area,* which is always smaller.

Apple, for years, tried to do the right thing. They measured their monitors (and advertised them) from corner to corner of the actual image area. Of course, that meant that the marketing people had to listen to customers say: "$300 for a 13-inch monitor? Why, by golly, when I used to own an IBM, I could get a *14-incher* for that money!"

As long as no one was giving Apple any credit for their more truthful approach, Apple said: "The heck with it." From that day on, Apple marketed its monitors the same way its rivals do — by measuring diagonally across the glass. Thus, the Apple 13-inch and 14-inch screens are identical in size, but come from two different marketing policies.

Ironically, thanks to a recent lawsuit, *all* computer companies have made a return to truth in advertisement. Today, monitors are advertised with phrases like, "Avanti 15-inch monitor, 12.7 inches diagonal."

Even so, inches aren't everything. In fact, they can be downright misleading. Here are two examples:

■ Consider Apple's sole dud monitor, the 12-inch color. From the name, it sounds as though it's larger than the Mac Classic screen, which is only 9 inches diagonally.

Surprise! The 12-inch color monitor has about the same number of pixels as the screen on a Mac Classic. Both have 512 pixels across; the 12-inch color measures 384 pixels vertically, and the Classic has 342.

■ The PowerBook 2400's screen, measured with a ruler, is over an inch smaller than the PowerBook G3's screen. Yet you can see *every bit* as much of a page on a 2400 as you can on the G3. It has the same *number* of dots (800 across, 600 down) as the "larger" PowerBook screens — they're just closer together (see Figures 11-2 and 11-3).

Figure 11-2: Which PowerBook screen is bigger? It's not an easy question.
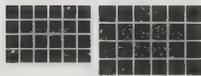
Figure 11-3: Actually, both PowerBook screens are the same size. Each shows the same slice of a page. The PowerBook 2400's screen (on the left) packs its dots closer together so that the image is smaller than actual size. But it's showing the same *number* of pixels.

The bottom line on resolution: The higher the dots-per-inch rating, the smaller but *sharper* the image will be. It's the same syndrome when you reduce something on a copying machine — the picture and text get smaller but crisper because the dots are compressed into a smaller space.

When you reach very high dpi ratings, though (some monitors go as high as, say, 94 dpi), normal-sized text becomes so small that it's hard to read. Your cursor and menus also get smaller. (If that effect bothers you, there's plenty of shareware available to help out. Greg's Buttons can enlarge your menus, for example.)

Multisync (multiple-scan) monitors

One of the most interesting developments in monitor technology is the *multisync,* also called *multiple-scan* or *multiple-resolution*, monitor. These monitors — virtually all monitors sold today — let you switch from one resolution to another. You can kick into 92-dpi mode if you need to do page layout and don't need to read the text, but just want to get an overview of as much graphic image as possible. When you need to edit, you can pop into 70-dpi mode, where text is large and legible.

For example, using the Monitors & Sound control panel or the Control Strip (see Figure 11-4), you can switch Apple's 17-inch ColorSync monitor between different modes, ranging from 640 by 480 gigantic pixels to 1,280 by 1,024 tiny pixels, which easily shows you two entire pages.
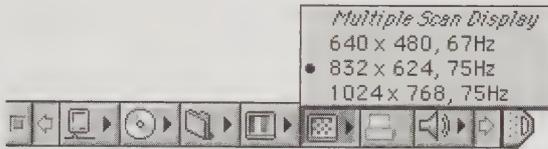
Figure 11-4: If your monitor can be switched among different resolutions (magnification levels), use the Control Strip to do it.

Depending on your Mac model's VRAM and video circuitry, you may even be allowed to choose, in the Options dialog box, pixel dimensions *larger* than the monitor itself. In such a case, the Mac — such as the 8500 — actually creates a *virtual screen;* roll the cursor against the edge of the display, and the entire picture slides in the opposite direction, as though your monitor's glass were merely a window onto a much larger desktop beneath.

The monitors in Apple's multiple-scan series do more than change resolutions, though. They come with a raft of other smart-screen technologies. For example, they have front-panel controls that let you fiddle with the dimensions and positioning of the image on the glass. And, in conjunction with most recent Macs, they can shut themselves off after a period of inactivity (using included control panels, such as Energy Saver; see Chapter 4).

Multiple Monitors

Windows users had to wait until 1998 to gain access to a multiple-monitors-at-once setup; Macs have offered this feature for years, even on laptops. Here are four ways to get a multiple-monitor setup going:

■ Get a Power Macintosh 7100 or any AV Power Mac. These models all have two video jacks on the back.

■ Get any Mac with slots. Use its built-in video jack for the first monitor. Install a video card into one of your Mac's slots. Plug the second monitor into the jack provided by the video card.

■ Use an older PowerBook, such as a high-numbered 100 series machine or a 500-series model, that has a video jack *and* lets you show a different image on the second monitor. Plug an external monitor into the video port. Your built-in PowerBook screen acts as one screen, and the external monitor acts as the other. (You can hook up an external monitor to a modern PowerBook, such as the 1400, 2400, 3400, or G3, but you can't use the external monitor as additional screen area — only as a mirror of the built-in screen.)

You can even have *more* than two monitors (up to six). You can theoretically install more than one video card into your Mac's slots, each with a separate monitor attached.

Arranging the monitors in space

After you've hooked up all these monitors, you can control their behavior in a number of impressive ways — using the Monitors & Sound control panel. (On a few Power Macs, it's called the Sound & Displays control panel; on older Macs, it's just the Monitors control panel.)

You can specify, for example, how the Mac will think the screens are ordered from left to right. For instance, you can specify that your PowerBook be the monitor on the left. When you move your cursor off the right edge of the screen, only then will the cursor appear on the external monitor.

Note, of course, that the external monitor may be *physically* placed to the left of the PowerBook. Even so, if the Monitors control panel thinks that it's to the right, the cursor will appear at the external monitor's left edge as soon as it leaves the primary monitor's right side (see Figure 11-5).

Figure 11-5: Suppose you indicate, using the Monitors & Sound control panel, that the external monitor is on the right (first example in the figure). From now on, the Mac will always treat the external monitor as an extension to the right of the PowerBook screen. You can move the actual monitor to the left (at right in the figure), and the Mac will still treat the external monitor as being on the right.

Now that we've given you the warning, here's how you specify the positioning: Click the Arrange icon that magically appears in the Monitors & Sound control panel (if you have it); then, regardless of which control panel you have, simply drag the images of the respective screens within the Monitors control panel (see Figure 11-6).

As you set up your monitors, keep in mind that the cursor can only cross from one monitor to another where their little screen icons are *touching*.

Otherwise, there are no limitations. Screen 2 can appear anywhere relative to screen 1: above it, below it, to the left or right, northwest of it, and so on. If you want the cursor to appear on the external monitor when you move it (the cursor) off the bottom of the main screen, for example, just drag screen icon 2 underneath icon 1. You can even nudge a selected screen icon in any direction, one pixel at a time, by pressing the arrow keys.

TRUE FACT

Which monitors can your Mac support?

No, we're not talking about built-in video support here, but actual *physical* support — as in weight-bearing capability.

Most people probably don't give a second thought to plunking a monitor on top of their Mac — but think about it: A typical 21-inch monitor weighs 80 pounds. Keeping such a unit stacked on your computer is like having a healthy sixth-grader standing on your Mac, all day, every day. Is your Mac really meant to bear all that weight?

Maybe not, according to Apple. For example, Apple says the IIsi, Quadra 605, Performa 475 and 476, and Macintosh LC 475 can support displays of up to 35 pounds — but no more.

The other Macs in the LC series are a bit more stable; they can carry loads of up to 50 pounds — but Apple doesn't recommend sticking a 16-inch monitor on the back of an LC, anyway. The weight's fine, they say, but the configuration is a little top-heavy and could be unstable.

The same holds true for the other desktop (non-tower) Mac models, such as those in the G3, 6000 desktop, and 7000 series. The cases of these Macs are strong enough to support a 16-inch monitor weighing 47 pounds, but Apple cautions that the setup might not be stable.

On the other hand, the Mac II, IIx, and IIfx were constructed with special supporting posts in the chassis that enable them to support a hefty two-page monitor of more than 50 pounds.

To be honest, we're not sure how important all of this is. Fact is, we've been to plenty of offices that break all the rules, with heavy large-size monitors stacked on top of IIsi's, and we've never seen any signs of damage as a result.
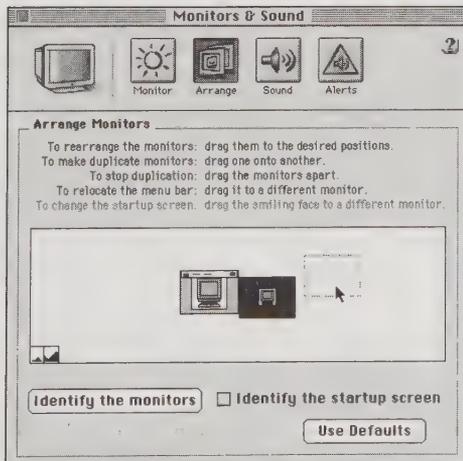
Figure 11-6: Drag either screen to change the Mac's idea of its spatial relationship. The Monitors & Sound control panel is shown, but the monitor-icons effect is the same on the older Monitors control panel, as you can see in Figure 11-7.

**Strange
But True**

In fact, if you have the Monitors & Sound control panel, you can even drag Screen 2's icon *squarely onto* screen 1's; the result is just what you would imagine — both monitors will show exactly the same picture, and you'll have no additional screen space at all!

Which monitor is this?

As you drag your little multiple-monitor icons around in the control panel, it's possible to get confused as to which little screen icon corresponds to which actual monitor on your desk. That's the function of the Identify button (see Figures 11-6 and 11-7), which comes in especially handy when you have *four or five* monitors connected.
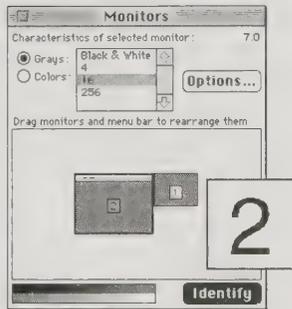
Figure 11-7: When you click Identify, a number appears on each screen icon in the control panel. A corresponding number flashes onto the physical screens of your monitors.

Specifying the startup monitor

The startup monitor is the screen across which the icons of your startup files (control panels and extensions) parade when you first turn on your Mac. It's also the monitor that displays your startup screen, if you've made one (see Chapter 7). We can't really figure out how this is useful (except to programmers, who can use this trick to specify which monitor is displaying the debugger, such as MacsBug), but there you are.

Anyway, you specify the startup monitor in the Monitors control panel by pressing the Option key. A tiny smiling Mac appears (see Figure 11-8). Drag this smiling Mac onto the icon of another screen, and you've done it. If you have the newer Monitors & Sound control panel, this feature isn't nearly so hidden; in fact, a checkbox called "Identify the startup screen" is staring you right in the face, as shown in Figure 11-6.

MACINTOSH SECRET

The one window you can't move

Here's a bombshell to throw out at the next cocktail party gathering of Macintosh nerds. "Hey, I got one. When you've got multiple monitors connected, what's the one window you can't ever slide from one screen to another?"

After the conversation dies and everyone stares at you for a minute, you can cleverly reveal the answer. "Why, the Monitors & Sound window itself, of course!" You can then go on to explain that when using this program with multiple monitors, a version of its dialog box appears on every screen. The purpose of this behavior, of course, is to make it simple for you to customize the color depth, resolution (zoom level), and gamma setting for each screen independently (because each now has its own private Monitors & Sound window).

This means, of course, that you can't drag any one of these Monitors & Sound windows onto any other screen; they're locked forever within their own monitors.

No need to thank us.
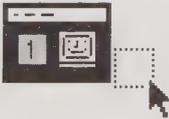
Figure 11-8: Specify the startup monitor — good only for the startup icon parade — by dragging the microscopic happy Mac.

Selecting the main monitor

The *main monitor* is the one with the menu bar and the menu. You can specify which monitor is the main one by dragging the little *menu bar* in the control panel from one monitor to another, as shown in Figure 11-9. (You can do this in either the Monitors or Monitors & Sound control panel.)
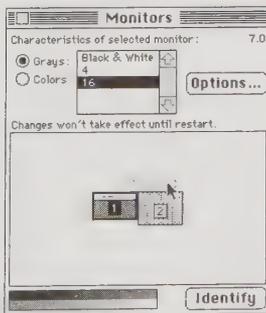
Figure 11-9: Drag the tiny title bar to control which actual monitor will house the Desktop.

Then restart the Mac.

Monitor Secrets ———————————————————•

The Mac's built-in screen saver

As we explain in Chapter 22, we consider screen-saver software among the biggest boondoggles ever to be foisted upon unsuspecting consumers. Instead of *saving* your screen by blackening it, such software accelerates your screen's wearout by keeping it brightly lit when you're not using it.

Your Mac has a built-in screen saver, though — a real one, one that turns the screen *off* after a few minutes of inactivity on your part. It's the Energy Saver program in your Control Panels folder. Instructions for setting up its two screen-saver modes — "light sleep" and "deep sleep" — appear at the end of Chapter 7.

Multiple monitors: preventing cursor flyover

When you're just beginning to work with two monitors, you're still used to the cursor stopping when it hits the boundary of your main screen's display area. It can be annoying, at first, when the cursor slips off your main monitor.

We've got a clever solution. When you're using two monitors, the pointer can cross over from one monitor to the next only where the *monitor icons* (in the Monitors & Sound or Monitors control panel) *touch*. Position screen 2 so that only its *corner* touches screen 1, as shown in Figure 11-10.
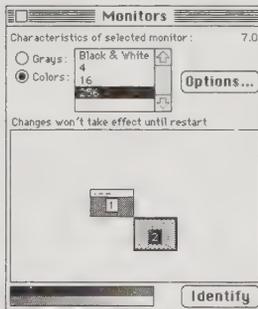
Figure 11-10: Position the icons like this to prevent accidental cursor flyover.

Then it's *impossible* to move the cursor onto screen 2, unless you decisively roll it through the imaginary "gateway" at the lower-right corner of screen 1.

Or suppose that you *like* the ability to move your cursor conveniently to the other screen — you just hate *accidental* flyover, as when you're going for your menu or Application menu.

In that case, open your Monitors & Sound control panel, and position the second monitor's icon just *a few pixels* lower than the primary monitor's. This way, your cursor can't cross over at the corner — yet when you move the cursor in the *middle* of the first monitor's boundary, it slips easily across to the second.

CASE HISTORY

Help! Both my monitors are gray!

We were fortunate enough to witness a near-disaster recently. This took place at a seminar in a New York City hotel ballroom. The incident involved a PowerBook 540c attached to a projector that the presenter had rented for the occasion.

With 25 minutes to go before the presentation, this presenter (who we'll call Gary — because that's his name) hooked up the projector to his PowerBook's video port. It was an LCD projection pad that he'd been guaranteed would work with his Mac.

Yet when Gary turned everything on, *nothing* came on. The projection pad showed a solid black. The PowerBook screen was completely gray: no icons, no menus, no cursor, nothing! Gary began to panic. He could *hear* the PowerBook's hard drive churning away, exactly as though it was starting up normally.

With five minutes to go before the speech, he finally realized what was happening. First, he saw nothing on the PowerBook screen because it wasn't selected as the *main monitor* in the Monitors control panel! The external monitor, number 2, was selected. Therefore, the PowerBook was considering its own screen to be an extended area of the *external* monitor. What *is* off to the right of any Mac main monitor? Plain, blank, gray infinity. That's what showed up on the PowerBook.

So why didn't Gary see all his icons and windows on the LCD projector? As it turned out, he *would* have seen them, except the Contrast control on the LCD was turned all the way up. (This often happens when these pads are shipped or handled.) As soon as he tweaked the Contrast knob, the projector came into sharp focus, complete with his usual Desktop.

This combination of *two* mishaps gave Gary quite a scare. Eventually, he opened the Monitors control panel, dragged the menu bar back onto the screen 1 icon (his PowerBook's built-in screen), and restarted the Mac. Then the *projector* acted as the extended area of the Mac, just as he'd intended.

Multiple monitors, multiple color settings

One fascinating aspect of the Monitors control panel is that you can set the "color depth" (the setting: 256 colors, grayscale, and so on) and resolution (640 by 480, 800 by 600, etc.) independently for *each* monitor.

Monitors control panel: Click the icon, in the control panel, of the monitor whose color depth you want to change, *then* change the setting.

Monitors & Sound: Each monitor appears with its own private copy of the Monitors & Sound window, complete with Color Depth, Resolution, Gamma, and Pointer Visibility settings.

Using this information, you can easily set up your multiple monitors to have *different* color depths. For example, you might display a color image in a Photoshop window that spans both monitors (or you could have two windows of the same image, one on each screen). One monitor could display the image in 24-bit color, and the other could appear in, say, 256 colors, so you'll know exactly what this image will look like when appearing on somebody else's Mac.

Multiple monitors, one big screenshot

It's no big secret these days that pressing ⌘-Shift-3 produces the sound of a camera shutter — and a file on your hard drive called Picture 1. (See Chapter 2 for additional variants of this keystroke.) That file is a graphic that depicts whatever was on your screen at the moment you pressed the keys.

But this powerful built-in screenshot function actually handles multiple monitors beautifully. The resulting PICT file includes the images — correctly positioned relative to each other — of all monitors attached to the Mac, no matter how big the PICT file, therefore, must be.

Multiple monitors: the programmer's head

As Easter eggs go, this is one of the eeriest — and funniest. Unlike most secret credits screens, this one doesn't reveal the programmer's name; it reveals his *head.*

Strange But True

To view this one, you need a multiple-monitor setup. Open Monitors & Sound. Click the Arrange button. If you now click the Identify Startup Screen button, a tiny smiling Mac icon appears on the miniature screen representing the startup screen, as described earlier in this chapter.

But if you *Option*-click the Identify Startup Screen button, you don't see the little smiling Mac icon. Instead, you see the little smiling *programmer's head.*

Correcting gamma?

Gamma relates to the balance of the middle colors displayed on the Mac. Gamma correction helps keep colors from looking washed out.

If your monitor offers gamma settings (most Apple monitors do), you'll see the controls at the left side of the Monitors & Sound program (see Figure 11-11). If you have the older Monitors control panel, click the Options button while pressing the Option key. Then you'll see the Special Gamma options.

For example, most Apple monitors offer three gamma settings: *Uncorrected,* which means "as it was when Sony manufactured it" and creates a slightly darker picture; *Page White,* which actually makes white images appear slightly yellowish; and *Mac Standard,* which makes whites a crisp white, which is Apple's preferred setting.

Worth Learning

We have one solemn word of advice: *use uncorrected gamma to view photos.* We've been devastated more than once by color-printing projects that looked fabulous in Photoshop but — because we'd had Mac Standard gamma selected while editing — looked dark and muddy when they came back from the local printing shop.
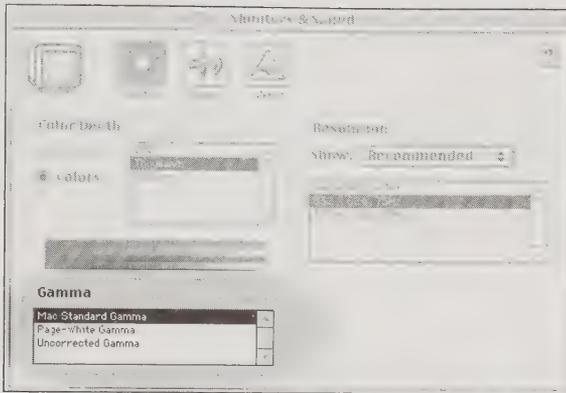
Figure 11-11: The Gamma nobody knows.

Cleaning the screen

As an electronically charged device, the glass surface of your monitor draws dust and grime like moths to a porch light.

This is another one of those are-you-conservative-or-liberal arguments. We've read in plenty of Mac magazines that you're never supposed to use glass cleaner on the monitor. This puzzles us because (a) it *is* glass, and (b) it's not *even* glass — it's glass covered by a plastic bonded sealant. As a matter of fact, we've used Fantastik for years to clean the monitor glass, and it works great. (We use paper towels, but a clean rag would probably be better.)

MACINTOSH SECRET

Connecting-the-monitor basics

You wouldn't think there's much to hooking up your monitor. After all: you plug one cord into a power outlet and another into the Macintosh, right?

Not so fast. First, many a beginner is stymied trying to plug the monitor's power cord into the wall — it *won't go.* Its prongs are surrounded by a tall plastic shield that prevents them from entering the wall socket.

This walled-in prong apparatus is, of course, designed to plug into the *Mac,* not the wall. Most Mac models offer an "inside-out" power outlet that accommodates this special monitor cord. Plug the monitor into the Mac, the thinking goes, and the monitor will shut off automatically when you turn the Mac off.

Many of Apple's latest monitors also have jacks or wires that fit to your Mac's sound, microphone, and keyboard jacks. Our advice: do it! For example, any Apple monitor that has built-in stereo speakers won't work at all unless you've plugged a cable from it into your Mac's speaker jack on the back panel.

Or, as free book winner Eolake Stobblehouse put it: "I owned an Apple 1710 (AV) monitor for a year before anyone cared to inform me that I had not plugged it in correctly. The keyboard goes into the monitor, and the monitor has a plug that goes into the ADB port. Doing this nearly doubled the possible resolution for the screen, and made it possible to tune the screen from the computer."

They *do* make special cleaning fluid for these screens. But we'd bet $100 that if you did a chemical breakdown, you'd find out that it's basically Fantastik.

Explaining the shadow line

The Apple 13-inch and 14-inch color monitors have a dark thin line that runs horizontally across the screen about two inches from the bottom. Don't bother returning your monitor — it's supposed to be there. The larger Apple monitors have *two* lines.

Strange But True

Turns out that these monitors are actually Sony Trinitron picture tubes. The design includes a wire inside the picture tube to stabilize the *colormask grid* (an array of vertical wires that helps the electron beam strike only the correct spots on the phosphor). Despite this shade effect, says Apple, there's no better monitor technology.

Simulating a smaller screen

Having a huge monitor is glorious — don't get us wrong. But suppose you're designing a document that's going to be used on many different Macs: a Web page, say, a FileMaker data-entry screen, a dialog box, or a startup screen. You'll want to make sure your creation fits on the lowest-common-denominator screen, 640 by 480 pixels.

CD

Now that Mac OS 8 lets you use any image as your desktop backdrop, the solution is at hand. In Photoshop or Color It (included with this book), create a 640 by 480-pixel colored or white box. Using the Desktop Pictures or Appearance control panel (see Chapter 4), install this image as a desktop picture.

Then, as you create your database/Web page/startup screen, just position it to fit the background box. You've just saved yourself 50 annoying trips to the Monitors control panel or control strip to switch back and forth from *your* favorite resolution to your future customers'.

Videotaping your monitor

You can't. See the end of Chapter 23 for details on this frustrating topic.

PowerBook monitors

For the scoop on this mutant screen technology, see Chapter 14.

Chapter 12

From 128K to Quadra: Mac to Mac

Yes, we've already been told that we're nuts to attempt the next two chapters of this book. Since 1984, Apple has created over 150 different Mac models — including 38 PowerBooks and 53 Performas! To make matters more complex, during the two-year era of Macintosh clones, Power Computing, Motorola, UMAX, and other companies added 75 *more* models to the dizzying parade. And despite Apple's recent financial woes, the company still manages to come up with another dozen or so new models each year. By the time you finish reading this page, another Power Mac probably will have been born.

Attempting to describe every model that existed, therefore, is an exercise in futility.

But we're going to try it anyway. This chapter tracks the speeds, specs, and life cycles of every non-Power Mac model, from the birth of the original Macintosh 128K to the PowerBook 190, the last Mac to contain Motorola's 68000-series processor chip. When you're finished reading this chapter, you will be one of the few people on Earth who actually know the difference between a Performa 550, 560, 575, 577, 578, 580, and 588.

Chapter 13 covers every Apple *Power* Mac — or, more accurately, every PowerPC-based machine — from the first ones released in 1994 to the models released just minutes before this book was printed. In other words, what separates the models in this chapter from those in the next is the microchip. (For details on the PowerPC chip, see Chapter 13.)

Despite the seemingly pointless array of nearly identical models, Apple's lineup actually has some logic. Over the years, there have been exactly four classes of Macs. Educational customers alone were usually offered the LC or Power Mac 5000 series. In the home market, there were the Performas and the Power Mac 6300 through 6500 lines. For business use, there were the Quadras and now their potent replacements, the Power Macs. And, of course, for the portable person, there are PowerBooks. On the other hand, Apple is never

completely consistent in its marketing distinctions; the first LCs, for example, were *not* restricted to educational buyers and the Performa designation disappeared in 1997 — but across the model lines, there's considerable duplication. At any rate, keep the education/home/business/laptop distinction in mind as you read. (All photos are courtesy of Apple Computer, Inc.)

Coming to Terms

We really don't like using technical terms — we cringe every time we find ourselves saying things like, "That microchip lacks a PMMU." But when comparing various Mac models, you must understand what some of the technical specifications really mean. Here's a guide to the terms we'll be using.

Mac Basics

Processor chip: Sometimes called the CPU, this chip is the absolute guts of the computer, a collection of microscopic transistors etched in a single square silicon chip. This microchip does the actual data processing. Until the Power Macintosh, all Macs were built around one of four microprocessor chips manufactured by Motorola: the 68000, 68020, 68030, and 68040. The higher the number, the more powerful the processor. (The Power Macintosh uses a PowerPC chip — the 601, 603, or 604, for example — as you'll find out in the next chapter.) These computers — the ones described in this chapter — are often called *680x0* (pronounced "68 thousand") machines.

Clock speed: This number is the most important speed statistic for a Mac. It refers to the speed at which data moves through the Mac's circuits, as measured in *megahertz,* or millions of cycles per second. The earliest Macs ran at 8 MHz; the newest Power Mac models run at 350 MHz or higher. (Pre-G3 Power Macs' names hint at their speeds; the 7200/75 model, for example, runs at 75 MHz.) Two Mac models may use the same microprocessor yet run at different speeds — because one has a lower clock speed.

Mac Basics

Note well, however: *A faster clock speed doesn't necessarily mean a faster computer.* The computer's processing speed is determined by the particular processor chip *and* the speed at which it's set to run. For example, a Power Mac 8600 running at 200 MHz is *faster* than a PowerBook 3400 running at 240 MHz — because the Power Mac's 604 chip is inherently faster than the PowerBook's 603e chip. As a rule, *you can't compare MHz across processor chips.* (Keep that startling fact in mind the next time somebody brags about the speeds in the PC world. "My Pentium runs at 300 MHz for the price of a 275 MHz Mac," you'll be misleadingly told.)

Bus speed: It's all well and good to have a Ferrari engine under the hood, but you won't go very fast if you have to drive through a wheat field. Similarly, the second most important statistic in measuring a Mac's speed is the *bus speed* — the speed of the circuitry that connects your main processor to the other components. Many a Mac model features a chip with dazzling clock speed — that runs dog slow, thanks to a slow *bus speed* that feeds data to the processor in miserable little dribbles. Likewise, many's the Mac — especially the G3 series — that runs much *faster* than its chip's clock speed suggests,

thanks to a beautifully engineered, blistering fast bus speed. Early Macs had bus speeds as pokey as 16 MHz; the buses in today's G3 machines cook along at 150 MHz or more.

Data path: The wider the data path, the larger the chunk of data that a microprocessor can push through the Mac's circuits at one time. (Most manuals and articles prompt you, at this point, to imagine lanes on a highway.) The wider the data path, the faster the Mac. Macs with a 16-bit data path are notably slower than those with a 32-bit data path. The PowerPC chip uses a 64-bit data path, which is one clue to its speed.

Processor-Direct Slot (PDS): This connector inside some Macs lets you plug an expansion card (such as an accelerator, digitizer, or video card) directly into the computer's main processor. Each Mac can have only one PDS — and, alas, cards for one Mac model's PDS might not fit a later model's. See Chapter 34 for more on PDS slots.

NuBus slot: Like a PDS, this is a thin rectangular connector into which expansion cards can be plugged. A Mac can control several NuBus cards simultaneously. A IIvx, for example, has three NuBus slots; the II, IIx, and IIfx had six (the most ever). For eight years, most desktop Macs included this kind of slot. (Again, see Chapter 34 for more on NuBus.)

PCI: You'll see this term mostly in the next chapter, which covers Power Macs. PCI stands for *Peripheral Component Interconnect,* and it's Apple's new design for expansion slots, replacing the NuBus slot. PCI cards mean lower prices and faster speeds than NuBus cards. (Again, see Chapter 34 for more.)

PMMU: This acronym stands for *Paged Memory Management Unit.* It's a *coprocessor* (a second "brain" designed to take some of the load off the main one) specifically designed to handle memory-related tasks. PMMUs are significant for only one reason: They allow a Mac to use virtual memory (see Chapter 9). In the following discussions, we won't specifically identify models with PMMUs; but any Mac based on a 68030, 68040, or PowerPC processor has the PMMU (and virtual memory). (A PMMU was optional on a few 68020-chip Macs.)

FPU: This stands for *floating-point unit,* the math coprocessor chip included in some Macs to handle certain mathematical computations, such as trigonometric and logarithmic calculations. Read this twice: For most everyday tasks — word processing, database, or even fairly complex business spreadsheet work — an FPU makes *no difference* to the speed of a Mac. Only if you get into heavy-duty math applications, high-end drafting, a few Photoshop filters, or 3D rendering does an FPU speed things up. The FPUs used in Macs are Motorola 68881 or 68882 chips, or they're built into the '040 processor. (Power Macs have a powerful, redesigned FPU — so different that non-PowerPC software can't use it.)

SIMM speed, SIMM type: SIMMs (*Single Inline Memory Modules*) are the little circuit cards you plug into a Mac to increase the amount of RAM available. (See Chapter 9 for details.) Some types of SIMMs take longer to produce a

requested piece of information for delivery to the main processor. This speed is measured in *nanoseconds* (ns) — *billionths* of a second. Some Macs require faster SIMMs to take advantage of their microprocessor's speed.

Each new generation of Macs tends to require a different *type* of SIMM, too — chips of different sizes and numbers of pins, for example. The newest Power Macs use DIMMs (*Dual* Inline Memory Modules), yet another permutation of the memory chip. We include this information in the following discussions so you'll know that, for example, the 20MB of extra RAM you bought for your old Quadra won't work in your new Power Macintosh.

VRAM: In Mac models that include built-in video support (those that don't require the purchase of a video card), monitor display tasks are handled by separate *VRAM*, or *video RAM*. As we discussed in Chapter 11, VRAM consists of memory chips mounted on the main logic board. Generally, you can expand your Mac's VRAM if you want to increase the number of colors a Mac can display, or if you need more VRAM for a larger monitor.

Price then/price now: Of course, our figures here are rough, and they're likely to change by the time you finish reading this book — or even this sentence. Still, we think it's fun to see what happens to your investment over a very short period of time.

More specs

CD

If we published every spec of every Mac, this chapter would be 1,400 pages all by itself. We've included with this book's CD-ROM, therefore, the astounding mini-program called GURU.

The acronym stands, sort of, for GUide to Ram Upgrades, but the program actually lists much more information about every Mac model. Run this program and look up your model to learn such geeky specs as its power consumption; cache sizes; SCSI connector style; which kind of replacement internal battery you need; amount of VRAM (and VRAM expandability); and (the program's specialty) a list of every possible RAM upgrade configuration for your model, including SIMM type and speed, number of RAM slots, and so on.

More Secrets

We've got a charming collection of Easter eggs, secret features, and subtle performance quirks about each of the 79 Macs described in this chapter. The odds of your having one of these Macs on your desk at this moment, however, are diminishing monthly. And new models are clamoring for space in the same number of *Mac Secrets* pages.

We hope you'll forgive us, therefore, if we refer you to Chapter 12 of the electronic edition of *Macworld Mac Secrets, 4th Edition* (on the CD-ROM that came with this book), where all of these older models' secrets are still intact. On paper, we've left only the most interesting and useful tricks and tips of these aging models.

MACINTOSH SECRET

The Mac's big debut

Apple's first Macintosh television commercial made its historic debut during the 1984 Super Bowl, right?

Wrong. The famous "1984" ad, directed by film director Ridley Scott (*Alien, Blade Runner*), actually was run for the very first time by a local station in Twin Falls, Idaho. It aired at 1 a.m. on December 15, *1983*.

Apple broadcast the ad in December so that it would qualify for the 1984 Clio Awards. (It won, by the way.)

Compact Macs

Macintosh 128K

There it was: a beige one-piece computer with no fan, no expansion slots, and a $2,500 price tag. Steve Jobs's brainchild, a direct descendant of the neato, but grossly overpriced, Lisa, was born January 24, 1984, out of his passion, his rages, and his vision of a computer as commonplace as the telephone. Jobs borrowed aspects of the Mac's revolutionary point-and-click interface from prototypes that he saw running at Xerox's Palo Alto Research Center. He packed in a whopping 128K of memory, twice as much as the popular Commodore 64. And, at the last minute, Steve Jobs grudgingly agreed to make the square, 3.5-inch, 400K disks part of the Mac — and only because the disks he preferred, the 143K 5¼-inch floppies then used on the Apple II, couldn't even hold a System and a Finder. (We shouldn't make fun of Steve, though. We shouldn't make fun of *anyone* who had $200 million in the bank by age 25.)

Some people laughed at the Mac. Some called it a toy. It had no SCSI port, no ADB jack, no slots of any kind (see Figure 12-1). In retrospect, it seems astonishing that the little machine caught on at all, having been introduced when virtually no software or peripherals were available.

Yet, if you were among those who first drew in MacPaint in 1984, you may remember the simple irresistibility of the computer, which was the most user-friendly ever built.

Price:	$2,500 then, $0 now
On the market for:	22 months
Processor and speed:	68000 at 8 MHz
Soldered memory:	128K, not expandable (150-ns chips required)
Equipment:	Built-in, black-and-white, 9" screen; no slots; no FPU

The Macintosh 128K: Officially worthless

You won't believe how much the original Macs, the ones people paid thousands of dollars to own in 1984, are worth today.

Absolutely nothing.

The United Computer Exchange, an organization that tracks the resale value of personal computers, has officially listed the real market value of a used Macintosh 128K as *zero*. The same is true of the Macintosh 512K and the 512Ke, which originally sold for over $3,000. If you're looking for a little spare cash, about the oldest Mac that you can sell these days is the Mac SE, which may bring you 50 bucks.

Still, we're not encouraging you to fling your old 128K Mac into a landfill. From a historical point of view, the original Macintosh is still worth plenty. Furthermore, we're certain that the pendulum will swing back — the day will come when the Mac 128K will be considered a valuable relic of a bygone era.

Macintosh 512K

The Macintosh 512K — the "Fat Mac" — was introduced September 10, 1984. An Apple press release described it as a "powerful business computer" that allowed users to "take advantage of larger documents and models, faster response time, and the more than 40 business productivity software packages now shipping." (See Figure 12-1.)

Figure 12-1: The original Macintosh case design. This one-piece, compact, essentially sealed-shut enclosure was the chassis for the Mac 128, the Mac 512K, and the Plus.

The 512K is simply the original Mac with four times as much RAM. Its debut was accompanied by two Apple marketing announcements that set the pattern for future Mac generations. First, the price of the original Mac 128K dropped (by $300); second, Apple offered an upgrade from the earlier model to this latest one.

The Macintosh 512Ke, for *enhanced,* appeared in April 1986, sporting an 800K floppy-disk drive.

Price:	$3,200 then, $0 now
Apple code name:	Fat Mac
On the market for:	18 months (512K), 17 months (512Ke)
Processor and speed:	68000 at 8 MHz
Soldered memory:	512K, not expandable (150-ns chips required)
Equipment:	Built-in, black-and-white, 9" screen; no slots; no FPU

TRUE FACT

Mac Obsolescence

If you're thinking of buying a new Mac, remember the golden rule of Mac obsolescence. Before you go salivating over the hottest new PowerBook and emptying your bank account, keep the following realities in mind:

■ Apple introduces more new computer models, and retires old models, faster than ever before. Some models, like the Quadra 900, were on the market for only 90 days before being canned. Furthermore, newer models are always much less expensive and much more powerful than previous models. (This is true, of course, of any personal-electronics gadget.)

■ However, this will *always* be the case. Your holding off on buying a Mac in the hope that one day the market will settle down simply means that you'll go longer without having any computer at all. If you wait forever, you will get an incredible deal, but you'll never get any work done.

■ Therefore, do your best to *anticipate* what new models Apple has in the pipeline (by reading the Macintosh-area America Online messages or www.macintouch.com, for example), make a decision, and then buy something. Plan, from the start, to feel cheated and deceived as prices continue to drop. Expect the Power Mac you buy in February to cost $300 less in May. Don't be shocked. It will happen.

■ Just because a computer has been discontinued by Apple doesn't mean it's obsolete. It still does your word processing, doesn't it? It still does what you bought it for. By definition, then, it's still a good computer. Don't fall prey to LAGS (latest-and-greatest syndrome). At least don't fall prey to it as much as we do.

■ In fact, the relentless parade of newer, faster Mac models can actually work in your favor when it comes to finding a good deal on a computer. We know plenty of savvy shoppers who actually *wait* for the particular Mac they want to be discontinued—*then* they buy it, just after Apple slashes the price of the model by $500 to clear it out and make room for the hot, new machines. Smart buyers know that a model's being discontinued hardly makes it obsolete. They realize that every Mac, no matter how well designed or enthusiastically received, will probably be discontinued within a year. So why pay a premium for a currently shipping model?

Macintosh Plus

"One Full Megabyte of Memory." With these words, Apple proudly announced the release of the Mac Plus in January 1986.

Compared with previous Macs, the Mac Plus *was* a major step forward. "With one full megabyte of RAM available, the Macintosh Plus can accommodate memory-intensive application programs," boasted Apple in one press release. And storage? The sky was the limit — *800K* on each double-sided floppy disk. That wasn't all the good news for storage addicts, either. The Mac Plus was the first model with a built-in SCSI port on the back, to which you could attach a (*very* expensive) hard drive.

The Plus remained part of Apple's product line for nearly five years, longer than any other model, before or since. But today, the Plus is barely recognizable. It doesn't have an internal hard drive, uses the older-style keyboard that predates the Apple Desktop Bus, and can't be expanded beyond 4MB of RAM without the use of third-party expansion kits. Nevertheless, thousands of Pluses are still around and still being used effectively. We know of at least one semiweekly newspaper that's written almost entirely on dusty old Mac Pluses. Incredibly, the Mac Plus cost the same as a Power Macintosh G3 today.

Price:	$2,600 then, $0 now
Apple code name:	Mr. T
On the market for:	4 years, 10 months
Processor and speed:	68000 at 8 MHz
Memory:	1MB, expandable to 4MB (150-ns, 30-pin DRAM chips required)
Equipment:	Built-in, black-and-white, 9" screen; no slots; no FPU
System software notes:	Requires System 3.2 through 7.5.5

Macintosh SE

The SE, released in March 1987, was originally billed as Apple's mainstream business computer (see Figure 12-2). The SE shares the Plus's compact design and 68000 microprocessor, although it runs 15 to 20 percent faster than the Plus. New SE users who had owned previous Mac models probably were shocked the first time they powered up an SE; it made noise! This was the first Mac equipped with a cooling fan, ending an era of silent Mac computing.

The SE marked several other firsts: It was the first Corporate Gray Mac (its predecessors were beige), it had the very first expansion slot and ADB keyboard jack, and a built-in hard drive was optional. (If you didn't opt for the hard drive, you could get an SE with *two* floppy-disk drives.)

Price:	$3,700 then, $50 now
Apple code names:	Aladdin, Chablis
On the market for:	2 years, 5 months
Processor and speed:	68000 at 8 MHz
Memory:	1MB, expandable to 4MB (150-ns, 30-pin DRAM chips required)

Equipment:	Built-in, black-and-white, 9" screen; 1 Processor Direct Slot; no FPU
Special note:	Some later models (bearing the FDHD logo on the front) were produced with SuperDrives capable of reading high-density 1.4MB disks
System software notes:	Requires System 4.1 through 7.5.5
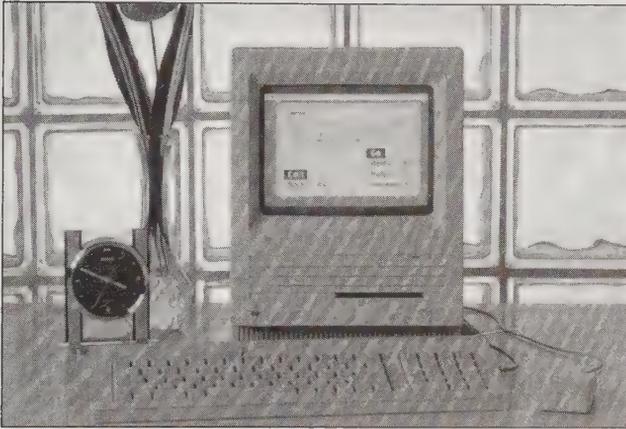
Figure 12-2: The light gray, slotted case design of the SE series.

Macintosh SE/30

Four times faster than an SE, the Macintosh SE/30 was released in January 1989 and was an extremely popular workhorse.

The SE/30 was another machine of firsts: the first compact Mac to be based on the 32-bit Motorola 68030 microprocessor; the first with an FPU to speed up complex math functions; the first with an internal SuperDrive to read high-density floppy disks and provide MS-DOS disk compatibility; and the first to include color QuickDraw, enabling you to add a video card to the SE/30's processor-direct slot and connect it to a color monitor.

Price:	$4,900 then, $100 now
Apple code name:	Green Jade
On the market for:	2 years, 9 months
Processor and speed:	68030 at 16 MHz
Memory:	1MB, expandable to 128MB (120-ns, 30-pin DRAM chips required)
Equipment:	Built-in, black-and-white, 9" screen; 1 Processor Direct Slot; FPU
System software note:	Requires System 6.0.3 through 7.5.5

MACINTOSH SECRET

The very first Mac surprise

By now, you've probably learned that if you poke around the Mac's System software long enough, you'll eventually find the name of a Mac programmer or two hidden in some unlikely spot. It usually takes some obscure Option-mouse click combination to uncover these hidden credits.

But the ultimate hidden-credits trick dates back to the very first Macintosh model (and persisted through the SE models). Crack open the case of an original 128K or 512K Macintosh, and you'll find the signatures of the first 47 Mac team members etched (in raised handwritten lettering) in the rear part of the plastic casing.

SE/30 Secrets

Making the SE/30 32-bit clean

The ROMs of older Macs, such as the SE/30, II, IIx, and IIcx, are not *32-bit clean*. As we discussed in Chapter 9, these models use only 24 bits instead of 32 to reference individual memory locations in RAM. Such machines are, therefore, limited to *using* 8MB of memory, no matter how much you install.

You can make these machines 32-bit clean with a free extension from Apple called the 32-Bit Enabler. This extension (for System 7.1 or later) allows the Mac to address up to 128MB of RAM. (See Chapter 9 for more information on 32-Bit Enabler and Mode32.)

The SE/30's secret attitude

Press the Interrupt switch on your SE/30. When the message box appears, type **dm 4082E853 20** and press Return. There on your screen, spelled out in plain-text letters, are the words *"WHAT ARE YOU STARING AT?"*.

Macintosh Classic

After releasing increasingly faster and more powerful computers for several years, Apple released a cheaper, more basic compact Classic model, based on the slower 68000 microprocessor, in October 1990 (see Figure 12-3). Why this step backward? Apple was attempting to create a truly competitively priced computer, one that would be especially attractive to new users. The stripped-down Classic without a hard drive listed for about $1,000 — a new low in complete-Mac-system pricing that would stand unchallenged for nearly a decade.

The modest price also meant modest equipment. The Classic was only 25 percent faster than the Mac Plus released more than four years earlier. The limited processing power outdated the Classic quickly; it was discontinued less than two years later and replaced by the more powerful Classic II.

Price:	$1,500 then, $60 now
Apple code name:	X0
On the market for:	1 year, 11 months
Processor and speed:	68000 at 8 MHz
Memory:	1MB, expandable to 4MB (requires a RAM card); 120-ns, 30-pin DRAM chips required
Equipment:	Built-in, black-and-white, 9" screen; no slots; no FPU
System software notes:	Requires System 6.0.6 through 7.5.5

Figure 12-3: Lose the grooves of the SE, and you've got the case design for the Classic and Classic II.

Macintosh Classic II (Performa 200)

The Classic II, also marketed as the Performa 200, was the last of the original compact Macs. It runs twice as fast as the Classic and includes a connector for an optional math coprocessor. Unlike the Classic, the Classic II has a microphone jack for sound input.

The Classic II is newer than the SE/30, which it replaced in October 1991. To the chagrin of Mac users who loved the SE/30, however, the Classic II handles most processing jobs about 30 percent *slower*, even though it's equipped with the same microprocessor. What accounts for the difference? The *data path*. The Classic II is equipped with only a 16-bit data path between the '030 processor and the RAM chips, whereas the SE/30 provides a 32-bit data path. In other words, the Classic II can move only *half* as much data at one time between the computer's memory and central processor as the SE/30.

The hidden Mac Classic ROM disk

The Classic was and is the only Mac model with a secret internal *ROM disk* (a disk whose contents are permanently etched into the computer's ROM chips and whose icon shows up on the Desktop like any other disk).

Hold down four keys while starting the Mac: ⌘, Option, letter O, and letter X. Wait. In a moment, a new disk appears on your Desktop, containing System 6.0.3. (Don't leave your fingers on the keys *too* long, however, or the Mac will think that you're trying to rebuild the ROM disk's Desktop. You'll probably get a system crash.)

If you have ResEdit, open the ROM disk's System Folder and look at the invisible folders therein. You'll see the names of the engineers.

When the Classic II was released, it cost about $1,000 less than an SE/30 (which at the time was selling for more than $3,000), making it a good deal despite the slower speed.

Price:	$1,900 then, $75 now
Apple code name:	Montana
On the market for:	1 year, 11 months
Processor and speed:	68030 at 16 MHz
Memory:	2MB, expandable to 10MB (100-ns, 30-pin DRAM chips required)
Equipment:	Built-in, black-and-white, 9" screen; no slots; FPU optional
System software notes:	Requires System 7.0.1 through 7.6

The Alternate Disk?

The first Macintosh owner's manual provided detailed instructions about how to use the Mac's *Alternate Disk*. This was an imaginary disk whose icon was supposed to have appeared on the Mac's Desktop; its purpose was to help you copy one disk onto another (because the original Mac only had one disk drive).

The Alternate Disk wasn't actually a disk; in fact, it was a RAM disk, like the ones described in Chapter 9. The idea was that you first would copy files to the Alternate Disk icon, and then eject the floppy disk, insert a destination disk, and copy the files from the Alternate Disk to the new floppy disk.

As it turned out, the Macintosh programmers at the last minute figured out a more intuitive way to accomplish disk copying. They eliminated the Alternate Disk just before shipping the first Macs. So the Alternate Disk didn't appear in the first version of the System software, but it *did* show up in the owner's manuals and the original Macintosh Guided Tour disks.

Macintosh Color Classic (Performa 250) and Color Classic II

The squat/tall, strange/wonderful-looking Color Classic was the first compact Mac with a built-in color screen. It was released in February 1993 and discontinued 15 months later. Electronically speaking, the Color Classic is an LC II in a compact case (see Figure 12-4).
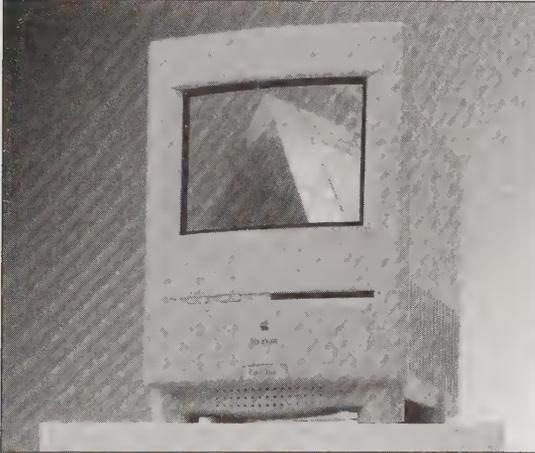
Figure 12-4: The weirdest case shape yet: that of the Color Classic and Color Classic II.

The Color Classic also was the first compact equipped with an easily accessible *logic board* (main circuit board). You can slide the entire board out the back of the Mac simply by unlatching two clasps at the rear. This makes adding RAM or expansion cards much easier than in previous compact models, for which special tools were required. The Color Classic also was the first desktop Mac with a tiny electret microphone built into the front of the case, making it easy to record voice annotations or other sounds. The unusual front-panel sound-volume control buttons make playing with sound even easier.

Although it's built around the same chip and runs at the same clock speed as its black-and-white counterpart, the Color Classic is slightly slower overall than a Classic II. (The Color Classic II, on the other hand, zips along at a goosed-up 33 MHz and can handle up to 36MB of memory — but, alas, was sold only in Asia.)

The Color Classic was briefly marketed as the all-but-forgotten Performa 250. It was also the noble ancestor, by the way, of the LC 520 (described later in this chapter) and the entire line of inexpensive, color, educational-targeted, easily upgradable machines.

Price (Color Classic):	$1,390 then, $300 now
Apple code name:	Slice
On the market for:	1 year, 3 months

Processor and speed:	68030 at 16 MHz
Memory:	4MB, expandable to 10MB (100-ns, 30-pin DRAM chips required)
Equipment:	Built-in 512-by-384-pixel Trinitron color display with 76 dpi; 256K VRAM (can be upgraded to 512K); 1 LC-style PDS slot; FPU optional
System software notes:	Requires System 7.1 (with Enabler 401) through 7.6

The Mac II Series

The era of modular Macs — those designed with separate, detachable monitors — began in 1987 with the Mac II.

Compact Macs are endearing (and they're making a comeback, led by the futuristic iMac). Still, the two-piece design of modular Macs offers practical advantages. A modular Mac is easy to expand, for example, because you can open it easily. There's plenty of room in the case for multiple expansion cards and additional storage devices. Also, with a modular Mac, you can shop for any size and type of monitor you prefer. Finally, the modular design allows you to place a large, bulky CPU on the floor instead of on your desktop, leaving more room on the desk for large monitors and other peripherals.

Macintosh II

The Macintosh II (March 1987 to January 1990; see Figure 12-5) was the first Mac built around the 68020 microprocessor. It also has a 32-bit data path, allowing it to operate roughly four times faster than a Plus. (The only other Mac with the '020 chip is the LC, introduced three years later.)

Figure 12-5: The Mac II's big, boxy chassis is the same as that of the IIx and IIfx.

The II had a major emphasis on expandability. You could add RAM up to an unprecedented 68MB. Furthermore, the six NuBus slots (and the pop-off lid) made installing add-ons particularly easy. Except for the IIx and IIfx, no other Mac model (even the Quadras) ever offered six NuBus slots.

Like most of the early modular Macs, the Mac II has no built-in video capability. To connect a monitor to it, you must install a video card.

Price: $6,500 then, $15 now

Apple code names: Jonathon, Milwaukee

On the market for: 2 years, 10 months

Processor and speed: 68020 at 16 MHz

Memory: 1MB, expandable to 68MB (special 120-ns, 30-pin PAL chips and 32-Bit Enabler required)

Equipment: Video card required; 6 NuBus slots; FPU

System software notes: Requires System 4.1 through 7.5.5

Macintosh IIx

Released in September 1988, the IIx (see Figure 12-5) was the first modular Mac equipped with a 68030 microprocessor and an FPU. The use of the '030 instead of the '020 chip makes the IIx about 15 percent faster than the Mac II.

On the IIx, a SuperDrive was standard (instead of an option, as on the Mac II). The IIx also offers better memory-expansion possibilities than the II; RAM can be boosted to 128MB instead of 68MB.

Price: $9,300 then, $75 now

Apple code name: Spock

On the market for: 2 years, 1 month

Processor and speed: 68030 at 16 MHz

Memory: 1MB, expandable to 128MB (120-ns, 30-pin DRAM chips required)

Equipment: Video card required; 6 NuBus slots; FPU

System software notes: Requires System 6.0.0 through 7.5.5

Macintosh IIfx

The IIfx debuted in March 1990. Dubbed "wicked fast" by Apple, it reigned as the top-of-the-line speed-demon Mac until the introduction of the Quadra in 1991. The IIfx is housed in the same larger-size case as the original Mac II (see Figure 12-5).

Though it employs the same 68030 microprocessor used in previous models, the IIfx runs at a faster clock speed — 40 MHz. That made the IIfx the first great choice for high-end applications: scientific data analysis, commercial publishing, multimedia production, 3-D animation, and so on. Also contributing to the IIfx's speed is its built-in 32K static RAM cache, which stores the processor's most frequently used instructions.

The IIfx is notable to us, by the way, because it's one of many dramatic examples of price deflation; a Mac IIfx bought in 1990 is today worth less than *one percent* of its original $10,000 price!

Price: $10,000 then, $35 now

Apple code names: F-16, Stealth, Blackbird

On the market for:	2 years, 1 month
Processor and speed:	68030 at 40 MHz
Memory:	1MB, expandable to 128MB (80-ns, nonstandard notched 64-pin DRAM chips required)
Equipment:	Requires video card; 6 NuBus slots, 1 Processor Direct Slot; FPU; SCSI chain requires special, 200-ohm black terminator
System software notes:	Requires System 6.0.5 through 7.6

A IIfx Secret

Brought to you by...

A digitized color picture of the IIfx's design team awaits your discovery. To see the picture, set the Mac's internal clock to 3/19/90, and set the monitor to 256 colors. Then restart your computer. As it restarts, hold down four keys: ⌘, Option, and the letters F and X.

Macintosh IIcx

Six months after the release of the IIx, Apple introduced the IIcx. The two machines are very similar, but the IIcx has a quieter fan and a smaller, more compact design. (It's one of the few models that can be set either vertically or horizontally on a desk, as shown in Figure 12-6.) The IIcx offers three NuBus expansion slots instead of the IIx's six.

Figure 12-6: The compact desktop case of the Quadra 700 (the IIcx and IIci design is very similar).

The IIcx was widely hailed as a breakthrough computer because it was *designed for manufacture* — that is, for the first time, components were designed with ease of factory assembly in mind. Its parts snap easily into the

IIcx case without screws or solder. (In a famous demonstration, Apple Vice President Jean-Louis Gassée assembled a IIcx in about a minute in front of a huge crowd at a Macworld Expo.) As a result, the IIcx was less expensive to build and easier to repair.

Apple was rewarded for its thoughtfulness by great enthusiasm from the Mac community, many members of which thought that the IIcx was one of the best-designed Macs ever. Great gnashing of teeth followed when the IIcx was discontinued at the height of its popularity.

Price:	$5,300 then, $20 now
Apple code name:	Aurora
On the market for:	2 years
Processor and speed:	68030 at 16 MHz
Memory:	1MB, expandable to 128MB (120-ns, 30-pin DRAM chips required)
Equipment:	Video card required; 3 NuBus slots; FPU
System software notes:	Requires System 6.0.3 through 7.5.5
Note:	Requires 32-Bit Enabler to use more than 8MB of RAM

Macintosh IIci

When it was released in September 1989, the IIci was the fastest Macintosh ever made. Physically, the IIci looks exactly like the other three-slotted modular Mac, the IIcx (see Figure 12-6). But the IIci's processor runs at 25 MHz instead of 16, giving it enough horsepower for more demanding kinds of work. A 25 MHz processor might seem laughably slow in this age of 300 MHz PowerPC chips, but the IIci handled the color graphics and QuickTime movies of its day with ease.

Rumor was that the *i* in the name stood for *integrated video* — it was the first Macintosh that didn't require you to buy a $400 video card to make a monitor work. Instead, the IIci has video circuitry built right in, resulting in a new port on the back panel into which you can plug a monitor directly.

The IIci can hold a *cache card* (described in the next section) that increases the machine's speed by up to 20 percent. At first, the cache card was a $300 add-on. Two years later, Apple offered a free cache card for a limited time. In the end, Apple's promotion never did wrap up; the cache card came free with every IIci until the day this model was discontinued in 1993.

Price:	$8,800 then, $35 now
Apple code names:	Aurora II, Pacific
On the market for:	3 years, 5 months
Processor and speed:	68030 at 25 MHz
Memory:	1MB, expandable to 128MB (80-ns, 30-pin DRAM chips required)
Equipment:	Built-in color video support; 3 NuBus slots; FPU
System software notes:	Requires System 6.0.4 through 7.6

IIci Secrets

Maximizing the IIci's memory

Speed Tip

To an extent, you can crank a speed boost out of your IIci exactly as you can with a IIsi (see the "Speeding up the IIsi" secret later in this chapter). The speed boost won't be as great, however, and the trick works only if your IIci has 5MB of RAM.

As with the IIsi, if you crank up your Disk Cache to 768K, you may see some improvement in the machine's speed. The fastest option of all, of course, is to use a video card instead of the built-in video option.

See the IIci design team

To see a full-color picture of the IIci's design team, change the date on the Mac's internal clock to 9/20/89 and set your monitor to 8-bit (256) color. Restart the Mac while pressing four keys: ⌘, Option, letter C, and letter I.

Macintosh IIsi

The inexpensive IIsi (born in November 1990) was based on a 68030 chip running at 20 MHz. This machine was the first in the II-series to have at least 1MB of RAM soldered onto the main logic board. And it was the first Mac — along with the LC — to include built-in circuitry for recording your own sounds. You can plug the included microphone into the sound input port.

As with most subsequent models, you don't have to install a separate video card to hook a monitor to the IIsi. All these features fit into the slimmest, most elegant gray plastic case ever — a low-standing shape that Apple called the "pizza-box" design (see Figure 12-7).

Figure 12-7: The slimline IIsi case design, ancestor of Macs like the Quadra 630.

Price:	$3,800 then, $20 now
Apple code names:	Ericson, Raffica, Oceanic, Ray Ban
On the market for:	2 years, 5 months
Processor and speed:	68030 at 20 MHz
Memory:	1MB, expandable to 65MB (100-ns, 30-pin DRAM chips required)
Equipment:	Built-in 256-color support, using System memory; 1 slot (with adapter, can hold NuBus or 030 Direct cards); FPU optional
System software notes:	Requires System 6.0.6 through 7.6

Macintosh IIvx (Performa 600), IIvi

The IIvx, released in October 1992, was the last member of the Mac II series. Its price was similar to that of the discontinued IIci; interestingly, so was its speed, despite the fact that the IIvx's processor runs at 32 MHz and the IIci's runs at 25 MHz. The IIvx loses its speed advantage because of the system bus speed: The IIvx pushes information through the processor at only 16 MHz, compared with the IIci's 25 MHz. (See Figure 12-8.)

Figure 12-8: The IIvx case (right) was the harbinger of the ventilation-hole look, also used for such Macs as the IIvi, Centris 650, and Power Macintosh 7100. At left: the big, low-slung case of the "6" series — the Quadra/Centris 610, Power Mac 6100, Performa 6115, and so on.

The IIvx's new twist: It was the first Mac to come with a built-in CD-ROM-drive option. Like the IIfx, the IIvx was equipped with 32K of cache memory to give its performance an extra boost. A lower-speed IIvx — without the cache or math coprocessor — was sold as the Performa 600.

After getting rave reviews in the Macintosh trade press, the IIvx — outpriced and outperformed by the Centris machines — was discontinued by Apple less than a year later. Thousands of buyers felt burned, despite the fact that the IIvx was (and is) a solid, flexible performer.

The IIvi, a IIvx that runs at half the clock speed, was never sold in the United States.

Price:	$2,950 then, $50 now
Apple code name:	Brazil
On the market for:	11 months
Processor and speed:	68030 at 32 MHz
Memory:	4MB, expandable to 68MB (80-ns, 30-pin DRAM chips required)
Equipment:	Built-in video (512K VRAM, expandable to 1MB); 3 NuBus slots; cache slot; FPU
System software notes:	Requires System 7.1 (with Enabler 001) through 7.6

The LC Series

LC originally stood for *low-cost color*. It wasn't exactly a powerhouse, but it was dirt cheap, and that's all that mattered to the thousands who snapped up this slim machine to make it one of Apple's biggest hits.

Over time, LC came to represent the educational line of Macs, sold only through schools and universities. Still, the line became more and more powerful, finally offering Quadra and then PowerPC power at the same low LC prices.

Macintosh LC

The LC was introduced in October 1990 as the lowest-cost color-capable Macintosh. Apple intentionally scaled back some features that were present in the II-series — eliminating all but one expansion slot, for example — to keep the size and cost down and to attract buyers who wanted color capability on a modest budget. The strategy worked. The LC quickly become one of Apple's best-selling computers; more than 500,000 were sold in the first year.

The LC, like the Mac II, is built around the 68020 microprocessor. That makes it about twice as fast as an SE or Classic but slower than most other Macs. (It also means no virtual memory.) The LC was discontinued in 1992, having been replaced by the LC II and III.

Price:	$2,500 then, $25 now
Apple code name:	Elsie
On the market for:	1 year, 5 months
Processor and speed:	68020 at 16 MHz
Memory:	2MB, expandable to 10MB (100-ns, 30-pin DRAM chips required)
Equipment:	Built-in video (256K VRAM, expandable to 512K); 1 Processor Direct Slot; FPU optional
System software notes:	Requires System 6.0.6 through 7.5.5

Macintosh LC II (Performa 400–430)

The LC II, introduced in March 1992, was destined to be a short-lived Mac model (see Figure 12-9). Apple replaced the LC's 68020 microprocessor with the faster 68030. But Apple retained the 16-bit data bus, limiting the computer's capability to take advantage of the extra processing power. The result: an upgraded computer with almost no improvement in speed.
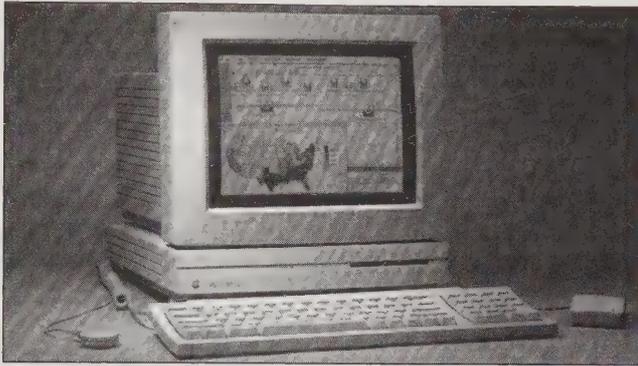
Figure 12-9: The original pizza-box LC I, II, and III, later inherited by the Performa 400 through 467.

The only practical difference between the LC and LC II is that the latter can use virtual memory (because it includes a PMMU on the '030 chip). The LC II's memory, however, still is expandable only to 10MB. The LC II lasted on the market only about a year before being displaced by the LC III.

The LC II also was sold as the Performa 400. With a built-in modem, preinstalled software, and monitor, it was called the Performa 405, 410, or 430, depending on the hard-drive size.

Price:	$1,240 then, $50 now
Apple code name:	Foster Farms
On the market for:	1 year
Processor and speed:	68030 at 16 MHz
Memory:	4MB, expandable to 10MB by installing 12MB and wasting 2 (100-ns, 30-pin DRAM chips required)
Equipment:	Built-in video (256K VRAM, expandable to 512K); 1 Processor Direct Slot; FPU
System software notes:	Requires System 6.0.8 through 7.6

Macintosh LC III (Performa 450, 460, 466, 467)

Introduced in February 1993, the LC III (Performa 450) is what the LC II should have been: a significant improvement from the LC. The LC III's '030 chip runs at 25 MHz, making this model twice as fast as the LC or LC II. The LC III also came with more video RAM (512K) to support larger color monitors without additional memory. Its price and expandability made it a perfect entry-level Mac. (On the other hand, its requirement for a new kind of RAM chip — the 72-pin style, popular on IBM clones — irritated some owners of previous Macs, who couldn't use their previously purchased SIMMs.)

The Performa 460, 466, and 467 are identical to the LC III (see Figure 12-9) — same slim shape, same video possibilities — except that they're faster. They run at 33 MHz instead of 25.

Price:	$750 then, $75 now
Apple code name:	Vail, Elsie III
On the market for:	1 year
Processor and speed:	68030 at 25 MHz
Memory:	4MB, expandable to 36MB (80-ns, 72-pin DRAM chips required)
Equipment:	Built-in video (256K VRAM, expandable to 768K); 1 Processor Direct Slot; FPU optional
System software notes:	Requires System 7.1 (with Enabler 003) through 7.6

Macintosh LC 475 (Performa 475 and 476)

See "Macintosh Quadra 605 (LC 475, Performa 475–476)," later in this chapter. Same Mac, different names.

Macintosh LC 520

In June 1993, with this strange-looking, one-piece hybrid of the LC III and Color Classic, Apple introduced a peculiar new shape for its Macs (see Figure 12-10). It's nearly as big as (and contains the same electronics as) an LC III with a 14-inch monitor, but it's constructed as a one-piece unit, complete with juicy multimedia features like a built-in CD-ROM drive, microphone built into the monitor, and—unlike any Mac before it—stereo phase-shift speakers.

Like all LC models, the 520 wasn't available through computer or electronics stores; it was offered exclusively to schools. The new package proved to be such a hit that Apple replaced the 520 with faster, but identical-looking models, only seven months later.
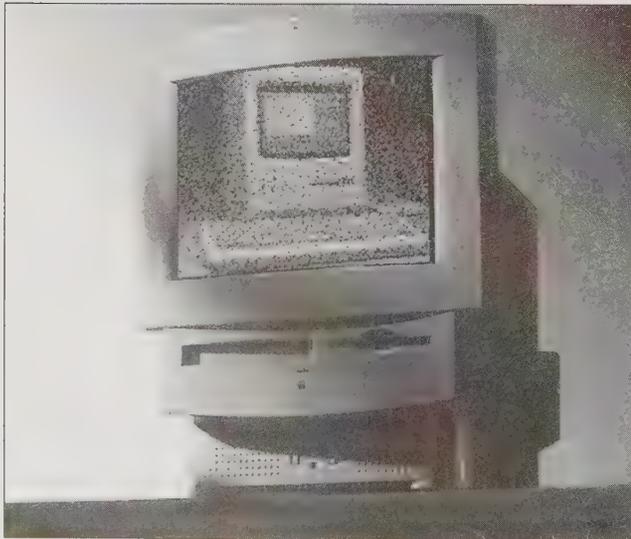
Figure 12-10: The case for the "5" series: the LC 520, 550, 575, 580; Performas 550 through 588; and so on. Picture it jet black, and you'll have the short-lived Macintosh TV.

Price:	$2,000 then, $275 now
On the market for:	7 months
Processor and speed:	68030 at 25 MHz
Memory:	5MB, expandable to 36MB (80-ns, 72-pin DRAM chips required)
Equipment:	Built-in, 14" Trinitron color monitor; 1 Processor Direct Slot; no FPU
System software notes:	Requires System 7.1 (with Enabler 403) through 7.6

Macintosh LC 550 and 575 (Performa 550 – 578)

The popularity of the 520 — a result of its low cost and multimedia prowess — led Apple to follow it up with two speedier sequels. In February 1994, these one-piece, stereo-speakered, 14-inch-Trinitronned, built-in-CD-ROMmed Macs made their debut (see Figure 12-10).

The only difference between the LC 550 and the LC 575 is the speed; the latter offers a potent 68LC040 chip (the same chip used in the Performa 630 series) instead of '030. These relatively inexpensive machines proved once and for all that the LC designation doesn't mean underpowered. Both machines were enthusiastically received by Mac fans, who appreciated their crisp color screens, speedy performance, rich sound, and upgradability to Power Macs down the line.

Apple ensured wider access to a good thing by selling these same computers as Performa models, bundled with CD-ROMs, software, and keyboard. The Performa 550 is identical to the LC 550. The 560 was the "*Money* magazine edition" of the 550 and came bundled with financial-management software; the 577 and 578 were simply the LC 575 with additional RAM and hard drive space.

All 575 family members have a special internal connector that Apple calls the communications slot. It's designed to accept either of two cards from Apple: a $100 Ethernet card or a high-speed fax/modem card.

LC 550

Price:	$1,200 then, $325 now
Apple code name:	Hook
Processor and speed:	68030 at 33 MHz

LC 575

Price:	$1,700 then, $400 now
Apple code name:	Optimus
Processor and speed:	68LC040 at 33 MHz

Both

Memory:	4MB, expandable to 36MB (80-ns, 72-pin DRAM chips required)
Equipment:	Built-in, 14" Trinitron color monitor (512K VRAM, expandable to 1MB); 1 Processor Direct Slot; no FPU
System software notes:	Requires System 7.1 (with Enabler 065) through 7.6. (The 575 can also handle Mac OS 8.)

MACINTOSH SECRET

The LC 550's secret partition

If Apple's programmers, in creating the Performa series, were aiming to make idiotproof computers, they were serious about it. The Performa 550 is an amazing case in point. When you run the Apple Backup program included with these Performa models, you get a little surprise that you didn't count on: a *hidden partition* on your hard drive!

This invisible chunk of hard drive space contains a miniature, invisible System Folder. Apple's internal memo explains it this way:

"When a system problem (one that prevents the Performa from booting) is detected, a [dialog box] informs the user of a system problem. The user can choose to fix the problem manually or to reinstall software from the backup partition's Mini System Folder."

If you choose to reinstall your System software, you get the wristwatch cursor for a moment while the miniature System Folder is silently copied to your main hard-drive partition. The Performa restarts from the restored hard drive, and the invisible system partition disappears once again.

Who knows what goodness lurks in the hearts of men?

Macintosh LC 580 (Performa 580, 588)

Take the all-in-one design of an LC 578 (see Figure 12-10): install System 7.5; replace the SCSI hard drive with an IDE drive (see Chapter 8) that holds half a gigabyte; add TV input and output jacks (the output jack operates in "mirror mode" only, so that the monitor and the external TV show the same thing) — and you have the LC 580. The Performa 580, of course, is the same computer with the usual home-computer software bundle and modem.

Price:	$1,200, $475 now
Processor and speed:	68LC040 at 33 MHz
Memory:	8MB, expandable to 52MB
Equipment:	500MB IDE hard drive, communications slot, built-in microphone

LC 630

See "Macintosh Quadra 630 (LC 630, Performa 630 – 638)," later in this chapter. These Macs are identical.

LC 630 DOS Compatible (Performa 640)

One of many spin-offs from the Quadra 630, described later, this model was introduced in May 1995 (see Figure 12-12). It's equipped just like a 631CD, but its PDS expansion slot has been fitted with an Apple DOS Compatibility Card containing a 66-MHz 486DX2 microprocessor. With this setup, you can switch between the Macintosh operating system and Windows (or DOS). Of course, having the PDS filled means you can't install any other options that would require plugging into the PDS (such as an accelerated video card). The Performa 640 version comes with a 15-inch monitor, modem, and the usual software bundle.

Price:	$2,200, $325 now
Processor and speed:	68LC040 at 33 MHz and 66-MHz 486DX2 on PDS card
Memory:	8MB, expandable to 36MB (80-ns, 72-pin DRAM chips required)
Equipment:	Built-in video (nonexpandable 1MB VRAM); 1 LC-style PDS slot; 1 Apple Video System slot; 1 communications slot; built-in CD-ROM

Macintosh TV

This jet-black, weird-looking, one-piece hybrid machine is…a computer! It's a CD player! It's a *television?*

All of the above. (It resembles the LC 500-series enough that we included it here in our LC descriptions; see Figure 12-10.) Everything's black: the TV, the mouse, the keyboard, and the remote control. With a video source plugged into the back of the machine (be it a VCR, cable, or camcorder), this Mac suddenly becomes a 14-inch stereo TV. The remote control handles both channel-changing and the CD player. You press a key on the keyboard to switch the Mac between showing your work and showing the TV signal.

You can capture single frames (from whatever you're watching) as PICT graphics files. You can't, alas, watch TV in one little window as you work on a spreadsheet in another (although you can hear the TV sound while you work). Nor can you capture incoming TV as a QuickTime movie. Yet this Mac was an interesting and, in many ways, practical 40-pound piece of electronics. Perhaps because of its limited availability (250 stores, plus college-campus bookstores) and limited expansion options, the Mac TV was quietly discontinued only a few months after its October 1993 introduction.

Price:	$2,000 (including keyboard) then, $75 now
Apple code name:	LD50
On the market for:	5 months
Processor and speed:	68030 at 32MHz
Memory:	5MB, expandable to 8MB (80-ns, 72-pin DRAM chips required)
Equipment:	Built-in, 14", 69-dpi monitor (8-bit Mac, 16-bit TV); 1 Processor Direct Slot; FPU optional
System software notes:	Requires System 7.1 (with Enabler 404) through 7.6

The Centris/Quadra Line

Apple's early-'90s, mainstream business Macs were built around two variations of the Motorola 68040 processor: the regular '040 and the 68LC040, a less expensive chip that lacks an FPU chip. (We like to think that the *LC* stands for *lacking chip*.)

Macintosh Quadra 605 (LC 475, Performa 475–476)

Apple's October 1993 shakeup introduced one new Mac with four different names: Quadra 605, LC 475, and Performa 475 or 476 (see Figure 12-11). To many people, this was a revolutionary Mac. Inside its neat, slim case is a very

fast processor, the likes of which would have cost $10,000 three years earlier. Unbelievably, this Mac cost less than $1,000 (without a monitor).

The chip inside is the 68LC040. With its single, LC III-style Processor Direct Slot (PDS), which accepts boards designed for all LC models, the 9-pound 605 is like an '040-based LCIII: sleek, fast, and pretty.

Figure 12-11: Take one LC case, lose the horizontal front-panel groove, and you get the sleek case of the Quadra 605 (also known as the LC 475 and the Performas 475/476).

Price:	$900 then, $175 now
Apple code name:	Aladdin, Primus
Processor and speed:	68LC040 at 25 MHz
Memory:	4MB, expandable to 36MB (80-ns, 72-pin DRAM chips required)
Equipment:	Built-in video (512K VRAM, expandable to 1MB); 1 Processor Direct Slot; FPU optional
System software notes:	Requires System 7.1 (with Enabler 065) or later

Macintosh Quadra 610 (Centris 610)

The Centris 610 was introduced in February 1993. It introduced the broad, low-slung, CD-ROM-ready case that became a staple of the Macintosh model line (see Figure 12-8). It also introduced one heckuva strange power button. Instead of turning the machine on with the keyboard or a back-panel switch, owners of this design (and all subsequent Macs based on it) must use a protruding button/nub on the *front* panel to turn the machine on *and* off.

The Centris 610 was built around the 68LC040 (no FPU). In October 1993, this model was renamed the Quadra 610 and (except for the 8/160 model) blessed with a faster 25 MHz processor *with* the FPU. Neither 610 can take memory chips in sizes less than 4MB each.

The 610 doesn't have a ready-to-use NuBus slot; by adding a $100 adapter, you can install either one 7-inch NuBus board or one PDS board. The Centris

610 can use up to 68MB of RAM. Because the Centris models were expected to find homes in corporate offices, high-speed Ethernet circuitry is available.

Price:	$1,700 then, $175 now (Quadra)
Apple code name:	Speedbump 610
On the market for:	8 months
Processor and speed:	68040 at 25 MHz (Centris: 68LC040 at 20 MHz)
Memory:	4MB, expandable to 68MB (80-ns, 72-pin DRAM chips required)
Equipment:	Built-in video (512K VRAM, expandable to 1MB); with adapter; slot can hold a 7-inch NuBus board or PDS board; FPU
System software notes:	Requires System 7.1 (with Enabler 040) or later

Macintosh Quadra 610 DOS Compatible

In February 1994, Apple released a special edition of the Quadra 610. From the outside, it looks exactly the same as previous 610s (see Figure 12-8) — except for the intriguing words *DOS Compatible* painted on the nameplate. Indeed, this model has Intel inside, a PDS card containing IBM-clone circuitry. By pressing ⌘-Return, you make the Mac screen fade smoothly to black; fading in is the hostile world of DOS, right there on your Mac screen. You even can run Windows at respectable speeds.

MACINTOSH SECRET

Name that Performa

Apple released no fewer than eight different Performa and LC variations on the standard 630 model. Apple's naming conventions for these models are so wildly inconsistent that it's almost impossible to distinguish which Performas do what.

The seemingly random numbering system is so confusing that Apple's own specification documents are sometimes wrong about how each model is equipped. It would be nice if there was a consistent rule — for example, the higher the model number, the bigger the hard drive, or something.

Abandon all such hope; it's much, much stranger than that.

The 631CD came with 8MB of RAM, a 500MB hard drive, and a 14,400 bps fax modem, whereas the 635CD had only 4MB of RAM, a 250MB hard drive, and a 9600 bps fax modem — but it came with a 15-inch monitor. The 636 is identical to the 635, but it came with a 14-inch monitor, and, oh yes, was available only to the higher-education market. The 636CD, however, was available to the general public and, of course, it has 8MB of RAM. Then there's the 637CD, which is exactly the same as the 635CD, except that it's the *Money* magazine edition, which includes financial software such as Personal Record Keeper, Will Maker, Wealth Builder, and MacInTax/Tax Planner.

So what's the 638CD? Obviously, it's a 635CD — with Apple's Video/TV Tuner card pre-installed.

Unfortunately, the one piece of logic to all of these naming conventions is driven by crass commercialism. Apple gave each consumer-electronics chain (Circuit City, The Wiz, and so on) the exclusive right to one particular model. And what's the point of that? The stores can now honestly promise to beat any other store's price on that model. Not so tough — when they're the only ones carrying it!

For those who have to coexist in offices with IBM compatibles, the DOS Compatible was a clever, inexpensive solution (except that it doesn't work, obviously, with IBM add-on *cards*). The 25,000 of these machines that Apple manufactured were snapped up quickly, making everybody wonder what the company was thinking when it announced, two months later, that no more would be manufactured. That gives this model the dubious honor of being the shortest-lived Mac model in Apple history. (The specs are the same as those listed for the Quadra 610, except for a higher original price tag and an additional 25 MHz Intel 486 processor.)

Macintosh Quadra 630 (LC 630, Performa 630–638)

Released in August 1994, this small, attractive desktop Mac represented new highs in speed and multimedia flexibility — and new lows in pricing. Shortly after it was released, it became one of Apple's top-selling Macs (see Figure 12-12).

The 630 has a 33 MHz '040 processor — surprisingly enough, as fast as the old Quadra 950 — and was sold as part of the Performa, Quadra, and LC families. This replacement for the Quadra 610, 650, and 660AV had three slots, each of a different type: (1) an LC-style PDS; (2) a communications slot like that found on the LC 575 (for an Ethernet card or — as bundled with the Performa models — a fax/modem card); (3) a video slot for either the $150 Apple Video System card (which lets you record video as a quarter-screen, 10-frames-per-second, 16-bit-color QuickTime movie), or a $250 Apple TV/Video System card (which offers a TV tuner and cable hookup for watching TV in a resizable window, as well as QuickTime recording). You can also hook up the 630 to the $300 Apple Presentation System, a converter card that can send the Mac's image to a TV or VCR.

Figure 12-12: The blockbuster 630 case design. This same plastic box housed Mac models ranging from the Quadra 630 to the LC 630 to the Performa 630 through 638, as well as the PowerPC-based 6200 and 6300 lines.

The 630's remote control: It's a Sony

If you bought the TV/Video System card for your 630 Mac, you also got a tiny remote-control unit. It can turn the Mac on or off, mute the sound, change TV channels, change the video display size, and control the CD-ROM drive (play, stop, eject, pause, fast-forward, and reverse on audio discs).

This remote control is a Sony (model RMC-A1, as it happens). Therefore, if you have a Sony TV in the same room as your Mac, you may run into problems — turning off the TV, for example, will also turn off your Mac!

You have no choice except to (a) disable the Apple remote, or (b) move the TV.

Just be grateful the thing doesn't operate your garage-door opener.

All this for $1,200? Some of the cost-cutting strategies were apparent. There's only one SIMM socket for memory; only one keyboard/mouse jack (as with all subsequent models); you can't expand the 1MB of video RAM; the 630 can only play back, not record, stereo sound; and the internal hard drive introduced the cheaper IDE format, as described in Chapter 8.

Nonetheless, the 630's slide-out motherboard, high speed/price ratio, easy upgradability to PowerPC, and distinctive front panel (which has volume buttons, a headphone connector, and a tiny receiver panel for the TV tuner's remote control) — added up to a remarkable, and remarkably popular, machine.

The Quadra and Performa versions of these machines aren't exact equivalents, by the way. The original Quadra 630 has a full 68040 chip, whereas all the Performa models are equipped with the 68LC040, without an FPU. The letters CD at the end of a model number mean it's equipped with an internal double-speed CD-ROM drive.

Price:	$1,280 then, $200 now. (Performa with CD-ROM and monitor: $2,250 then, $250 now)
Apple code name:	Crusader
Processor and speed:	68LC040 at 33 MHz (Quadra: full 68040)
Memory:	4MB, expandable to 36MB (80-ns, 72-pin DRAM chips required)
Equipment:	Built-in video (nonexpandable 1MB VRAM); 1 LC-style PDS slot; FPU (in Quadra model); 1 Apple Video System slot; 1 communications slot; optional built-in CD-ROM
System software notes:	Requires System 7.1 (with Enabler) or later

Macintosh Quadra 650 (Centris 650)

The Centris 650 (born in February 1993), like the IIvx, is a IIcx-size, tallish gray box with a bizarre set of perforations on the lower front panel (see Figure 12-8).

It's bigger than the 610, yes, but also more expandable, thanks to its three NuBus slots. The 650 is faster, too, built on a quicker '040 chip, giving it a natural niche at the high end of Apple's 1993 product line. All but the base-model 650s include a math coprocessor (missing on the 610). The 650 offers roughly the same speed as the discontinued Quadra 700; the Quadra 650, which it was dubbed in October 1993, is faster still, thanks to its 33 MHz chip.

Like the 610, the 650 has an internal compartment that can hold an optional CD-ROM player, hard drive, or other storage device. All but the base-model 650s include Ethernet capability.

Price:	$2,700 then, $240 now
Apple code name:	Speedbump 650
On the market for:	1 year
Processor and speed:	68040 at 33 MHz (Centris = 25MHz)
Memory:	4MB, expandable to 136MB (80-ns, 72-pin DRAM chips required)
Equipment:	Built-in video (512K VRAM, expandable to 1MB); 3 NuBus slots; 1 Processor Direct Slot (adding a PDS board, however, covers one of the NuBus slots); FPU
System software notes:	Requires System 7.1 (with Enabler 040) or later

Macintosh Quadra 700

The Quadra 700, released in October 1991, was the first Macintosh built around the 68040 chip — and, with the Quadra 900, was the first to displace the IIfx as the top-of-the-line Mac. Both the Quadra 700 and 900 run about 20 percent faster than a IIfx. The Quadras were the first Macs with built-in support for Ethernet networking.

The original Quadras look different from other modular Macs; they were the first to feature a tower-style case. The 700, however, is the size of a IIcx (see Figure 12-6). Therefore, it's small enough to be placed on the desk, and can be used in a horizontal orientation.

Price:	$6,000 then, $150 now
Apple code names:	Shadow, IIce
On the market for:	1 year, 5 months
Processor and speed:	68040 at 25 MHz
Memory:	4MB, expandable to 20MB — or, with sometimes-problematic 16MB chips, to 64MB (80-ns, 30-pin DRAM chips required)
Equipment:	Built-in 256-color video support (512K, expandable to 2MB); 2 NuBus slots; one Processor Direct Slot; FPU
System software notes:	Requires System 7.0.1 or later

Macintosh Quadra 800

The 800, released in February 1993 and discontinued 13 months later, was a terrific machine for the age (see Figure 12-13). It's less expandable than the 950, but it also is faster, lighter, more compact, and less expensive. Interestingly,

this model can't produce 24-bit color (the "millions of colors" setting) on any monitor, no matter how much VRAM or what video card you buy for it — Apple deliberately crippled this machine to enhance the attractiveness of the Quadra 900 and 950 models!
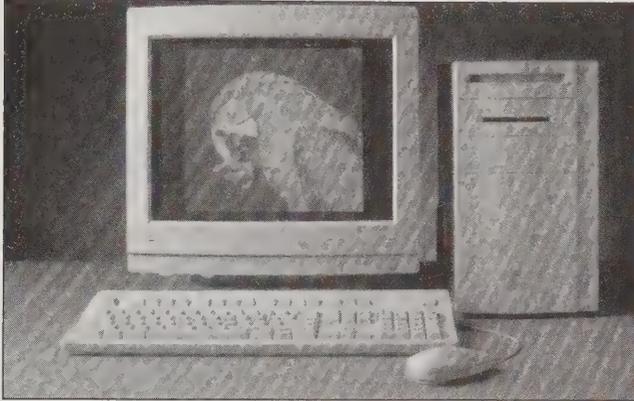
Figure 12-13: The Quadra 800 minitower design was also used for such Macs as the 840AV and the Power Macintosh 8100 and 8500.

The 800 also offers *memory interleaving,* whereby the Mac can access two SIMMs of the same size and speed at the same time. (Memory interleaving also is a feature of the Centris 650.) And like other tower Macs, the 800 has two extra storage bays. Only one of the two extra spaces is big enough for a 5 ¼-inch device, such as a SyQuest or CD-ROM. The other bay can hold a smaller appliance, such as a hard drive.

Price:	$4,700 then, $240 now
On the market for:	13 months
Processor and speed:	68040 at 33MHz
Memory:	8MB, expandable to 146MB (60-ns, 72-pin DRAM chips required)
SIMM slots:	Four slots that accept 72-pin SIMMs
Equipment:	Built-in video support (512K VRAM, expandable to 1MB); 3 NuBus slots; 1 Processor Direct Slot; FPU; Ethernet
System software notes:	Requires System 7.1 (with Enabler 040) or later

Macintosh Quadra 900

The huge, tower-design Quadra 900 (see Figure 12-14) was released simultaneously with the Quadra 700 at the beginning of 1992. Like most of the Quadras, it has built-in Ethernet and video support. The 900 had the most expandable memory of any Macintosh before it; you can boost it to 256MB by plugging SIMMs of 16MB each into each of the 16 slots. It also has room for up to four internal hard drives (or other storage devices).

Figure 12-14: The full-size tower of the Quadra 900 was also the enclosure for other "9-" series Macs: the 950, Power Macintosh 9500, and so on.

Along with the usual mouse and keyboard, the 900 came with one piece of equipment alien to all previous Macs: a key. The key-lock control can be set to Off, On, and Secure. When the key-lock is set to Off, the machine can't be powered up. In Secure mode, the ADB port (and, thus, the mouse and keyboard) and the floppy disk drive are disabled, presumably for use when the Quadra is doing duty as a dedicated file server.

Price:	$8,500 then, $150 now
Apple code names:	Darwin, Ilex
On the market for:	6 months
Processor and speed:	68040 at 25 MHz
Memory:	4MB, expandable to 256MB (80-ns, 30-pin DRAM chips required)
Equipment:	Built-in video (1MB VRAM, expandable to 2MB); 5 NuBus slots; 1 Processor Direct Slot; FPU; Ethernet
System software notes:	Requires System 7.0.1 or later

Macintosh Quadra 950

The hulking Quadra 950, which replaced the identical-looking 900 after only six months, weighs more than 36 pounds *without* a monitor (see Figure 12-14). Running at 33 MHz, it runs applications 30 percent faster than the Quadra 700, and it can display 16-bit color on monitors of up to 19 inches. The 950 offered a faster hard-drive data-transfer rate than any Macintosh before it: 3,800K per second.

Price:	$6,100 then, $200 now
Apple code name:	Amazon
Processor and speed:	68040 at 33 MHz
Memory:	8MB, expandable to 256MB (80-ns, 30-pin DRAM chips required)

Equipment:	Built-in video (1MB VRAM, expandable to 2MB); 5 NuBus slots; 1 Processor Direct Slot; FPU; Ethernet
System software notes:	Requires System 7.0.1 or later

Macintosh Quadra (Centris) 660av, 840av

The original audiovisual duo of July 1993, the 660av and 840av, are based on the '040 chip running at 25 MHz and 40 MHz, respectively. The Quadra 660av, originally called the Centris 660av, resembles the Centris 610 in its low-slung case (see Figure 12-8). The Quadra 840av has the same towerlike case as the Quadra 800 (see Figure 12-13) and will forever rest secure in its place as the fastest non-PowerPC Macintosh ever built.

Both models introduced several redesigned components, including a new *32-bit data path* that gives all internal components direct access to the memory chips (meaning that 32-bit addressing is on all the time; see Chapter 9); an improved input/output subsystem for faster access to attached disks and storage devices; *built-in 24-bit* (840av) or 16-bit (660av) video for more lifelike colors; and *TV input and output,* which allows you to watch the Mac's video picture on a TV, or record it directly to videotape, in a variety of TV-signal outputs (NTSC, PAL [the European standard], and S-video).

Most impressive of all, however, was the new AT&T *DSP* (digital signal processor) chip in both Macs. This special chip can process huge streams of sound and video information. It debuted a number of amazing options on these models:

■ **Speech recognition.** You speak into the microphone, and the Mac understands you. We're not talking about a Mac that takes dictation. The AV Macs recognize only certain sets of commands that have to do with using the Mac — menu commands, for example.

Alas, subsequent (and superior) versions of the PlainTalk software were *incompatible* with these guinea-pig AV models; see Chapter 23 for details.

■ **Talking.** These Macs don't just listen; they also speak words over your speaker. (Once again, see Chapter 23 for more info.)

■ **Sound digitizing**. Like other models, these Macs can *digitize* (record to disk) sounds. Because of the DSP chip, however, these models and the Power Macs can record in *16-bit sound* — the same fidelity as that used by audio compact discs.

■ **GeoPort.** This serial-port connector is akin to the modem port found on older Macs. Previous Macs' serial ports handled only one task at a time. But the GeoPort's speed is so great that it can, in theory, print, send a fax over the phone lines, and remain connected to a network — all from a single port. Most people, however, use the GeoPort jack only to connect the GeoPort Adapter ($100), which can impersonate a modem's chirps and squawks.

To further complement this multimedia mogul machine, Apple introduced its first AudioVision monitor (today known as AppleVision), with stereo speakers and a built-in microphone.

All this miraculous technology carried, for some, a steep price in compatibility. Programs like Suitcase, ATM, After Dark, and most fax/modem software needed upgrades to be compatible. Perhaps worse for many people was the "sync on green" problem — the AV Macs didn't work with many standard Mac monitors. For some monitors, you could get a special cable that works with the AV (call the monitor company and find out); others couldn't be made to work at all.

Quadra 660av

Price:	$2,000 then, $200 now
Apple code name:	Tempest
On the market for:	14 months
Processor and speed:	68040 at 25 MHz
Memory:	8MB, expandable to 68MB (70-ns, 72-pin DRAM chips required)
Equipment:	Built-in 16-bit video support; 1 7" NuBus slot (requires adapter); FPU
System software notes:	Requires System 7.1 (with Enabler 088) or later

Quadra 840av

Price:	$4,100 then, $330 now
Apple code name:	Cyclone
On the market for:	9 months
Processor and speed:	68040 at 40 MHz
Memory:	8MB, expandable to 128MB (60-ns, 72-pin DRAM chips required)
Equipment:	Built-in 32-bit video; 3 enhanced NuBus slots; FPU; Ethernet
System software notes:	Requires System 7.1 (with Enabler 088) or later

Portable Macs

When it comes to shrinking the Macintosh to laptop size, the world took awhile to get it right. Even before the anvil-like Macintosh Portable (described in a moment), for example, there was the Outback, made from the cannibalized chips out of a Macintosh SE by a Colorado company. Instead of a trackball or trackpad, it had — well, how do we describe this — a three-inch piece of *drinking straw* that you could slide horizontally with your thumb, roll toward you or away, or push down to register a click.

We'll take a PowerBook G3 any day.

Macintosh Portable

The Mac Portable, born in late 1989, was Apple's first attempt at a laptop. It failed miserably, mainly because of its weight. Though it has a laptop-style fold-down design, the Mac Portable weighs 16 pounds — as much as a compact Mac! Its excessive weight and high price — almost $7,000 — made it very unpopular.

Nevertheless, the Portable has an active-matrix LCD screen (see Chapter 14) that provides a sharp, clear image, free of ghosting. And the Portable was the

forerunner of the PowerBook 100, which inherited much of the Portable's internal design.

Price:	$6,500 then, $10 now
Apple code names:	Esprit, Laguna, Malibu
On the market for:	1 year, 5 months
Processor and speed:	68000 at 16 MHz
Memory:	1MB, expandable to 9MB (special 30-ns static RAM card required)
Equipment:	Built-in, 10", black-and-white, active-matrix 640-by-400-pixel LCD screen (backlighted on later models); video-output jack for external monitor; 1 nonstandard 120-pin PDS slot; no FPU
System software notes:	Requires System 6.0.4 through 7.5.5
Battery:	Lead-acid; lasts about 5 hours
Weight:	16 pounds

PowerBook 100

The PowerBook 100, born with the PowerBooks 140 and 170 in October 1991, was the low-end, budget version of the PowerBook. It's equipped with the same slower 68000 microprocessor found in the Mac Classic.

The 100 is lighter than the other early PowerBooks because it's missing a lot of features; as with Apple's subsequent ultralight PowerBooks (such as the 2000 series), it has no internal floppy disk drive, only a 20MB hard drive, and no sound-recording capabilities. (You could buy a $200 floppy drive that attached to the back of the PowerBook.) The case is made of lightweight plastic instead of the polycarbonate used for the other PowerBooks. The 100's sealed lead-acid battery lasts two to four hours before requiring a recharge.

Probably because of the missing components, the PowerBook 100 didn't sell well. Apple shrugged and decided to sell off as many remaining 100s as possible. It slashed the price; PowerBook 100s were selling for $900 on the West Coast and $700 on the East Coast. Suddenly the 100 was the hottest Mac ever. Soon, as Apple had hoped, the inventory was gone.

Price:	$2,500 then, $90 now
Apple code names:	Derringer, Rosebud
On the market for:	10 months
Processor and speed:	68000 at 16 MHz
Memory:	2MB, expandable to 8MB (100-ns pseudostatic RAM card required)
Equipment:	Built-in, 9", black-and-white, passive-matrix 640-by-400-pixel LCD screen; no slots; no FPU; no video-output jack
System software notes:	Requires System 7.0.1 through 7.5.5 — officially; 6.0.7 also runs
Battery:	Lead-acid; lasts about 2 hours
Weight:	5.1 pounds

PowerBook 140

Heavier and more powerful than the 100, the 140 is the middle of the original three PowerBook models. It's equipped with a passive-matrix screen similar to that of the 100, but the 140's screen is larger, and its dots are less dense on the screen. As a result, text is easier to read (see Figure 12-15).

Instead of a lead-acid battery, the 140 uses a NiCad battery that provides between 90 minutes and two hours of power. The 140 also has a larger trackball than the PowerBook 100 (30mm instead of 25mm), making it easier to control. Finally, the 140 can record sound (and comes with a microphone), unlike the PowerBook 100.

Price:	$3,000 then, $140 now
Apple code name:	TIM Lite
On the market for:	10 months
Processor and speed:	68030 at 16 MHz
Memory:	2MB, expandable to 8MB (100-ns, pseudostatic RAM card required)
Equipment:	Built-in, 10", black-and-white, passive-matrix LCD, 640-by-400-pixel screen; no slots; no FPU; no video-output jack
System software notes:	Requires System 7.0.1 through 7.6
Battery:	NiCad; lasts about 2 hours
Weight:	6.8 pounds

Figure 12-15: The PowerBook 100-series case, used in such Macs as the PowerBook 140, 145, 150, 160, 165, 165c, 170, and 180.

The Macintosh Portable and the PowerBook 100

What do the PowerBook 100 and the overweight Macintosh Portable have in common?

A lot. Sony, the company contracted by Apple to build the 100, started with the original Mac Portable and simply miniaturized its components to create the 100. That's why the design of the 100 is fundamentally different from that of the 140 and 170; it's really just a shrunk-down Mac Portable. The Portable and the 100 share the same overall design and even the same ROM.

PowerBook 145

The 145 is a faster (and less expensive) version of the 140, which it replaced at the end of 1992. The sole noticeable difference is that the 145's chip runs at 25 MHz instead of 16 MHz.

Price:	$2,150 then, $200 now
On the market for:	10 months
Processor and speed:	68030 at 25 MHz
Memory:	2MB, expandable to 8MB (100-ns, pseudostatic RAM card required)
Equipment:	Built-in, 10", black-and-white, passive-matrix LCD, 640-by-400-pixel screen; no slots; no FPU; no video-output jack
System software notes:	Requires System 7.0.1 through 7.6
Battery:	NiCad; lasts about 2 hours
Weight:	6.8 pounds

PowerBook 145b

Whenever Apple lowers its prices, it's rewarded by a huge groundswell of new purchasers. That phenomenon clearly is what Apple had in mind for this PowerBook model, which debuted in June 1993.

The specs of the 145b are identical to those of the PowerBook 145 except for the original price: about $1,300 for the 40MB-hard drive model. (The price has dropped to about $200 now.) What you lose in the bargain (compared with a PowerBook 145) is the microphone and a set of System disks. The 145b's low price, and the fact that the low price doesn't mean less computing power, put all the necessary nails into the 145's coffin.

PowerBook 150

In the never-ending series of replacements for replacements, the 150 is the next heir in the 140-145-145b lineage. Its $1,300 price tag appealed to the budget-minded. But "inexpensive" no longer meant "slow"; the 150's 33 MHz 68030 processor is the same as the one that drives, for example, the LC 550. Also of note: The 150 was the first PowerBook to use a less-expensive IDE internal hard drive instead of a SCSI drive. (See Chapter 8 for more details about IDE drives.)

The most startling aspect of the 150 was the appearance of some PowerBook Duo technology. For example, the 150 uses Duo-style memory SIMMs, and it preserves the contents of RAM while you change batteries, just like the Duos. Unfortunately, the paucity of jacks also matches the Duos — the 150 introduced the solitary serial (modem/printer) jack that persists even on today's PowerBook models, and it lacks the Ethernet and monitor jacks of its PowerBook contemporaries.

But members of the student-and-starving-artist class said, "Ports, schmorts!" This model's speed, low price, and unusually low weight (1.3 pounds less than other full-size PowerBooks) gave it definite appeal. The 150 was discontinued in August 1995.

Price:	$1,300 then, $220 now
Apple code name:	Jedi
Processor and speed:	68030 at 33 MHz
Memory:	4MB, expandable to 40MB (70ns Duo DRAM card required)
Equipment:	Built-in, 9.5-inch, 4-level grayscale, passive-matrix LCD, 640-by-400 pixel screen; no slots; no FPU; no video-output jack
System software notes:	Requires System 7.0.1 through 7.6
Battery:	NiCad; lasts about 2.5 hours
Weight:	5.5 lbs.

PowerBook 160

Released in September 1992 and dropped 11 months later, the PowerBook 160 is similar to the 145 — same weight, dimensions, processing speed (see Figure 12-15). But the 160 also offered five important improvements:

■ The 160's LCD screen offers 16 levels of gray instead of just black and white.

■ The 160 has a video-out port so that you can connect it to an external monitor easily. The 160 can fill the external monitor with up to 256 colors.

■ The 160 can hold an internal hard drive of up to 120MB, whereas previous models could be expanded only to 80MB.

- The 160 was the first PowerBook since the original PowerBook 100 that could be used in *SCSI Disk Mode* (in which it's connected to your desktop Mac just as though it were an external hard drive) for super-fast data transfers. (See Chapter 14 for details.)

- Finally, the 160 was the first PowerBook on which memory could be expanded beyond 8MB. You can boost it to 14MB.

All these features came at a price of only about $300 more than the PowerBook 145, making the 160 an exceptionally flexible, functional Mac.

Price:	$2,430 then, $250 now
On the market for:	11 months
Processor and speed:	68030 at 25 MHz
Memory:	4MB, expandable to 14MB (85-ns, pseudostatic RAM card required)
Equipment:	Built-in, 10", 16-level grayscale, passive-matrix LCD, 640-by-400-pixel screen; no slots; no FPU; video-output jack
System software notes:	Requires System 7.1 (with Enabler 131) through 7.6
Battery:	NiCad; lasts about 2.5 hours
Weight:	6.8 pounds

PowerBook 165

See the preceding section. The 165 (born in August 1993) is identical to the PowerBook 160 in every possible way, except that it runs at 33 MHz instead of 25 MHz. Yet it was even less expensive than the model it replaced; it debuted at about $1,300 (and goes for $250 used these days).

PowerBook 165c

The PowerBook 165c, released in February 1993, was the first color PowerBook. The 165c's passive-matrix LCD display is smaller than that of most other PowerBook models — only 9 inches instead of 10 — but it can display 256 colors.

The 165c, like the PowerBook 180 on which it's based, is a fast and powerful machine, with a 33 MHz 68030 microprocessor and an FPU chip. But many Mac fans didn't find its color screen (manufactured for Apple by Sharp) very impressive. The passive-matrix technology is slow, it lacks brightness, and it's tough to read in bright sunlight. Another negative involves the 165c's NiCad battery life. A charge lasts only about an hour, thanks to the juice required by the dual backlights.

Price:	$3,400 then, $270 now
Apple code name:	Monet
On the market for:	10 months
Processor and speed:	68030 at 33 MHz
Memory:	4MB, expandable to 14MB (85-ns, special notched chips required)

Equipment:	Built-in, 9", 256-color, passive-matrix LCD, 640-by-400-pixel screen; no slots; FPU; video-output jack
System software notes:	Requires System 7.1 (with Enabler 131) through 7.6
Battery:	NiCad; lasts about 1 hour
Weight:	7 pounds

PowerBook 170

The PowerBook 170 was the top-of-the-line PowerBook in 1991 — one of the original three models (see Figure 12-15). It was eventually replaced by the faster, cheaper, sharper-screened PowerBook 180.

Overall, the 170 runs about 50 percent faster than the PowerBook 140. The key differences between the 170 and the 140: The 170 has a clock speed of 25 MHz (instead of 16 MHz); it's equipped with a math coprocessor; and it came with an optional, troublesome, built-in fax/modem.

This model was the first PowerBook to offer an active-matrix display (see Chapter 14), which produces a much brighter, crisper image with less ghosting and sluggishness than the passive-matrix display used on other PowerBooks.

Price:	$4,600 then, $270 now
Apple code name:	TIM, Road Warrior
On the market for:	1 year
Processor and speed:	68030 at 25 MHz
Memory:	2MB, expandable to 8MB (100-ns, pseudostatic RAM card required)
Equipment:	Built-in, 10", black-and-white, active-matrix LCD, 640-by-400-pixel screen; no slots; FPU; no video-output jack
System software notes:	Requires System 7.0.1 through 7.6
Battery:	NiCad; lasts about 2 hours
Weight:	6.8 pounds

PowerBook 180

The PowerBook 180, which debuted in October 1992, was by far the most sought-after PowerBook to date. Months after its introduction, Apple still couldn't manufacture it fast enough for its customers. In frustration, dealers took orders, pleaded with Apple, and waited for a few precious machines to come their way — a pattern to be repeated with many subsequent Mac models well into the 1990s.

The 33-MHz 180 is a faster version of the 170, with enough processing power for even heavy-duty business tasks. The 180 also was the first PowerBook with a 16-shade *active*-matrix grayscale screen, the clarity and beauty of which was primarily responsible for this Mac's popularity. This grayscale screen makes the Desktop look richer and more attractive, and it makes possible some QuickTime and graphics work.

Like the 160, this model has a video-out port so that you can connect it to an external monitor. The 180 was the first PowerBook to sport a built-in microphone. Like the 160, the 180 can be connected to another Macintosh as a SCSI device. A fax/modem is optional.

Price:	$4,110 then, $300 now
On the market for:	1 year, 7 months
Processor and speed:	68030 at 33 MHz
Memory:	4MB, expandable to 14MB (85-ns chips required)
Equipment:	Built-in, 10", 16-level grayscale, active-matrix LCD, 640-by-400-pixel screen; no slots; FPU; video-output jack
System software notes:	Requires System 7.1 (with Enabler 131) through 7.6
Battery:	NiCad; lasts about 2.5 hours
Weight:	6.8 pounds

PowerBook 180c

This was the screen that PowerBook fans had been waiting for: for the first time, an *active*-matrix *color* screen. Introduced in June 1993, the 180c offers a glorious display that is not only vibrant, but also big—not in inches, but in image area. That is, the 180c's screen was the first on a PowerBook to match, pixel-for-pixel, the dimensions of a standard Apple 14-inch monitor. But because the screen resolution is 94 dots per inch, the dots are densely packed, and the physical dimensions of the screen are *smaller* than on a traditional PowerBook.

As usual, you paid a price for the active-matrix screen, both in battery power and (dramatically) in dollars. Nonetheless, the 180c was the hot model for quite a while—at least until the active-matrix color screen came to other PowerBook models.

Price:	$4,160 then, $385 now
On the market for:	8 months
Processor and speed:	68030 at 33 MHz
Memory:	4MB, expandable to 14MB (85-ns chips required)
Equipment:	Built-in, 10", 256-color, active-matrix LCD, 640-by-480-pixel screen; no slots; FPU; video-output jack
System software notes:	Requires System 7.1 (with Enabler 131) through 7.6
Battery:	NiCad; lasts about 1 hour
Weight:	7.1 pounds

PowerBook 190, PowerBook 190cs

Released in August 1995, the PowerBook 190 and 190cs were the last of Apple's non-PowerPC portable Macs. Like the 500-series PowerBooks (described later), these models are based on the 33 MHz Motorola 68LC040 processor—the same chip used in the Performa 630 series.

The 190 has essentially the same solid-black design as the PowerPC-based PowerBook 5300 laptops (see Figure 12-16). It offers many of the same state-of-the-art PowerBook features: built-in PC Card slots; a removable floppy drive; and a trackpad that lets you double-click by tapping on the pad instead of clicking a button (see Chapter 14 for a full description of these features).

Figure 12-16: The 1995 PowerBook line's case. PowerBook 190 series and 5300 series look like this.

Apple's idea in releasing the 190 was to provide a low-budget model that was nevertheless equipped with some of the more-advanced PowerBook features. What it *doesn't* have (that the 5300 series does) is the PowerPC chip, a video-output jack, an infrared transceiver, and a sound input jack; you can add all but the sound-input jack as added-cost upgrades. The 190's passive-matrix screen and its lack of a PowerPC chip made it about half the price of its PowerPC counterparts.

The only real difference between the 190 and 190cs is the screen quality. The 190 has a grayscale screen, while the 190cs has a slightly larger, dual-scan color display. Apple discontinued the 190 series in September 1996.

190

Price:	$1,900 then, $410 now
Equipment:	Built-in, 9.5" passive matrix grayscale; optional video-out port; 16-bit stereo output
Weight:	5.9 pounds

190cs

Price:	$2,300 then, $550 now
Equipment:	Built-in, 10.4", dual-scan color passive-matrix LCD; optional video-out port; 16-bit stereo output
Weight:	6.4 pounds

Both

On the market for:	1 year, 1 month
Apple code name:	Omega
Processor and speed:	68LC040 at 33 MHz
System software notes:	Requires System 7.5.3 or later
Memory:	8MB, expandable to 40MB
Battery:	NiMH; lasts about 2 hours

PowerBook Duo 210 and 230

The PowerBook Duos, introduced in October 1992, are super-lightweight portables. The name stems from the fact that a Duo can function either as a stand-alone notebook computer or, when inserted into a docking station (called a Duo Dock) or attached to a connector strip (the Mini Dock), as a desktop system. See Chapter 14 for details.

The first Duo models — 210 and 230 — look the same (see Figure 12-17). Built around a light-but-sturdy magnesium frame, they weigh just 4.2 pounds each — nearly 3 pounds lighter than the other PowerBook models. The Duos are only 1.4 inches tall.

Figure 12-17: The slimline Duo is the lightest-weight Macintosh ever created. This design housed the 210, 230, 250, 280, and (in slightly thicker incarnations) the 270c and 280c.

Of course, many features were shrunk or eliminated to compress the Duos into such a compact package. There's no built-in floppy drive; a separate disk drive is optional. The screen is an inch narrower than previous PowerBook screens, although it has the same number of pixels (they're just packed in more closely). And the trackball is more than a centimeter smaller than other PowerBook trackballs. There are only three connectors on the back of either Duo: a modem/printer port, a power adapter jack, and the 152-pin connector for attaching the computer to a Duo Dock or Mini Dock.

The Duo nickel-metal-hydride battery recharges faster than the NiCad batteries used with most PowerBooks. There have been three generations of Duo batteries, known as Type I (shipped with the Duo 210 and 230), Type II (Duo 250 and 270), and Type III (the 280s). Each type lasts longer than the preceding type, ranging from about two hours of power (Type I) to three hours (Type III). All three types work in all Duos.

Despite their size, the Duos have powerful features. The 210 and 230 are built around the 68030 microchip and can be upgraded to 24MB of RAM. The displays can show 16 levels of grayscale. The 210 is the slower of the two machines, running at 25 MHz.

Duo 210

Price:	$2,250 then, $150 now
On the market for:	1 year
Processor and speed:	68030 at 25 MHz

Duo 230

Price:	$2,610 then, $180 now
On the market for:	1 year, 8 months
Processor and speed:	68030 at 33 MHz

Both

Apple code names:	DBLite, BOB W, Cinnamon
Memory:	4MB, expandable to 24MB (70-ns DRAM card required)
Equipment:	Built-in, 9", 16-level grayscale, passive-matrix LCD, 640-by-400-pixel screen; 2 NuBus slots (in Duo Dock only); FPU (in Duo Dock II only); video output (with full or mini Dock)
System software notes:	Requires System 7.1 (and PowerBook Duo Enabler) through 7.6
Battery:	NiMH; Type I lasts about 2 hours
Weight:	4.2 pounds

PowerBook Duo 250

The second generation of Duos, the 250 and 270c, rescued the Duo line's flagging reputation in the computer press. First, the active-matrix LCD screens on these new models, introduced in October 1993, are glorious to look at. Second, these models came with the improved Type II Duo battery, which meant that a Duo can hold a charge much longer than before — perhaps just under three hours with normal use.

The 250 is simply a 230 except that it has an *active*-matrix grayscale screen instead of a passive one.

Price:	$2,500 then, $250 now
Apple code name:	Ansel
On the market for:	7 months
Processor and speed:	68030 at 33 MHz
Memory:	4MB, expandable to 24MB (70-ns DRAM card required)
Equipment:	Built-in, 9", 16-level grayscale, active-matrix LCD, 640-by-400-pixel screen; 2 NuBus slots (in Duo Dock only); FPU (in Duo Dock II only); video output (with full or mini Dock)
System software notes:	Requires System 7.1 (and PowerBook Duo Enabler) through 7.6
Battery:	NiMH; Type II lasts about 2.5 hours
Weight:	4.2 pounds

PowerBook Duo 270c

Something had to give when Apple designed its first color Duo — size, weight, and battery-charge length. The Duo 270c is almost a half-pound heavier than other Duos. It's also a quarter-inch taller, making it slightly too big to fit into a Duo Dock. (You had to buy a replacement top half of the Duo Dock from Apple to accommodate the 270c, or else use a Duo Dock II.)

Still, this model offers a fast processor, a stunning screen that offers a complete 640-by-480 display area, and an FPU. It even has a remarkable color-display feature in common with the LC III (see "An LC III [Performa 450] Secret" earlier in this chapter). It may not weigh much, but the 270c is no lightweight.

Price:	$3,100 then, $275 now
Apple code name:	Escher
On the market for:	7 months
Processor and speed:	68030 at 33 MHz
Memory:	4MB, expandable to 32MB (70-ns DRAM card required)
Equipment:	Built-in, 8.4", color active-matrix LCD, 640-by-480-pixel screen (or, in 16-bit color, 640 by 400); 2 NuBus slots (in Duo Dock only); FPU chip; video output (with full or mini Dock)
System software notes:	Requires System 7.1 (and PowerBook Duo Enabler) through 7.6
Battery:	NiMH; Type II lasts about 2 hours
Weight:	4.8 pounds

PowerBook Duo 280 and 280c

Apple's May 1994 Duos further refined its subnotebook genre by adding a critical ingredient: speed. The 280 (active-matrix grayscale screen) and 280c (active-matrix color screen) are identical to the 250 and 270c, except that they include a 33 MHz 68LC040 processor — in other words, Quadra power in a four-pound package. Apple sweetened the deal by including the longer-lasting Type III batteries with these Duos, along with the promise that these models would be easily upgradable to the PowerPC-based Duo models.

Duo 280
- **Price:** $2,550 then; $270 now
- **Equipment:** Built-in, 9", grayscale active-matrix LCD, 640-by-400-pixel screen; 2 NuBus slots (in Duo Dock only); FPU (in Duo Dock II only); video output (with full or mini Dock)

Duo 280c
- **Price:** $3,000 then; $320 now
- **Equipment:** Built-in, 8.4", color active-matrix LCD, 640-by-480-pixel screen (or, in 16-bit color, 640 by 400); 2 NuBus slots (in Duo Dock only); internal FPU; video output (with full or mini Dock)

Both
- **Processor and speed:** 68LC040 at 33 MHz
- **Memory:** 4MB, expandable to 24MB (70-ns DRAM card required)
- **System software notes:** Requires System 7.1 (and PowerBook Duo Enabler 2.0) or later
- **Battery:** NiMH; Type III lasts about 3 hours
- **Weight:** 4.2 pounds (280c = 4.8 pounds)

PowerBook 520, 520c, 540, and 540c

Apple's May 1994 crop of PowerBooks, code-named Blackbird, introduced several dramatic improvements to the PowerBook line:

- They were the first full-size Mac laptops to contain a speedy '040 processor chip, just like a Quadra. (The 520s run at 25 MHz; the 540s go at 33 MHz.)

- They can be upgraded to Apple's PowerPC-based PowerBook models.

- These sleek models offered, for the first time on a PowerBook, a *full-size* keyboard that even includes a row of function keys. (A 100-series PowerBook keyboard is, overall, ½-inch narrower than a desktop keyboard.)

- The trackball was replaced by a small *trackpad* that you operate by dragging your finger. (There's only one mouse button now, below the trackpad.)

- Small stereo speakers adorn the upper corners of the screens.

- New battery technology gives these Macs longer life per charge.

Finally, most remarkably, a 500-series PowerBook introduced the PowerBook module bay (see Figure 12-18), into which you can insert a second battery for a total of about four hours of color-screen working time. A few other companies manufacture additional modules for this bay — such goodies as PC cards (credit card-size expansion cards, popular on IBM clones), cellular modems, and so on. You can leave the bay empty for lighter weight.

The stereo speakers, larger (and higher-quality) screens, and quick performance made these the first serious multimedia PowerBooks. Despite the sleek feel of the 500s' rounded, Duo-esque, two-tone gray cases, they're actually slightly larger and heavier than the 100-series PowerBooks. Most PowerBook fans consider the 500's among the most successful PowerBooks ever.
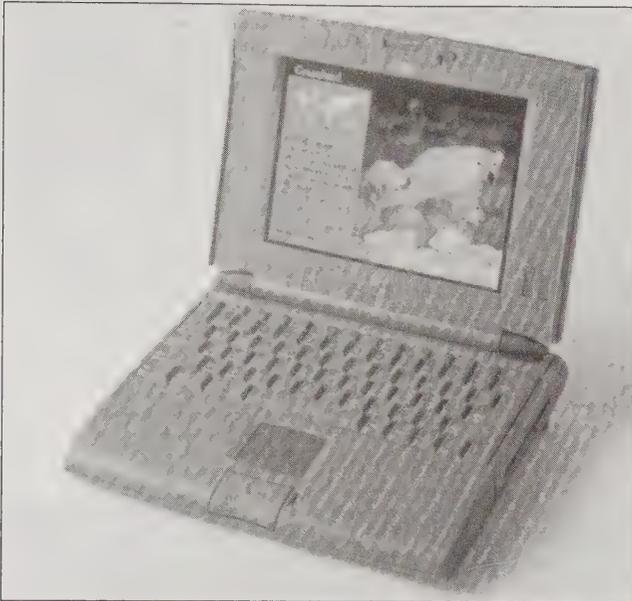
Figure 12-18: The two-tone 1994 PowerBook case design housed the 520 and 540 series (and their color incarnations).

PowerBook 520

Price:	$2,270 then, $410now
Processor and speed:	68LC040 at 25 MHz
Equipment:	Built-in, 9.5", grayscale passive-matrix LCD, 640-by-480-pixel screen; video-output jack

PowerBook 520c

Price:	$2,900 then, $430 now
Processor and speed:	68LC040 at 25 MHz
Equipment:	Built-in, 9.5", color dual-scan passive-matrix LCD, 640-by-480-pixel screen (dual-scan's quality is halfway between that of previous passive- and active-matrix color screens); video-output jack

PowerBook 540

Price:	$3,160 then, $440 now
On the market for:	5 months
Processor and speed:	68LC040 at 33 MHz
Equipment:	Built-in, 9", grayscale, active-matrix LCD, 640-by-480-pixel grayscale screen; video-output jack

PowerBook 540c

Price:	$4,840 then, $500 now
Processor and speed:	68LC040 at 33 MHz
Equipment:	Built-in, 9", color active-matrix LCD, 640-by-480-pixel screen (or, in 16-bit color, 640 by 400); video-output jack

All four

Memory:	4MB, expandable to 36MB (70-ns DRAM card required)
Battery:	PowerBook Intelligent Battery; lasts about 2.5 hours (two may be used simultaneously)
System software notes:	Requires System 7.1.1 (and PowerBook 500 Enabler) or later
Weight:	7.1 pounds

The Only Upgrade Guide You'll Ever Need

All of us fall victim, now and then, to latest-and-greatest syndrome. Every time Apple comes out with new Mac models that are much faster than the ones we already own, we get Megahertz Envy, and we start to seek advice on upgrading our own aging machines.

ANSWER MAN

Where the model numbers come from

Q: How does Apple come up with these model names — by drawing numbers out of a hat?

A: Sarcasm duly noted.

Truth is, though, you're right: Apple's model-numbering scheme has never seemed to have much consistency. Why is the 7600 way faster than the 8100? Why is the PowerBook 3400 much more desirable than the higher-numbered 5300?

Apple's naming conventions have come in several multi-year spasms. At the beginning, of course, each Mac had a two-letter name: the SE. The LC. The FX, CX, CI, SI, VX, and so on. The rumor was that the first letter usually represented the size of the case (Compact, Slim) and the second letter stood for the video system — either *Integrated* or *EXternal* (on a video card).

Later came the three-digit era. We had the 475, 580, 650, and so on. In this system, the first digit of the model number consistently referred to the shape of the case: the 5, 6, 7, 8, and 9 families are, respectively, the one-piece built-in monitor models (LC 550 and 580, for example); the thin "pizza-box" shape (Quadra 630, Power Mac 6100); the thicker desktop models tall enough to accommodate NuBus or PCI cards (Quadra 700, Power Mac 7600); the mini-towers (Quadra 800, Power Mac 8500); and the full-height towers (Quadra 900, Power Mac 9500).

This system occasionally broke down, alas; the Quadra 650 actually has the same case shape as the 7-something family, for example, and the Performa 6400 is a full-size tower like the 9-something models. But it was *something*. And when the Power Macintosh debuted, we had *seven* digits to contend with: the four digits of the model, plus the three after the slash that indicated the processor speed.

When Steve Jobs returned to the fold, he did away with all those complicated naming conventions. There were Power Mac G3s and PowerBook G3s. Never mind that these names say nothing about speed *or* case size. Never mind that there was *already* a PowerBook model called the G3 that had nothing to do with the G3 *Series* PowerBooks released in 1998.

At least nobody can claim to be confused by the model line now — only by which computer they actually own!

We have only one piece of advice about upgrading your Mac: Do the math.

Worth Learning
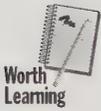
The new models Apple releases every Wednesday aren't just faster; they're also continually less expensive. For years, it made much more sense, financially speaking, to *sell* your old Mac and apply the proceeds to the latest model from Apple. (Advertise in the library, grocery store, user-group newsletter, newspaper, or at the worldwide used-Mac Web page, www.uce.com.) In the process, you get more speed, a new one-year warranty, the latest operating system, a new system CD, and a more up-to-date model. Upgrades from Apple, in particular, usually don't make economic sense.

There are two whopping exceptions to our general "think twice before upgrading" policy. First, upgrading your *RAM* makes plenty of sense, especially given the dramatic drop in RAM prices in recent years. DIMMs aren't a huge investment, and they can give your existing system a lot more power.

Second, upgrading a Power Macintosh model by adding a G3 upgrade card, such as those from Newer Technologies G3, is a no-brainer. These upgrades are so popular, cost-worthy, and speed-inducing that many savvy Mac fans now go out of their way to buy older machines, such as Power Mac 6100s and PowerBook 1400s — just because, after the G3 upgrade card, they'll have spent less money overall than if they'd bought new G3 machines.

Chapter 13

The PowerPC Macs, Model by Model

In March 1994, Apple introduced a completely new breed of Mac — the Power Macintosh. After more than a decade of building Macs around the Motorola 68000, 68020, 68030, and 68040 chips, Apple shifted to a much faster, more powerful microprocessor — the PowerPC chip.

When the Power Macs were first released, Apple promised that *all* future Mac models would be based on the PowerPC chip. Although that didn't immediately prove to be the case — the PowerBook 500 series, the PowerBook 190, and the Quadra 630 series were among the 68040-based machines released *after* the Power Macs — by the fall of 1996, Macs with four-digit model numbers (PowerPC-based Power Macs, LCs, PowerBooks, and Performas) were the only computers still in production. In less than four years, the Power Mac line has grown to over 65 models.

One more note: We've included the most important specs for each model in this chapter. For the real nitty-gritty, however — detailed information about jacks, RAM slots, VRAM, and so on — see the Apple Specs database on the CD-ROM that came with this book.

CD

The PowerPC Chip

Remember, the PowerPC isn't a *computer*. It's just a *processor chip* that can form the *basis* of a computer, whether it is a Macintosh, Windows NT machine, or automobile transmission. This much-hyped RISC chip, which began shipping in September 1993, is the result of joint development by the two former archenemies — Apple and IBM — and Motorola. (For your cocktail-conversation pleasure: Yes, the PowerPC chip *is* faster, cheaper, cooler, and less energy-demanding than the corresponding Pentium chips found in high-end

DOS-based PCs. Furthermore, the PowerPC is a new architecture with plenty of room for growth, as the G3 and G4 models demonstrate. The Pentium chip, by contrast, is already reaching its limits; Intel can't make them faster without adding more circuitry, which explains their incredible heat. Now you know why the guy with the Pentium laptop on the commuter train has charred thighs.)

RISC, by the way, stands for *reduced instruction set computer.* This reduced instruction set is one of the things that makes the chip so fast; the RISC chip uses a more concise, less-convoluted vocabulary of instructions. Therefore, it can handle more tasks in less time than earlier chips could. Furthermore, the RISC chip not only can process instruction data in larger chunks (32 bits instead of 16 on 68040-based Macs), but also handle more than one set of instructions at the same time. Even the *slowest* Power Mac can theoretically run programs six times faster than, say, a Quadra 800.

The original Power Mac models — the 6100, 7100, and 8100 — used the first-generation 601 PowerPC chip and ran at clock speeds of 60, 66, and 80 MHz, respectively. Since then, many new versions of the PowerPC chip have been released: the 603, 603e, 604, 604e, the G3 family, and so on. See "Get your chips straight," later in this chapter, for details.

All about emulation

To experience the exhilarating speed of a Power Mac in all its glory, you must run software specially written for the PowerPC chip. This special software is called *native-mode PowerPC* software. (That term is often shortened to "native," even though the term *native* actually means "written specifically for this chip," whether it's a PowerPC chip or not.) As far as the Power Mac is concerned, every program sold before March 1994 was written in a foreign language.

Obviously, Apple couldn't release a Mac that didn't run existing Mac software. So, to ensure compatibility with existing Mac programs, Apple included an *emulator* program in the Power Mac's ROM. This emulator works behind the scenes, automatically translating the normal Mac code (in which your programs were written) into a format that the PowerPC chip understands. So, despite the fast processor speed, these older programs don't run any faster in Mac emulation mode on the original Power Macs than they would on, say, a Quadra 700.

Fortunately, the emulation picture got brighter quickly. With each generation of Power Macs, Apple improves its emulation. Even in emulation mode, for example, a 300-MHz Power Mac G3 is much faster than the fastest Quadra ever made. (For first-generation Power Mac owners, the Connectix program called Speed Doubler provides an emulation speed-up that ties or even beats Apple's mechanism.)

The emulated OS

Ironically, Apple's *own* software is largely non-native. In its rush to get the Power Macintosh to market, Apple had time to rework only a small percentage of the Mac's behind-the-scenes *Toolbox* (the set of computer

instructions upon which all commercial programs rely and which handles such basic Mac tasks as creating windows and menus) in System 7.1.2.

With each system update, Apple has added a few more nuggets of native PowerPC code to the operating system. By the time System 7.5.3 rolled out in 1996, key components such as QuickDraw, Modern Memory Manager, Desktop Printing, and the Resource Manager were all rewritten in native code. And when Mac OS 8 was finally released in 1997, it included a fully native version of the Finder.

Of course, every Power Mac owner's fantasy would be a *completely* native-PowerPC operating system; with each new system-software release, Apple brings us closer to that goal. (See Chapter 6.). Mac OS x, Apple's next-generation operating system, is PowerPC-native from top to bottom.

In any case, when you run native-PowerPC software on a Power Macintosh, no emulation is required. These programs leave even the fastest Quadra in the dust. Fortunately, the installers for most of today's Mac programs offer a choice of PowerPC version, 68000, or *fat binary* — a single program version that includes both PowerPC and non-PowerPC code, making it take up lots of disk space, but ensuring its compatibility on any Mac.

Look and feel

On the outside, Power Macs look no different from their predecessors, and most existing Mac appliances — printers, modems, CD-ROM drives, and so on — work fine with Power Macs.

However, as new Power Macs have continued to roll off the assembly line, driven by even faster versions of the PowerPC chip, some fundamental changes have taken place. Although the first PowerPC models used the same 72-pin SIMMs used in other recent Mac models, newer Power Macs require 168-pin DIMMs, which transfer data at 64 bits at a time instead of 32. Also, the newest Power Macs are equipped with PCI (Peripheral Component Interconnect) expansion slots — instead of the standard NuBus slots found on most earlier Macs — for items such as video digitizer cards, graphics accelerators, and networking hardware. So although your old laser printer will work just fine with a new Power Mac, the graphics card that came with your 1991 monitor will probably have to be replaced. (See Chapter 34 for more about PCI slots.)

Every Power Macintosh offers audiovisual features previously associated only with the AV Macs (see Chapter 23). These features include speech recognition, CD-quality stereo recording and playback, and, in certain models, an input jack for video (so you can make your own QuickTime movies).

Get your chips straight

Every Power Mac described in this chapter is based on one of six *different* PowerPC chips — the 601, 603, 603e, 604, 604e, or the 750 (G3). But what's the difference between a 601 and a 603? And what makes the 604 different than a 604e? Here's the rundown:

- The **601** was the first PowerPC chip, used in the earliest Power Macs. The first 601s ran at 60 to 80 MHz. Later versions were accelerated to 120 MHz, but that's about as fast as you can reliably speed up a 601 chip.

- Despite its higher number, the next-generation chip, the **603**, *isn't* faster than the 601. It's slower because it has a less efficient *cache* design. (*Cache* is an added sidecar chip of superfast memory that stores, for fractions of a second, information that may be needed again by the main processor.) For this reason, a 603 running at 75 MHz offers about the same speed as a 601 running at just 66 MHz. On the other hand, the 603 is smaller, less expensive, and more energy efficient. Apple used the 603 in the Performa/LC 5200-series and the early 6200-series models.

- Next comes the **603e**, an update of the 603, with a larger chunk of cache memory (32K instead of 16K). This cache makes the 603e a bit faster. Because the 603e is smaller and runs cooler than any of the other PowerPC chips, it's the one found in all the PowerPC-based PowerBooks until late 1997. Apple also uses the 603e in its lower-end desktop Macs, including most 5000- and 6000-series Performas. With its power-efficient design, the 603e can be accelerated more dramatically than the 601, with speeds beyond 200 MHz.

- The **604** chip, found in the first 7600, 8500 and 9500 models, is considerably faster than the 601 and 603 chips. To illustrate: A 604 running at 150 MHz is *faster* than a 603e running at 200 MHz. The 604 has the same size internal cache as the 601, but with a more efficient structure — the 32K cache is divided into two sections, one for instructions and another for data. A 604 chip can run at clock speeds of up to 166 MHz.

- Then there's the **604e**, a revision of the 604. The 604e is actually a much more sophisticated chip. It has twice as much internal cache memory as the 604 and can execute four computer instructions per clock cycle (that is, per tick of the processor's pulsing heart) — twice that of the 603e. It's also smaller than the 604 (and, therefore, it uses less power), squeezing 5.6 million circuits into 148 square millimeters.

- Finally, there's the incredibly fast **750** chip, which Apple calls the G3 (for "Generation 3"). The G3 is inside Power Macs and PowerBooks that bear its name, although the processor in some PowerBooks, equipped with a less powerful cache circuitry, is known as the **740**. The G3 is even smaller and more energy-efficient than the 604e chip, meaning that it can be used in both portables and desktop Macs. The G3 is optimized to handle the type of calculations most frequently used in graphics and business applications at blazing speeds.

All of this emphasizes a point we've made repeatedly in this book: You *can't compare the speed* of Power Macs (or any computers) based solely on clock speed. A Power Mac 8500/180 and Performa 6400/180 both run at 180 MHz — but the 8500 is up to 50 percent faster, because the 604e chip is inherently faster than the 603e. The same principle applies when comparing Macs and PCs. Next time your neighbor brags about the speed of his 300-MHz Pentium II, remind him that a G3 chip is 45 percent faster than the Pentium II chip at any given megahertz.

(A note about this chapter: From the dawning of the Power Mac era until the introduction of the G3 Macs, you could tell how fast a Mac's processor chip ran just by looking at the Mac's name; the number after the slash mark always indicated the Power Mac's clock speed. The official name for the first 9500, therefore, was 9500/132. But Apple tends to release "speed bump" Macs, identical in every respect to their predecessors, but with a marginally faster PowerPC chip. For example, the Power Macintosh 7200/90 was replaced by the 7200/120. For simplicity's sake, we'll leave off the chip-speed designations in most of our model-by-model discussions.

Apple dropped the "slashed" naming convention when its G3 models debuted. If you want to know how fast your Power Mac G3 is — well, consult your sales receipt.)

Power Macs, Model by Model

Power Macintosh 4400

The 4400, introduced in April 1997, was Apple's attempt to offer a no-nonsense, low-frills computer targeted at the small-business market. Don't look for cool multimedia features on this machine; you won't find a stereo subwoofer, video capture jacks, or 3-D graphics acceleration. Instead, you get built-in Ethernet, 3 DIMM slots that let you expand memory to 160MB, and speed.

The 4400 contains the same 603e chip found in the 5400-, 5500-, 6400-, and 6500-series machines. All the 4400 models run at 200 MHz, except for one 160 MHz version that was sold only in Europe (and which also lacks the L2 cache and Ethernet).

Apple billed the 4400 as the Mac for doing payroll reports, not homework. It even looks more serious and businesslike than other models; the boring, boxy case lacks the gently sculpted, bulging curves of most newer Macs (see Figure 13-1). The machine's simplified design — inside and out — allowed Apple to sell this machine at what the time was a great price for a 200 MHz computer — about $1,700.

The uninspiring 4400 wasn't a great success. As the prices of much faster — and better-looking — models dropped in late 1997 and early 1998, the minimalist 4400 became a less and less appealing option.

Price:	$1,700 then, $550 now
Processor and speed:	PowerPC 603e at 200 MHz
Memory:	16MB, expandable to 160MB
Equipment:	1.2GB or 2GB IDE hard drive; 8X or 12X CD-ROM drive; 256K level 2 cache; built-in 2-D graphics acceleration; 10Base-T Ethernet port; 16-bit stereo audio input and output; 2 PCI slots
System software notes:	Ships with 7.5.3; doesn't support System 7.5.5. or 7.6; can be upgraded to 7.6.1 and up

Figure 13-1: The uninspiring look of the strictly-for-business Power Mac 4400.

CASE HISTORY

Tales from the Tech Line, Part I

David Schargel, former president of Aladdin Systems, has a pretty good idea why even the Macintosh isn't easy for everyone.

Years ago, he says, he got a phone call from a frustrated elderly woman who was trying to turn off her Macintosh. David did what he could to talk her through the process, much as the air-traffic tower may try to talk down a novice pilot.

But things weren't going well. Over and over again, Schargel calmly attempted to teach her how to use the Shut Down command (in the Special menu). "OK, Mrs. Speck," he'd say, "do you see the word *Special* at the top of the screen?"

"Yes," she'd say.

"OK," David would reply. "Now just point to that word, *Special*, and press down on the button."

"All right, I'm doing that," Mrs. Speck would say.

David wiped his brow. "All right. So, now do you see the list of commands? Including the one that says *Shut Down*?"

"No," she'd say. "All I see is that word *Special* and the gray screen."

So David would go through it all again. "You're pointing *right* at the word *Special*? And you're *holding down* the button?"

"Yes," she'd say.

Finally, after 20 minutes of this, Mrs. Speck interrupted the cycle. She asked him, "When you say 'the button,' you mean the *big* button, right?"

David's blood ran cold. "Um . . . what . . . what do you mean, 'the big button'?"

She told him, "I'm pressing the *big* button. With one hand. And with the other, I'm pointing at the word *Special*. Right?"

From there, it was only another five minutes before David realized what she'd been doing. For the entire call, she'd been pointing to the Special menu — *with her finger.*

And she had indeed been pressing the button. Not the mouse button — the *big* button.

The spacebar.

Power Macintosh 5200 LC, Power Macintosh 5260, Performa 5200–5270

The 5200, released in April 1995, occupies a unique position in Mac history—it was the first Mac to contain a PowerPC 603 chip.

At first glance, the 5200 looks like a large monitor; it's about the same size as a standard 15-inch screen. But when you look closer, you notice the floppy-disk drive, CD-ROM drive slot, and stereo speakers nestled in along the bottom edge of the machine. Apple fused a variant of the 15-inch Multiscan Display with the CPU case itself, creating one sleek-looking unit that can tilt and swivel (see Figure 13-2).

Figure 13-2: The monitor-as-CPU concept. Looks like a monitor, but houses the entire computer! This case design was used for the LC or Performa 5000 lines.

The 5200 models with the LC designation were available only to schools, while the Performa models were sold to the general public. Once again, Apple altered its naming conventions with this model, tacking the LC designation on to the *end* of the model name instead of the beginning.

And speaking of naming conventions: Shouldn't a Mac that's *newer* than a 6100 have a number that's *higher* than 6100? No, because Apple had fallen into the practice of using the number 5 (at the beginning of a desktop model number) to indicate a one-piece design (Performa 575, 580, 5200, and so on) instead of a two-piece design.

The 5200 was a popular choice with schools because of its low price and compact design. It's also easily expandable. Like the old Color Classic, the 5200 has a pull-out tray for access to its expansion slots, which are very similar to those in the Quadra 630. There's a communications slot for an Ethernet card, a video-in slot for the Apple Video System, a connector for Apple's optional TV tuner, and a single LC-style PDS slot. Into this final slot you can plug the MPEG Media System, a card that allows you to play back full-motion video with CD-quality

sound. The 5260 also includes a slot for a 256K cache card. (On the 5200, 256K of level 2 cache memory is soldered on the logic board and can't be upgraded.) There were four versions of the basic 5200: The 5210 and 5220 were sold outside the U.S., while the 5215 is a 5200 with a 1GB hard drive.

The 5200 is a perfect example of how higher MHz numbers don't necessarily mean better speed. You might think that one of these 75-MHz Macs would be faster than a 60-MHz Mac (such as the Power Mac 6100). Not true; actually, a 5200 runs *slower* than a Power Mac 6100/60. That's because the 603e chip has a less efficient cache design; it has only half the Level 1 cache of the 6100 (16K instead of 32K). So even though the microchip at the heart of the 5200 is running faster in sheer megahertz, the machine as a whole doesn't process data any faster. (As we pointed out in Chapter 12, MHz ratings are useful only for comparisons between *identical chips* — you can't compare the MHz ratings between a 601 and a 603e PowerPC chip, and you can't compare the MHz ratings between a PowerPC and a Pentium.)

After one year, Apple replaced the 5200 with the Power Macintosh 5260 (*without* the LC designation), a revved-up model running on a 100-MHz 603e chip. The 5260, like the original 5200 LC, was sold only to educational institutions. (The 5270 was an identical model sold only overseas.)

Price:	$2,000 then, $500 now
On the market for:	1 year (5200 LC version)
Processor and speed:	*5200:* PowerPC 603 at 75 MHz; *5260:* 603e at 100 MHz
Memory:	8MB or 16MB, expandable to 64MB
Equipment:	IDE hard drive; built-in video; 15" tilt-and-swivel display; internal 4X CD-ROM drive; front-mounted speakers; internal 14.4 Kbps data/fax/voice modem; one PDS slot

Power Macintosh 5300 LC, Performa 5300, 5320

On the outside, the 5300 is exactly the same as the 5200 (see Figure 13-2). The sole difference: It's powered by the 603e chip instead of the 603, and it chugs away at 100 MHz instead of 75. This means, of course, that the 5300 is virtually the same as the 5260, but with more RAM (16MB instead of 8MB). (The 5320 is the same model sold outside of the U.S.)

Price:	$2,400 then, $600 now
Processor and speed:	PowerPC 603e at 100 MHz
Memory:	16MB expandable to 64MB (80-ns, 72-pin DRAM chips required)
Equipment:	Built-in video with 1MB of DRAM; includes Apple Multiple Scan 15"; 4X CD-ROM drive; 28.8 Kbps fax modem

Power Macintosh 5400–5420

Another in Apple's series of for-schools-only computers, the 5400 looks identical to all the other one-piece 5200- and 5300-series models (see Figure 13-2). Inside the case, however, it's a whole new Mac. In developing the 5400, Apple finally scrapped the logic board architecture that had been used in the

Quadra 630 and Performa 5200, 6200 and 6300 models, and replaced it with a new logic board based on the PCI architecture used in higher-end Power Macs. The 5400 logic board includes one PCI slot, 8MB of soldered-on RAM, and 64-bit RAM slots that hold 168-pin DIMMs. (This design is also the basis for the tower-style Performa 6400, discussed later in this chapter.)

With this new design came new speed, with a 603e chip running at 120 MHz. In fact, with a level 2 cache card installed (a $100 option), the 5400 is even faster than a Power Mac 7200/120.

At the same time, the 5400 has the easy expansion options and slick multimedia features found in the earlier 5000-series models: digital video input and output; stereo sound; a bay for a TV tuner; a video converter for output to a television; and a 15-inch monitor that can switch between three different zoom levels. This is a very slick, compact classroom Mac. Apple eventually bumped up the speed of the 5400 to 180 MHz, and sold two spinoffs — the Performa 5410 and 5420 — outside of the U.S. only.

Price:	$2,300 then, $850 now
Processor and speed:	PowerPC 603e at 120 MHz
Memory:	16MB expandable to 136MB (70-ns, 168-pin DIMM chips required)
System software notes:	Requires System 7.5.3 Revision 2
Equipment:	Built-in 15-inch multiple scan tilt-and-swivel color display; 1.6GB IDE hard drive; 4X CD-ROM drive; 10BaseT Ethernet connector; NTSC video converter; two GeoPort-capable serial ports; SRS 3-D sound enhancement; communications slot; TV tuner slot; video input and output jacks

Power Macintosh 5500

At the end of 1997, Apple introduced another one-piece machine, the Power Mac 5500. (The "LC" designation associated with Apple's educational line of computers was dropped in 1997. Today, all desktop models — whether intended for school, home, or business — are simply called Power Macs.) The 5500 is essentially a souped-up 5400 (see Figure 13-2). It comes with a larger 2GB hard drive, a 12X CD-ROM drive, and a revved-up, 225-MHz 603ev chip. The 5500 also is equipped with 3-D hardware acceleration and more VRAM. Oddly enough, the 5500's memory is *less* expandable than its predecessor, with a 128MB maximum, instead of 136MB in the 5400.

Price:	$1,899 then, $1,300 now
Processor and speed:	PowerPC 603ev at 225 MHz
Memory:	32MB expandable to 128MB (64-bit-wide, 168-pin, EDO DIMMs required)
System software notes:	Supports System 7.5.5 or later
Equipment:	Built-in 15-inch multiple scan tilt-and-swivel color display; 2.0 GB IDE hard drive; 12X CD-ROM drive; 2-D and 3-D hardware graphics acceleration; 256K level 2 cache; two GeoPort-capable serial ports; 16-bit sound with SRS 3-D sound enhancement; communications slot; TV tuner slot; video input jack

CASE HISTORY

Tales from the Tech Line, Part II

As consultants and troubleshooters, we've seen it all. We've taken the calls from people whose printer simply wouldn't work (it wasn't plugged in); people who couldn't manage to stick a floppy disk into the drive (a disk was already in the drive); and people whose work disappeared suddenly and without a trace (they had clicked the Desktop, sending their word-processor window to the background).

But that's small potatoes compared to some of the stories we read in the *Wall Street Journal* recently. A technician at Compaq Computers told of a frantic call he received on the help line. It was from a woman whose new computer simply wouldn't work. She said she'd taken the computer out of the box, plugged it in, and sat there for 20 minutes waiting for something to happen. The tech guy asked her what happened when she pressed the power switch. The lady replied, "*What* power switch?"

In the Mac world, we're used to pressing Return or Enter to dismiss a dialog box. In the PC world, however, it's common for the screen to say,

"Press any key to continue." Incredibly, literally *hundreds* of people wind up calling the computer makers to complain that they can't *find* the "Any" key on the keyboard. Compaq is actually considering changing the instruction to "Press the Return key."

Then there's the immortal tale of the help-line technician who asked the caller to send him a copy of the disk that was giving her trouble. Sure enough, several days later, the technician received a photocopy of the disk. (It was a two-page enclosure, of course, because the disk was double-sided.)

Our credulity is stretched nearly to the breaking point, however, by the following story told by a Dell computer technician. As the *Wall Street Journal* put it: "A customer called to say he couldn't get his computer to fax anything. After 40 minutes of troubleshooting, the technician discovered the man was trying to fax a piece of paper by holding it in front of the monitor screen and hitting the Send key."

Power Macintosh 6100, Performa 6110–6118

Introduced in March 1994, the 6100/60 was the cheapest of the very first Power Macs. Its wide, low-slung case looks exactly like that of a Quadra 610 (see Figure 12-8 in the previous chapter). It's equipped with the 601 PowerPC chip running at a 60 MHz or 66 MHz.

Like the 610, the 6100 offers a PDS slot, which (with a $99 adapter, which may no longer be available) can accommodate a NuBus card. (Buyer, beware: The special circuit board on the *AV* model fills the PDS slot, so the 6100/60 AV *can't* accept any additional cards.) Also like the 610, you turn the machine on by pushing a front-panel button, not by using the keyboard. The original price of the 6100, around $1,600, was an incredible value at the time. With the optional $300 cache card, this Mac blazed even faster than the original 7100.

Six months after the 6100 made its debut, it started showing up in department stores under the Performa designation—the very first of the PowerPC-based Performas. As always, the Performa versions of the 6100 (the 6110, 6112, 6115, 6116, 6117, 6118) included monitor, modem, CD-ROM drive, and pre-installed software.

The 6100/60 was replaced in January 1995 by the 6100/66, a nearly identical computer with — as its name indicates — a faster clock speed.

Price:	$1,700 then, $425 now (with AV option: $2,400 then, $500 now)
Apple code name:	PDM
On the market for:	9 months (non-Performa version)
Processor and speed:	PowerPC 601 at 60 or 66 MHz
Memory:	8MB, expandable to 72MB (80-ns, 72-pin DRAM chips, in pairs, required)
Equipment:	Built-in video (uses System RAM); with adapter, slot can hold a 7" NuBus board or PDS board (except on the AV model, whose slot is already filled); optional AV model includes TV input/output, additional video jack; optional cache card provides 15 percent speed-up; Ethernet; 2 GeoPort jacks; records and plays 16-bit CD-quality stereo sound
System software notes:	Requires System 7.1.2 (with PowerPC Enabler) or later

Power Macintosh 6200, Performa 6200–6230

The July 1995-born 6200-series models — six Performas and one Power Mac — were conceived as low-cost computers with a heavy-duty multimedia slant. Each Performa has a 1GB hard drive, 8MB or 16MB of RAM, a 15-inch screen and an internal 4X CD-ROM drive. Come to think of it, a 6200 is nothing more than a 5200 split into two pieces — a monitor and a CPU box — which resemble the Quadra 630 (see Figure 12-12 in the previous chapter).

As usual, distinguishing between the various Performa models is confusing at best. The *only* difference between a Performa 6200 and a 6205 is the speed of the modem (a 6200 has a 14.4 Kbps modem, while the 6205's modem runs at 28.8 Kbps). The next model up *isn't* called the 6210 or 6215 — it's the *6216*. Why? Because it comes with one additional piece of software — Expresso, a calendar/address book. After that comes the 6218, with 16MB of RAM instead of 8 (and, oddly enough, a *14.4 Kbps* modem). The 6220 came with a TV tuner and the Apple Video System, which lets you digitize video from a VCR or camcorder. And the Performa 6230CD came with Apple's $300 MPEG Media System preinstalled, a card that compresses and decompresses full-motion video and 16-bit CD-quality sound.

Like the Quadra 630 series, the Performa 6200 (and the 5200 series, described earlier) have IDE hard drives instead of the usual SCSI hard drive. See Chapters 8 and 33 for IDE details.

Price:	*6200:* $2,000 then, $550 now; *6230:* $3,000 then, $550 now
On the market for:	8 months
Processor and speed:	PowerPC 603 at 75 MHz
Memory:	8MB or 16MB expandable to 64MB (80-ns, 72-pin DRAM chips required)
Equipment:	IDE hard drive; built-in video with 1MB of DRAM; includes Apple Multiple Scan 15"; 4X CD-ROM drive; fax modem

MACINTOSH SECRET

The modem port scandal of '95

Every desktop Mac comes with two standard serial ports in the back — a modem port and a printer port, right?

Not quite. Inspect the back of any Performa with a built-in modem, such as the Performa 6200 or 5200, and you'll see something unprecedented in Mac history — instead of a modem port, there's a little plastic cap with a label that says, "Do not remove." If you pry off the cap and try plugging something into this port anyway, nothing happens. The port is dead.

What's going on here? Believe it or not, the internal Global Village IIv fax modem that comes installed in the communications slot on those models *disables* the external modem port. That's why Apple politely covers the port on those models with a plastic cap.

Apple's thinking on this was: "Who needs a modem port? You've *got* an internal modem." The problem is, of course, modem ports aren't just for modems; they link all kinds of serial devices to your Mac — MIDI keyboards, digital cameras, QuickCams, PalmPilots, and so on. (Then there's the issue of upgrading that modem to a 56K model.)

So what if you need to use that dead modem port on your 6200? There *is* a solution: You can remove the internal modem card from the communications slot. As soon as the communications slot is empty, your modem port springs back to life. (Of course, Apple is quick to point out that any damage caused by the removal of the modem is *not* covered under warranty.)

Performa 6260CD, 6290CD

While seemingly identical to other models in the 6200 series (see Figure 12-12 in the previous chapter), the Performa 6290, introduced in January 1996, is actually a faster and more powerful computer, built around a 603e chip running at 100 MHz. The 6290 package comes with a 1.2GB hard drive, 28.8 Kbps internal fax modem and a 14-inch monitor (instead of the 15-inch monitor that came with the earlier 6200-series machines). The 6260, released six months later, is identical, sold only overseas.

Price:	$2,200 then, $575 now
On the market for:	9 months
Processor and speed:	PowerPC 603e at 100 MHz
Memory:	8MB expandable to 64MB
Equipment:	Built-in video with 1MB of DRAM; includes Apple Multiple Scan 14"; 4X CD-ROM drive; 28.8 Kbps fax modem

Performa 6300–6360

The Performa 6300, introduced in November 1995, is a Performa 6290 with more RAM, a 15-inch monitor, and three additional software programs thrown into the Performa bundle (see Figure 12-12 in the previous chapter). (You can, in fact, turn your 6200 into a 6300 with a $700 logic-board upgrade from Apple. The upgrade — if it's still available — also fits 5200-series and 630-series Macs.)

The Performa 6320, rolled out six months after the original 6300, is a souped-up version of the 6300, running at 120 MHz. However, Apple canned the 6320 in September 1996, just seven months after its release, making it one of the shortest-lived Mac models in history. Then, a month later, the 6360 debuted — a 160 MHz machine that, with its 16MB RAM, 1.2GB hard drive, 28.8 modem, and 8X CD-ROM for $1,500, actually made Windows computers look expensive by comparison.

Price:	*6300:* $2,800 then, $650 now; *6360:* $1,500 then, $700 now
Apple code name:	Crusader
On the market for:	*6300*: 1 year, 1 month; *6320*: 7 months; *6360*: 1 year
Processor and speed:	*6300:* PowerPC 603e at 100 MHz; *6360:* PowerPC 603e at 160 MHz
Memory:	16MB expandable to 64MB (80-ns, 72-pin DRAM chips required)
Equipment:	Built-in video with 1MB of DRAM; includes Apple Multiple Scan 15" display; 4X CD-ROM drive; 28.8 Kbps fax modem

Performa 6400

When the Performa 6400 was introduced in August 1996, it forever shattered the concept of the Performa as a low-end, beginners-only Macintosh. These hefty, tower-style Macs were high-powered machines at the time, with 603e chips running at 180 MHz or 200 MHz. The minitower case resembles a puffed-up 8500, but with softer edges, a rounded, bulging top, and a headphone jack mounted smack in the front panel (see Figure 13-3).

Figure 13-3: Apple's first minitower Performas: tall, sleek, powerful.

Of course, the 200-MHz Performa 6400 isn't as fast as, say, the 200-MHz Power Mac 9500, which runs on a 604e chip. But it *is* as fast as a 150-MHz Power Mac 9500 — and that's still one very fast Performa.

The 6400 doesn't just run faster than earlier Performas — it sounds better, too. Its sound system includes SRS surround-sound and a subwoofer speaker. Plug Apple's TV/FM Radio System into the special expansion bay provided on

the 6400, and you can listen to your favorite radio stations (or watch TV) in full, rich stereo.

The 6400 is also one of the first Performas that's easily expandable. It's got two PCI slots plus a variety of specialized communications and video slots. The Performa 6400 Video Editing Edition, released in October 1996, added an Avid Cinema software suite to Apple's Video System digitizing card, making it easy for camcorder or VCR owners to produce QuickTime movies on the family Mac.

The 6400, by the way, was the last Performa. Apple decided that the term "Performa" was confusing the public, and that customers associated it with the company's older, less-powerful computers. The 6400's successor, the 6500, was called a Power Mac — as are all new models, regardless of the market for which they are intended.

Price:	*6400/180:* $2,400 then, $800 now; *6400/200:* $2,800 then, $900 now; *6400/200 Video Edition:* $950
On the market for:	1 year, 1 month
Apple code name:	Instatower
Processor and speed:	PowerPC 603e at 180 or 200 MHz
Memory:	16MB (or 32MB in the Video Edition) expandable to 136MB (70-ns, 168-pin DIMM chips required)
Equipment:	Eight-speed CD-ROM drive; 1.6GB or 2.4GB IDE hard drive; 256K level 2 cache (with 200 MHz model); two PCI expansion slots, communications slot, input slot for Apple Video System, expansion bay for Apple TV/FM Radio System; 1MB of VRAM; includes Apple Multiple Scan 15"; 4X CD-ROM drive; 28.8 Kbps fax modem

Power Macintosh 6500

The 6500 is a faster, more powerful version of the Performa 6400 (see Figure 13-3). Four variants of the 6500 were introduced in April 1997 — each built around a 603ev chip cranked up to 225 MHz, 250 MHz, 275 MHz, or 300 MHz. Those speeds may have sounded dizzying, but remember that the 603 chip was the slowest PowerPC chip in history. A 6500/**300** runs *slower* than a Power Mac 7300/**200** (because the 7300 has a 604e chip).

Beyond the speed bumps, though, the 6500 is also equipped with a faster CD-ROM drive (12X or 24X) than the 6400, twice the VRAM, 2-D and 3-D graphics acceleration hardware (which the 6400 lacks), and a larger hard drive. Also, all of the faster 6500 models came with a built-in Zip drive — a first for Apple. Because the 6500 doesn't have any RAM soldered on its logic board, it can be expanded to 128MB of RAM, rather than the 136MB supported by the 6400.

Like the 6400, the 6500 was designed to be a multimedia machine, with surround sound enhancement and slots for a TV or radio tuner. The "Creative Studio" edition of the 6500 included video-capture hardware and software.

Price:	*6500/225:* $2,000 then, $1,100 now; *6500/300:* $3,300 then, $1,500 now
Processor and speed:	PowerPC 603ev at 225, 250, 275, or 300 MHz

Memory:	32, 48, or 64MB expandable to 128MB (64-bit-wide, 168-pin, EDO DIMMs required)
System software notes:	Supports System 7.5.5 or later
Equipment:	2, 3, 4, or 6GB IDE hard drive; 12X or 24X CD-ROM drive; 2-D and 3-D hardware graphics acceleration; 256K level 2 cache; 2MB VRAM; two GeoPort-capable serial ports; 16-bit sound with SRS 3-D sound enhancement; communications slot; TV tuner slot

Power Macintosh 7100, 7100AV

This Mac was the middle-priced, midrange model of the original Power Macintosh trio that debuted in March 1994. The 7100 looks like a Quadra 650 (see Figure 12-8 in the previous chapter) and runs at 66 or 80 MHz. It has three NuBus slots and room for a PDS card. As on the 6100, the optional cache card grants you another 15 percent speed increase — a worthy purchase.

This Mac has four RAM slots; as with the other original Power Macs, you must fill those slots with pairs of identical SIMMs. The 7100, like the 6100, was an impressive amount of computer for the money.

The 7100/66 models were replaced in January 1995 by the 7100/80 and 7100/80AV. In addition to providing more speed, the 7100/80 fixed a fairly major problem with the 7100/66 — a glitch that caused slower NuBus performance. Although this slowdown wasn't noticeable with many types of NuBus cards, it was *very* noticeable to those who plugged a video compression card (such as the Radius Spigot Power AV) into one of the slots. The 7100/66's NuBus slot wasn't transferring data fast enough to keep up with the video-capture hardware. The 7100/80's NuBus slots can transfer data three to four times faster than the 7100/66.

Price:	$2,900 then, $475 now (AV model: $3,900 then, $600 now)
Apple code names:	Carl Sagan, BHA
On the market for:	9 months
Processor and speed:	PowerPC 601 at 66 or 80 MHz
Memory:	8MB, expandable to 136MB (80-ns, 72-pin DRAM SIMMs, installed in pairs, required)
Equipment:	Built-in video (uses System RAM) plus PDS video on non-AV model (1MB, expandable to 2MB); three NuBus slots; AV model includes TV input/output and additional video jack (2MB VRAM); optional cache card provides 15 percent speed-up; Ethernet; 2 GeoPort jacks; records and plays 16-bit CD-quality stereo sound
System software notes:	Requires System 7.1.2 (with PowerPC Enabler) or later

Power Macintosh 7200, 7215, 7220

In August 1995, the 7200/75 became the new low-end Power Mac, replacing both the 6100 and 7100 series. Although it's built around the same PowerPC 601 chip found in the earlier Macs, the 7200's faster clock speed makes it noticeably

faster than its predecessors. The first 7200s ran at 75 or 90 MHz. In 1996, a "speed-bumped" version of the 7200 revved its CPU up to 120 MHz. Its bulged-out version of the Power Mac 7100 case design is shown in Figure 13-4.
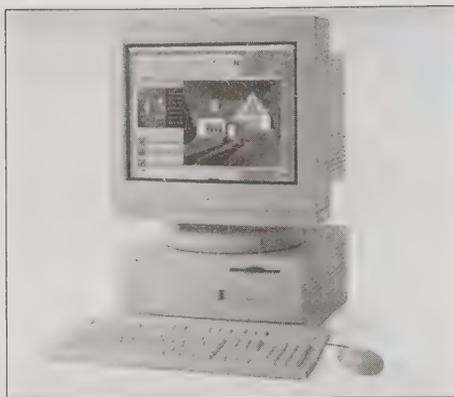
Figure 13-4: The Power Macintosh 7200 case design also houses such Macs as the 7300, 7500, 7600, and the G3 desktop series.

The 7200 may have been at the bottom of the heap among the second-generation Power Macs, but its features rivaled or outshone those of the high-end Macs of even a year or two earlier. Even the basic 7200 included a 4X CD-ROM drive, 500MB hard disk, Ethernet, and three PCI expansion slots (see Chapter 34 for the significance of PCI). The 120 MHz version of the 7200 came with an 8X CD-ROM drive and a 1.2GB hard drive. There was also a DOS-compatible version of the 7200, a 7200/120 with a 100 MHz Pentium processor card pre-installed in one of the PCI slots.

The 7200, along with the other second-generation Power Macs, was one of the first desktop Macs that could be put into *sleep* mode — just like a PowerBook — to conserve energy. When you put a 7200 to sleep, the computer cuts the video signal going to the monitor, which blacks out the screen. The hard drive keeps spinning, however, and the CPU keeps drawing power.

A special version of the 7200/90 with 16MB of RAM was released in January 1996 and sold overseas as the Power Macintosh 7215/90. As for the more recent Power Mac 7220/200 (another overseas-only machine, released in February 1997), it's hardly a member of the 7200 family at all. It's built around the 603e chip (instead of 601) running at 200 MHz, and — get this — it has the same case as a Power Mac 4400 (see Figure 13-1). In fact, feature for feature, it *is* a 4400 — yet another aberration in Apple's wacky model-naming scheme.

Here's an even stranger one: What do you get if you take a 7200/120 and pack it into a Quadra 800-style minitower? A Power Mac 8200, of course! The 8200, released in April 1996, was never sold in the U.S. It's a 7200 in a tower.

Price:	*7200/75:* $1,700 then, $400 now; *7200/90:* $1,900 then, $430 now; *7200/120:* $1,900 then, $500 now
Apple code name:	Catalyst
Processor and speed:	PowerPC 601 at 75, 90, or 120 MHz
Memory:	8MB, expandable to 256MB via four DIMM slots (16MB standard on 120 MHz version)
Equipment:	16-bit stereo input and output; Internal AppleCD 600i quadruple-speed CD-ROM drive (eight-speed CD on 120 MHz models); 3 PCI slots; 1MB of VRAM, expandable to 2MB; level 2 cache slot for optional 256K or 512K L2 cache (256K included with 120 MHz model)
System software notes:	Requires System 7.5.2 (with System Enabler 701) or later; 7200/120 requires System 7.5.3 or later.

Power Macintosh 7300

The 7300, released in early 1997, was Apple's replacement for the inexpensive 7200 models, which the 7300 resembles. The three 7300 models, all PowerPC 604e-based, have speeds of 166, 180, and 200 MHz, respectively (the 166-MHz model was sold only in Asian markets). Like the 7200, the 7300 lacks video inputs. But like all current Macs, the 7300s come ready for business — 32MB of RAM, a 2GB hard drive, a level 2 cache for added speed, 12X CD-ROM, and built-in Ethernet.

Price:	*7300/180:* $2,300 then, $800 now; *7300/200:* $2,700 then, $900 now
Processor and speed:	PowerPC 604e at 180 or 200 MHz
Memory:	32 MB, expandable to 512MB via eight DIMM slots
Equipment:	16-bit stereo output; internal 12X CD-ROM drive; 3 PCI slots; 2MB of VRAM, expandable to 4MB; 256K level 2 cache; built-in Ethernet
System software notes:	Requires System 7.5.5 (with System Enabler 702) or later; can run 7.6.1, but not 7.6

CASE HISTORY

Tales from the Tech Line, Part III

The Dumb User stories we mentioned in a previous sidebar are sad indeed, but we've heard tales on our own that we think match the *Wall Street Journal's.*

For example, a Microsoft friend told us about a guy who wanted to insert one of the old-style 5¼-inch floppy disks into his 3½-inch drive. Frustrated, he simply folded the disk in half—

and then called tech support in disbelief when the drive would not read his mutilated diskettes.

Or this, from Aldus: A woman called the company, irate and screaming, when she learned that PageMaker had no keyboard shortcut that would translate her newsletter into French.

Hmm . . . ⌘-F, maybe?

ANSWER MAN

The cache story

Q. I've noticed that some Power Macs come with level 2 cache and some don't. What the heck is level 2 cache? For that matter, what's level 1 cache?

A. Both terms refer to tiny super-fast memory circuitry that does nothing but feed frequently-used data and instructions to your Mac's PowerPC chip. The larger the cache size, the faster your computer will run.

Level 1 cache is a tiny piece of memory that's built right into the processor chip itself. The size of the level 1 cache depends on the type of PowerPC chip; the 603s has a 16K cache, while the 604e and 750 chips have 64K. At any rate, level 1 cache is etched into the chip; you can't upgrade it.

Level 2 cache is a different story. It's yet another piece of ultra-high-speed memory that retains and feeds data into the PowerPC chip, but this cache isn't a part of the processor chip. It exists in the form of a memory module that plugs into the logic board or, in the case of the newer G3 Power Macs, directly to the CPU card. On most Power Macs, you can upgrade the level 2 cache simply by installing a cache SIMM or DIMM in the appropriate slot. (The SIMM and DIMM chips used in cache slots are *not* the same as the chips you use to upgrade your RAM—they're a special design.) Most Macs can handle up to 256K of level 2 cache, but some can be upgraded to 512K or 1MB.

Power Macs based on the PowerPC 750 (G3) chip use a much more efficient caching scheme called backside cache. With backside cache, the cache module is attached *directly* to the CPU module, bypassing the system bus and providing a much more direct (and *faster*) route between the cache and PowerPC chip itself. (In fact, backside cache is one of the main reasons the G3 Power Macs are so fast.) You can't upgrade backside cache.

The bottom line is that this extra cache memory can dramatically speed up your Power Mac, especially if you're running PowerPC-native software. As the PowerPC chip speeds through its clock cycles, it looks for instructions to execute. The extra bits of memory in the two caches keep the pipeline full, feeding a continuous flow of data to the CPU for processing. With each clock cycle, the microprocessing chip first checks its internal cache (level 1) for instructions, then checks the external cache (level 2). Finally, it checks your Mac's RAM to grab the next instruction. But cache memory is much faster than standard RAM. And on G3 Power Macs, the journey from the backside cache to the CPU is faster and more direct than the route from your RAM chips through the system bus. So the more cache, the steadier the flow of data to the microprocessor.

Our advice: If your Power Mac supports level 2 cache memory and you don't have any installed, add it; a 256K cache chip costs less than $100 and will speed up your machine by 10 to 15 percent. (On the other hand, upgrading from 256K to 512K doesn't produce nearly as much of a performance gain.)

Power Macintosh 7500

The Power Mac 7500 looks identical to the 7200; it shares the same case design (see Figure 13-4). But within that case, the 7500's PowerPC 601 chip runs at a faster 100 MHz. The 7500 is also faster because it has a faster *system bus*—the internal circuitry—which runs at 50 MHz. Thanks in part to the improved system bus, the 7500/100 fitted with a 256K cache card (optional) is actually *faster* than an 8100/110 at most tasks.

The 7500's most distinguishing characteristics, however, are its AV features. This second-generation Power Mac, released in August 1995, has sound and video options previously available only in Apple's special AV models. For example, the 7500 has RCA-style plugs for line-level stereo input and output, which provide much better audio quality than the standard Mac miniplug-style audio jacks. The 7500 also has RCA phono jacks for video input from a typical VCR or camcorder, as well as an S-video input connector for the higher-quality video signal from Hi-8 and S-VHS recorders.

The 7500's video features allow full-screen (640-by-480 pixel) video capture at 15 frames per second. And, like the earlier Power Mac AV models, the 7500 has an internal DAV — a digital audio/video connector — for adding fancier QuickTime compression/decompression cards. (But see Chapter 34 for details on the rarity of DAV cards.)

Despite a winning combination of features, the 7500 was quickly eclipsed by the even faster Power Mac 7600, which replaced it just eight months later.

Price:	$2,700 then, $510 now
Apple code name:	TNT
Processor and speed:	PowerPC 601 at 100 MHz
Memory:	16MB of RAM, expandable to 512MB via 8 DIMM slots; Requires 64-bit-wide, 168-pin, 70-ns DIMMs
Equipment:	Internal 600i 4X CD-ROM drive; 2MB of VRAM, expandable to 4MB; GeoPort fax and telephony software; 3 PCI slots; 10Base-T and AAUI-15 Ethernet connectors; internal Fast SCSI bus; RCA phono jacks for 16-bit stereo audio input and output; minijacks for 16-bit stereo audio input and output; RCA phono jacks for composite video input; S-video input connector; digital audio/video (DAV) connector for video compression/decompression cards
System software notes:	Requires System 7.5.2 (with System Enabler 701) or later

ANSWER MAN

Upgradable processor chips

Q: Didn't I read somewhere that the second-generation Power Macs have a removable processor chip? That I can replace my processor with a faster one next year?

A: Absolutely correct. In certain Power Mac models (such as the 7300, 7500, 7600, 8500, 8600, 9500, and 9600) the PowerPC chip is fastened to a removable circuit board — technically known as a *daughterboard*. When your budget and technology have reached high enough levels, you can pop out the original daughterboard and replace it with one containing a faster PowerPC chip. (This easy upgradability is also a feature of the higher-end Power Computing and UMAX clones.)

As of this writing, inexpensive 604e upgrade cards are available in 180, 200, and 233 MHz flavors — and even G3 daughterboards — from Newer Technology and others.

Power Macintosh 7600

In April 1996, Apple swapped the 7500's PowerPC 601 chip for the faster 604 chip, boosted its speed to 120 MHz, replaced the 4X CD-ROM drive with an eight-speed drive, added a slightly larger hard drive, and rechristened it the 7600. (A 132-MHz version was released four months later.) In every other respect, the 7600 is identical to the 7500. Like the 7200 and 7300, it was available in a DOS-compatible configuration, with a 100-MHz Pentium processor card pre-installed in one of the PCI slots.

In February 1997, the 7600 got the usual speed-bump overhaul. It gained a faster chip (604e at 200 MHz), faster CD-ROM drive (12X), more RAM in its basic configuration (32MB), and larger hard drive (2GB).

Price:	*7600/120:* $3,000 then, $650 now; *7600/132:* $3,000 then, $700 now
Processor and speed:	PowerPC 604 at 120 or 132 MHz, or PowerPC 604e at 200 MHz
Memory:	16MB of RAM, expandable to 512MB via 8 DIMM slots; requires 64-bit-wide, 168-pin, 70-ns DIMMs
Equipment:	Internal 4X (120-MHz model), 8X, or 12X CD-ROM drive; 2MB of VRAM, expandable to 4MB; 256K level 2 cache; GeoPort fax and telephony software; 3 PCI slots; 10Base-T and AAUI-15 Ethernet connectors; internal Fast SCSI bus; RCA phono jacks for 16-bit stereo audio input and output; minijacks for 16-bit stereo audio input and output; RCA phono jacks for composite video input; S-video input connector; digital audio/video (DAV) connector for video compression/decompression cards
System software notes:	Requires System 7.5.3; 200-MHz model requires System 7.5.5 (with System Enabler 702) or later; can run 7.6.1 but not 7.6

Power Macintosh 8100, 8100AV, 8115

At its introduction in March 1994, the 8100 was the fastest personal computer ever made, running native software at an unheard-of 80 MHz and equipped with a 256K cache for even more speed.

On the outside, the minitower 8100 looks like a Quadra 800 (see Figure 12-13 in the previous chapter). Its roomy case houses the same three NuBus slots and room for extra internal storage devices, such as additional hard drives, CD-ROM players, or SyQuest drives. The 8100 with the AV option (a PDS card that adds television inputs and outputs) was the first Mac in several years to cost more than $5,000.

The 8100/100 and the 8100/110 were built on faster-still 601 chips. The only thing more impressive than its speed was its scarcity; virtually no one could find one to buy. (Overseas, the fastest of the 8100-series models was sold as the Power Macintosh 8115/110.)

Apple pulled the plug on the 8100/80 models in January 1995 and discontinued the faster versions nine months later.

Price:	*8100/80:* $4,250 then, $400 now; *8100/80AV:* $5,660 then, $500 now

Apple code name:	Cold Fusion
On the market for:	9 months
Processor and speed:	PowerPC 601 at 80, 100, or 110 MHz
Memory:	8MB, expandable to 264MB (80-ns, 72-pin DRAM chips required)
Equipment:	Built-in video (uses System RAM) plus PDS video on non-AV model (2MB, expandable to 4MB); three NuBus slots; optional AV model includes TV input/output, additional video jack (2MB VRAM); 256K cache card; Ethernet; 2 GeoPort jacks; records and plays 16-bit CD-quality stereo sound
System software notes:	Requires System 7.1.2 (with PowerPC Enabler) or later; 100-MHz and 110-MHz models require at least System 7.5 (with PowerPC Enabler 1.1.1)

TRUE FACT

"Cupertino, we have a problem…"

Early in the spring of 1996, Apple officials were horrified to discover several serious problems in the ROM and cache components used in the 5200 and 5300 LC Power Macs, as well as the Performa 5200, 5300, 6200, and 6300 models. The faulty components were causing frequent system freezes on some models and sudden, random color shifts on the monitors of others. At the same time, a series of distressing hardware-related problems were emerging on the 5300 PowerBook family: Video screen bezels were separating at the seams, AC power connectors were failing, and PowerBooks were dropping off LocalTalk networks.

These weren't the kind of problems that could be fixed with a software update or yet another system enabler. Apple realized it had only one choice: Notify the tens of thousands of customers who had bought the affected models — and fix the problems for free.

Thus was born the euphemistically-named *Repair Extension Program for the Apple Power Macintosh and Performa 5200, 5300, 6200, and 6300* and the *Apple PowerBook Repair Extension Program.* Company officials cautiously avoided referring to either of these programs as recalls. In fact, in an official press release, Apple helpfully explained, "This is a repair extension program, not a product recall."

Recall, repair, whatever — the point is that if you have one of these Macs, you're eligible for a free repair if your model suffers from the aforementioned

problems. The affected desktop models are: 5200/75 LC, 5300/100 LC, Performa 5200, 5215, 5300, 6200, 6205, 6214, 6216, 6218, 6220, 6230, 6290, or 6300. (The problem was fixed in the 5260 and 6320 models before they were released.) Before calling 800-SOS-APPL to schedule a repair, however, download the free program called *5xxx-6xxx Tester* from America Online or Apple's Web page (www.info.apple.com/swupdates). This program tells you whether or not your model has the hardware problem, so you don't wind up schlepping your Mac away only to find out that you had a simple extension conflict. (That diagnostic software tests the *desktop* models, not the PowerBooks.) Local Apple dealers handle the repairs.

The eligible PowerBooks include the 5300, 5300c, 5300ce, and 5300cs; and the 190 and 190cs. To get the free repairs, call 800-801-6024. Apple will send you a freight-paid shipping box so you can send in your PowerBook without charge. (If your PowerBook's serial number has the letters AA at the end of its serial number, it was manufactured since the problems in the construction process were corrected. You have nothing to worry about.)

Apple plans to continue the free repair programs for each desktop and portable model until seven years after it is discontinued. If only that free seven-year warranty applied to our Macs for *any* problem that might arise . . .

Power Macintosh 8200

This tower-style Mac was sold only overseas and is, in essence, a Power Mac 7200 in a different case. See "Power Macintosh 7200" earlier in this chapter for details.

Power Macintosh 8500, 8515

Toward the end of 1995, this was the Power Macintosh everyone wanted — a screaming-fast machine with a stunning range of standard AV features, three PCI slots for expansion, and, at its heart, a PowerPC 604 chip running at 120 MHz. The 8500 thereafter received three speed bumps. In April 1996, two versions running at 132 and 150 MHz were introduced. Then, four months later, Apple replaced the 604 chip with a 604e and again upped the speed, this time to 180 MHz.

The 8500 has the same audio features as the 7500 — RCA-style plugs for 16-bit sound — and can also record video signals via composite and S-video jacks. However, the 8500 goes a step further, offering built-in video *output* capabilities, too, so you can show your QuickTime movies on a TV or record them on your VCR in 24-bit color. (Previous AV Macs were limited to 16-bit color for video output; see Chapter 11 for definitions of these terms.) If you upgrade the 8500's VRAM to 4MB (the maximum), you can display images on your computer screen *and* a TV at the same time.

Thanks to its speed, the 8500 is a QuickTime moviemaking monster. It can capture full-motion video — 30 frames per second — at 320-by-240 pixel size without requiring a compression card or other hardware.

Like its predecessor, the 8100, the 8500 is housed in a tower-style case (see Figure 12-13 in the previous chapter) with three slots (PCI) and a bay for an additional internal drive. As with most of the recent Power Macs, Apple released an overseas-only version of the 8500, too, called the 8515.

Price:	*8500/120:* $4,000 then, $800 now; *8500/150:* $3,600 then, $850 now; *8500/180:* $4,500 then, $925 now
Apple code name:	Nitro
Processor and speed:	PowerPC 604 at 120, 132, or 150 MHz; or PowerPC 604e at 180 MHz
Memory:	16MB or 32MB of RAM, expandable to 512MB via 8 DIMM slots; requires 64-bit-wide, 168-pin, 70-ns DIMMs
Equipment:	Internal AppleCD 600i 4X or 8X CD-ROM drive; 2MB of VRAM, expandable to 4MB; GeoPort fax and telephony software; 3 PCI slots; 512K cache card; 10Base-T and AAUI-15 Ethernet connectors; internal Fast SCSI bus; RCA phono jacks for 16-bit stereo audio input and output; minijacks for 16-bit stereo audio input and output; RCA phono jacks for composite video input and 24-bit video output; S-video input/output connector; digital audio/video (DAV) connector for video compression/decompression cards
System software notes:	120-MHz version requires System 7.5.2 (with System Enabler 701) or later; faster versions require System 7.5.3 or later.

Play your RAM cards right for better speed

Most PCI-based Power Macs (7500, 7600, 8500, and 9500, for example), as well as some high-end clones, offer a unique trick called *memory interleaving* to get more speed. (To find out if your model is among the chosen, consult the program called GURU — it's included with this book's CD-ROM.)

If you examine the DIMM slots inside your machine, you'll discover that they're arranged in two separate clusters, called banks. (See Chapter 9 for details on installing RAM.) When you upgrade your RAM, buy your DIMMs in identical pairs, and install them in identical positions in the two banks. For example, buy two 16MB DIMMs, and install them into the rightmost slot (slot 1) in both banks (banks A and B). Your Mac will automatically gulp down data from the two parallel chips as though it's a single entity, resulting in a speed gain of about 10 percent for some processes.

If you have an odd number of DIMMs to install, data accessed from the single DIMM will be at the normal, noninterlaced speed; all DIMMs that *have* been installed in matched pairs, however, will still benefit from memory interleaving.

Power Macintosh 8600

Despite the 8500's slick multimedia appeal, it has one feature everyone hates: A crowded, convoluted case design that makes adding memory chips or installing PCI cards a major headache. Adding RAM to a 8500 is a nightmarish process of unscrewing the back panel, detaching a tangle of ribbon cables, removing all the PCI cards, and then unscrewing the panel that holds the motherboard in place.

Relief came in February 1997, when Apple re-packed the 8500 into a new easy-open case. Its side panel is a door that pops off; a drive bay inside swings open to give unobstructed access to the expansion slots (see Figure 13-5). Along with the new case design, Apple cranked up the speed to 200 MHz. A new Mac model was born — the 8600.

Figure 13-5: The unfold-able case of the 8600 and similar machines.

Feature for feature, the 8600 and 8500 are otherwise the same, except that the 8600 has a larger hard drive, faster CD-ROM drive, and an optional internal Zip drive. In August 1997, Apple released two even faster versions of the 8600, running at 250 MHz and 300 MHz.

Price:	*8600/200:* $3,200 then, $1,120 now; *8600/250:* $3,199 then, $1,150 now; *8600/300:* $3,700 then, $1,250 now.
Processor and speed:	PowerPC 604e at 200, 250, or 300 MHz
Memory:	32MB of RAM, expandable to 512MB via 8 DIMM slots; requires 64-bit-wide, 168-pin, 70-ns DIMMs
Equipment:	Internal 12X CD-ROM drive; 2MB of VRAM, expandable to 4MB; GeoPort fax and telephony software; 3 PCI slots; 512K cache card; 10Base-T and AAUI-15 Ethernet connectors; internal Fast SCSI bus; RCA phono jacks for 16-bit stereo audio input and output; minijacks for 16-bit stereo audio input and output; RCA phono jacks for composite video input and 24-bit video output; S-video input/output connector; digital audio/video (DAV) connector for video compression/decompression cards
System software notes:	200-MHz version requires System 7.5.5 (with System Enabler 702) or later; faster versions require System 7.6.1 or later.

Power Macintosh 9500, 9500/180MP, 9515

This June 1995 top-of-the-line Power Mac was, weirdly enough, the *first* of the second-generation Power Macs; it preceded the 7200, 7500, and 8500 by two months. It was, therefore, the first Mac to be built around the PowerPC 604 chip and the first Mac with PCI slots instead of NuBus slots.

Originally, there were two versions of the 9500 — 120 MHz and 132 MHz. Subsequently, Apple released a 150-MHz version (in April 1996) and two versions based on the 604e chip (August 1996), one running at 180 MHz and one at 200 MHz. The 604 models were immediately discontinued with the release of these faster machines.

Unlike the other second-generation Power Macs (notably the 7500 and 8500), the 9500 *wasn't* designed to be a multimedia powerhouse. It has neither RCA-style audio jacks nor video input/output jacks. In fact, it has no built-in video *at all.* You have to buy the Apple Accelerated Graphics Card or a third-party graphics card just to hook the 9500 up to a monitor.

What the 9500 does offer, pure and simple, is speed and room to expand; it has *six* PCI slots and can hold up to 768MB of RAM (see Figure 12-14 in the previous chapter). This machine was intended for high-end users who need the 9500's sheer processing muscle for color publishing or multimedia production.

And speaking of sheer processing muscle, the 180-MHz model, officially called the 9500/180MP, was a landmark release — the first computer in Apple's history to offer *multiprocessing.* It came with *two* 604e chips, which work simultaneously to process data. (The MP in the name stands for *multiprocessing.*) One processor handles the Mac OS and controls the stream of information pouring in and out of the computer, handing off other tasks to the second

chip for processing. Obviously, a pair of 604e chips working in tandem in this way can chug through graphics and video data very fast, but software has to be specially rewritten to take advantage of this multiprocessing scheme.

Serveral companies — Adobe Systems, Deneba, Macromedia, Strata, and others — promised to release programs to take advantage of multiprocessing. A multiprocessor-compatible version of Photoshop, for example, was made available. When used with software that supports multiprocessing, the 9500/180MP can handle tasks twice as fast as a single-processor Mac. Still, the idea never caught on; only one other MP Mac was ever released.

Price:	*9500/120:* $4,700 then, $800 now; *9500/132:* $5,300 then, $810 now; *9500/150:* $4,800 then, $850 now; *9500/180MP:* $5,700 then, $950 now
Apple code name:	Tsunami
Processor and speed:	PowerPC 604 at 120, 132, or 150 MHz; or PowerPC 604e at 180 or 200 MHz
Memory:	16MB of RAM, expandable to 768MB; requires 168-pin, 64-bit, 70-ns DRAM DIMMs
Equipment:	Internal AppleCD 600i quadruple-speed (or eight-speed) CD-ROM drive; 2MB of VRAM, expandable to 4MB; 512K level 2 cache; 6 PCI expansion slots; 10Base-T and AAUI-15 Ethernet connectors; one sound-output port for stereo CD audio and one sound input port for 16-bit stereo sound input
System software notes:	Requires System 7.5.2 (with System Enabler 701) or later; 150, 180, and 200 MHz versions require System 7.5.3 or later

Power Macintosh 9600

Like the Power Mac 8500 series, the 9500 series received a complete makeover in February 1997, with an improved case design, faster clock speeds, and, of course, a new name — the Power Mac 9600 (see Figure 13-5). Initially, Apple made three versions: Two single-CPU models, running at 200 and 233 MHz, and a multiprocessor model with two 604e chips running at 200 MHz.

Six months later, Apple released two dramatically faster versions of the same machine, with speeds of 300 MHz and 350 MHz, respectively. These models were faster than earlier Power Macs — not just because of their higher clock speeds, but because they were among the first to include 1MB of *in-line cache* connected to the processor chip. With in-line cache, the level 2 cache memory travels to the CPU along a special high-speed connector that can shuttle data at *twice* the speed of the system bus — 100 MHz instead of just 50 MHz on the older 9500, for instance. (For more on cache, see the sidebar "The cache story" earlier in this chapter.)

Although the 9500 and 9600 are no longer state of the art, at this writing, they're the best hope for moviemaking professionals who long for the G3 chip's speed — but loathe the fact that Apple no longer makes six-slot Macs. Get yourself a 9500 or 9600, equip it with a Newer Technology G3 upgrade card, and you've got yourself the best of both worlds: a Mac that's even *faster* than the fastest G3 machine, and a full array of PCI slots.

Price:	*9600/200:* $3,700 then, $1,000 now; *9600/200MP:* $4,700 then, $1,280 now; *9600/300:* $4,600 then, $1,550 now. *9600/350:* $5,400 then, $1,600 now
Processor and speed:	PowerPC 604e at 200, 233, 300, or 350 MHz
Memory:	32MB or 64MB of RAM, expandable to 768MB; requires 168-pin, 64-bit, 70-ns DRAM DIMMs
Equipment:	Internal 12X or 24X CD-ROM drive; 2MB of VRAM, expandable to 4MB; 512K or 1MB level 2 cache; 6 PCI expansion slots; 10Base-T and AAUI-15 Ethernet connectors; one sound-output port for stereo CD audio and one sound input port for 16-bit stereo sound input
System software notes:	Requires System 7.5.5 (with System Enabler 702) or later; 300 and 350 MHz versions require System 7.6.1

The Twentieth Anniversary Macintosh

Amidst plummeting sales and financial chaos, Apple celebrated its 20th anniversary in February 1997 with the release of a special, commemorative Mac model called the Twentieth Anniversary Macintosh. This special edition model doesn't look or sound like any other Mac (see Figure 13-6). The elegant main unit consists of a flat-panel LCD display with a unique, vertically-mounted CD-ROM drive on the front; a beautifully sculpted keyboard with built-in (and removable) trackpad; and a Bose sound system for outstanding audio quality. Radio and TV tuners were built in. The idea was that this machine would be more than a computer — it would be a full-fledged entertainment center, as high-tech, great-looking, and great-sounding as anything you could buy.

This Mac wasn't meant for everyone. Apple only manufactured 20,000 of them, and originally sold them only through special dealers who would actually come to your house, deliver the computer personally, and set it up for you. The price: $7,500.

Figure 13-6: If the Jetsons had a Mac, it might have looked something like the sleek, limited edition Twentieth Anniversary Mac.

Futuristic-looking and wildly overpriced, the Twentieth Anniversary Mac offers some cool multimedia features, but it never was a state-of-the-art computer. Driven by a 603e chip running at 250 MHz, it's considerably slower than other Macs that cost much less. It's also only got one PCI expansion slot and an active-matrix display that supports thousands, but not millions, of colors.

Despite its uniqueness and collectability, the T.A.M. didn't sell out overnight. In fact, less than 18 months after its original release, the price dropped to $4,000 and by the middle of 1998, promotions for as low as $2,000 were popping up — still a lot to pay for a 603e-based computer with limited expansion options.

Price:	$7,500 then, $1,100 now
Processor and speed:	PowerPC 603e at 250 MHz
Memory:	32MB expandable to 128MB (60-ns, 168-pin DIMM chips required)
Equipment:	12.1-inch active matrix, 600 by 800 pixel LCD display; CD-ROM drive; 2GB hard drive; 256K level 2 cache; one PCI expansion slot; communications slot; S-video input port; TV/FM Radio System; 2MB of VRAM; ATI 3D RAGE II 64-bit graphics and multimedia accelerator chip; 16-bit stereo input and output; keyboard-mounted trackpad
System software notes:	System 7.6.1 or later with System Enabler 704

Power Macintosh G3

These were the dream machines of early 1998 — the first Macs built around the PowerPC 750 chip, a chip that's inherently faster, cooler, and smaller than the 604e chip. Two of the first-generation G3 machines are housed in desktop-style cases identical to the 7300 (see Figure 13-4); they run at 233 and 266 MHz, respectively. The third 266 MHz G3 machine is a minitower that resembles the 9600 (see Figure 13-5). Over the months, Apple gradually substituted faster G3 chips into the same Power Mac models: a 300-MHz model in early 1998, and 333- and 366-MHz models in August 1998.

All the G3 Power Macs offer unprecedented speed. The G3 chips made the Power Macintosh the fastest personal computer in the world in 1998 — a fact Apple celebrated with an ad campaign that contrasted the G3 chip to the older, slower Pentium II chip (which appeared, in the ads, aboard the back of a snail).

However, the speed of the G3 isn't just due to its faster microchip. Nor is the speed a matter of sheer megahertz — as you can tell, because even the 233-MHz G3 outpaces the 350-MHz Power Mac 9600 in speed tests. The entire architecture of the G3 system is different, allowing data to be shuttled through the computer's circuitry at a higher speed and with fewer bottlenecks.

The G3 was the first Mac based on a logic board design that used to be known as CHRP (which stands for Common Hardware Reference Platform). CHRP, developed by Apple and IBM, was originally conceived as a system that would run *your choice* of operating system: the Mac OS, Windows NT, OS/2, or AIX (IBM's version of the UNIX environment). The idea behind CHRP was to create a specification that relied almost entirely on industry-standard hardware, so that Mac-compatible machines could be built less expensively

and by more companies. Other companies such as Motorola and Power Computing enthusiastically started building Mac-compatible CHRP-based models using the PowerPC 750 chip.

But when Steve Jobs returned to Apple in late 1997, he saw devastation of Apple's profits at the hands of the clone makers. And so it was that Apple canceled its licensing agreements with the clone companies, thus dashing any hopes that the standardized CHRP specification would encourage innovation development by other computer manufacturers. The CHRP-based machines from Motorola and Power Computing were yanked from production, and Apple became the sole proprietor of 750-based Macs.

At any rate, the Power Mac G3 design still reflects its origins as a CHRP machine, making much use of industry-standard components. For that reason, the G3s are remarkably cheap to build, and therefore offer incredible speed for a relatively low cost.

Given the fact that the G3s are based on a new chip and a new logic board, it's not surprising that compatibility problems arose as soon as these models were released. Among the key issues:

- Apple's own GeoPort isn't supported.

- You must physically disconnect LocalTalk cables when switching between AppleTalk to Ethernet.

- Some G3 Power Macs don't work properly with Ethernet auto-sensing hubs.

- There are compatibility problems with some StyleWriters and HP printers.

- The contents of a RAM disk (see Chapter 9) are no longer preserved when you restart the computer.

Despite these "gotchas," the G3 Power Macs became instant bestsellers, both at dealerships and from Apple's Web site, which lets you custom-assemble your own configuration. (The stunning 1999 models, the "Blue G3" series, are described on page 548.)

Price (examples):	*G3/233 desktop design:* $1,700 then, $1,000 now; *G3/266 minitower*: $2,400 then, $1,500 now; *G3/300 minitower:* $3,400 then, $2,000 now; *G3/333 minitower:* $3,000
Processor and speed:	PowerPC 750 at 233, 266, or 300 MHz
Memory:	32MB of RAM, expandable to 192MB or 384MB
Equipment:	Internal 24X CD-ROM drive; 4GB or 6GB IDE hard disk drive (4GB or 9GB Ultra/Wide SCSI hard drives optional); 512K level 2 backside cache on processor module; 2MB of SGRAM video memory, expandable to 6MB; 512K level 2 cache; ATI 3D RAGE II+ 64-bit graphics and multimedia accelerator chip; 3 PCI expansion slots; 10Base-T and AAUI-15 Ethernet connectors; mini jacks for 16-bit stereo audio input/output; composite and S-video connectors for video input/output (minitower only); optional internal Zip drive.
System software notes:	Mac OS 8 or higher

Power Macintosh G3 All-in-One

Yes, that — "G3 All-in-One" — is the official name of this one-piece version of the G3 Power Mac. The All-in-One is essentially a 233- or 266-MHz G3 Power Mac packed into a case with a 15-inch tilt-and-swivel color display (see Figure 13-7). As usual, Apple developed this one-piece model for the education market, where ease of set-up is a key factor. It was only available to schools and colleges.

Price (examples):   *G3/233*: $1,500; *G3/266*: $1,800

Processor and speed: PowerPC 750 at 233 or 266 MHz

Memory: 32MB of RAM, expandable to 384MB

Equipment: 15-inch, multi-scan tilt-and-swivel color display; internal 24X CD-ROM drive; 4GB hard disk; 512K level 2 backside cache on processor module; 2MB of SGRAM video memory, expandable to 6MB; 512K level 2 cache; ATI 3D RAGE II+ 64-bit graphics and multimedia accelerator chip; 3 PCI expansion slots; 10Base-T Ethernet connector; mini jacks for 16-bit stereo audio input/output; two front-mounted headphone jacks

System software notes: Mac OS 8.1 or higher

Figure 13-7: The "molar" Mac, shaped like a giant tooth: the All-in-One.

iMac

In the history of Apple Computer, few products generated as much excitement and anticipation as the iMac, which appeared in August 1998.

The compact, two-toned iMac is a totally redesigned one-piece Macintosh with a revolutionary new look — a small, rounded pyramid (or alien egg, as some called it), with elegant curves and a 1950s-inspired retro design. The iMac features translucent colored plastic panels that let you catch shadowy glimpses of the hardware inside the case, mouse, and even cables (see Figure 13-8). The design is so quirky and alluring that you literally have to reach out and touch one when you see it.

The iROM: The secret Toolbox

Every Mac has a blob of software known as the Toolbox. It's a collection of behind-the-scenes computer instructions that tell the Mac how to do the most basic Mac tasks: draw a window, create a menu, and so on.

On all Macs before the iMac, the Toolbox code was permanently encoded into the Mac's ROM chip on its main circuit board. (Contrast with DOS — a *Disk* Operating System — in which the Toolbox-like instructions are, as the DOS name implies, stored on the hard drive.)

The ROM scheme has some drawbacks, however. For example, whenever Apple needs to fix a bug in the Toolbox, it has to create a patch in your System Folder (because it can't very well replace any elements of the permanently etched ROM chip). The result is a slowdown; the Mac first has to get its Toolbox instructions from the ROM chip, then consult your System Folder to see if there are any necessary updates.

The iMac marks the first time Apple, bowing to pressure from software companies and others, put the Toolbox code on the hard drive instead of in a ROM chip. Open any iMac System Folder, and there it is: a file called Mac OS ROM, whose contents get loaded into the Mac's memory when you turn the computer on. (The iMac still has a ROM chip, but it's tiny, containing only the software necessary to let the computer start up.)

For various technical reasons, the on-disk ROM scheme gives a gigantic speed boost to G3-based Macs. We expect to see Apple adopt a similar procedure in subsequent Mac models.

At the same time, the iMac offers state-of-the-art technology, equipped with a 233-MHz (or faster) G3 processor, a 66-MHz system bus, 4GB (or larger) hard drive, built-in 15-inch monitor and a 56K modem — all for $1,300 or less.

Figure 13-8: The sleek, retro-styled iMac features semi-transparent panels that let you peek at the hardware inside.

For long-time Mac users, however, the bigger shock was what the iMac *doesn't* have — no SCSI port, no modem or printer port, and no floppy drive. Instead, the iMac introduced the first Mac Universal Serial Bus (USB) ports, of which it has two (see Chapter 10). The more flexible USB interface replaces the old ABD, serial, and SCSI ports. The good news is that you can plug up to 127 devices into a USB machine, so peripheral expansion is virtually limitless; the catch is that you need adapters to make your existing peripherals work. A quick search of the Web reveals dozens of such adapters for sale — both those that let you use USB devices on older Macs, as well as those those that let the iMac use older peripherals.

Floppy disks are rapidly becoming irrelevant as more and more software comes on CD, but plenty of us still have files stashed away on stacks of floppies. If you want to use floppy disks on your iMac, you have a couple of options: Newer Technology sells a USB-compatible external floppy drive, and Imation's SuperDisk can read standard floppies in addition to its own 120MB-format disks. And if you've managed to wean yourself away from floppies completely, Iomega is happy to sell you a USB-compatible Zip drive.

After scoring an unassailable knockout with this irresistible machine, Apple continued to enhance its prize possession. The 1999 model costs less, has a faster chip and bigger hard drive, and comes in your choice of fruit-flavor colors: Lime, Tangerine, Strawberry, Blueberry, or Grape.

Price:	$1,300 then, $1,200 now
Processor and speed:	PowerPC 750 at 233 MHz (1998 models), 266 MHz (early 1999 models), or faster
Memory:	32MB of RAM, expandable to 128MB
Equipment:	15-inch built-in display with 1024x768 resolution; 4GB (early models) or 6GB IDE hard drive; 24x CD-ROM drive; 10/100Base-Tx Ethernet; built-in 56K modem; two 12Mbps Universal Serial Bus (USB) ports and a two-port USB hub on keyboard; 4Mbps infrared port; built-in stereo speakers with SRS sound.
System software notes:	Mac OS 8.1 or higher

Laptop Power Macs

In the summer of 1995, Apple introduced the first PowerBooks driven by a PowerPC chip — the PowerBook 5300 series. For these models, yet another incarnation of the PowerPC chip was developed — the 603e chip. The 603e is slower than the 601 (the chip in the original desktop Power Macs), but it consumes only a third as much power and has three reduced-power sleep modes. The 603e chip itself also is smaller than the 601, making it perfect for a laptop.

For awhile, you could modify any 1994 PowerBook in the 500 series (the 520, 540, and so on) with a PowerPC chip, of course; but all new PowerBooks are designed from the ground up around the PowerPC processor.

PowerBook 1400 family

After the quality-control problems of the 5300 PowerBook series (see "PowerBook 5300," later in this chapter), Mac fans longed for one rock-solid, reliable, glitch-free PowerBook. And they wanted a CD-ROM built in.

Apple was listening (see Figure 13-9). The PowerBook 1400 debuted in October 1996, filled with crispness and solidity refinements. The trackpad, keyboard, screen-hinge "brake," and overall construction were all improved, and none of the 5300-style quality problems emerged.

Moreover, this PowerBook was the first with a full-size CD-ROM — a 6X CD-ROM unit whose tray slides out of the front edge of the machine (see Figure 13-9). The entire drive pops neatly out of the PowerBook, too, so that you can slide the floppy drive (or VST Zip drive, hard drive, or magneto-optical drive) into its place. Other new features: a flip-up keyboard to make upgrading easy, and a clear plastic cover to replace the usual dark gray top panel. Beneath this plastic panel you can insert a BookCover — a colorful paper insert from Apple; your travel itinerary, phone numbers, or business cards; solar-panels; leather, woodgrain, or stainless steel covers; and so on.

Otherwise, the 1400 is much the same as the former top-of-the-line 5300ce — at a fraction of the price. For example, the 1400 inherits the 5300ce's brilliant, 800-by-600 dpi screen (about the equivalent desktop area of a 16-inch CRT monitor).

Figure 13-9: The PowerBook 1400's new case is actually the same size as its predecessor, the 5300 — but appears slimmer and slimmer, thanks to a clean, sculpted design and tighter-fitting clamshell halves.

The 1400's speed didn't increase as much as many fans had hoped — the standard model uses the same 117-MHz PowerPC 603e processor chip (with no level 2 cache) as the discontinued 5300ce, although a more expensive 133-MHz model (with a cache) is available. Nor did weight (seven pounds) or battery life (two-hour NiMH battery) improve. Otherwise, the 1400's sleek new case design, screen, keyboard, CD-ROM, and trackpad are so well designed that you'll quickly forget you're using a laptop.

A faster 166-MHz version of the 1400, with a 12X CD-ROM and a larger hard drive, was introduced July 1997, but the 1400 remained Apple's low-end PowerBook line until the May 1998 release of four G3 models.

Price:	*1400cs without CD-ROM:* $2,500 then, $720 now; *1400c with 166 MHz processor and CD-ROM:* $4,000 then, $1,100 now
Apple code name:	Epic
On the market for:	9 months (117 MHz model)
Processor and speed:	603e at 117, 133, or 166 MHz
Memory:	12 to 16MB of RAM, expandable to 64MB
Equipment:	Removable Apple SuperDrive/6X, 8X or 12X CD-ROM; 11.3" dual-scan or active-matrix color display (800 by 600 pixels); 750MB, 1GB or 2GB hard drive; enhanced, clickable trackpad; 2 PC Card slots (for two Type I or II PC Cards or one Type III card); Nickel-Metal-Hydride battery; internal slot for 8-bit video or Ethernet card; 16-bit stereo sound input/output ports; built-in speaker and microphone
System software notes:	117- and 133-MHz versions: System 7.5.3 or higher; 1400c: 7.6.1 or higher; 1400cs: Mac OS 8 or higher.

PowerBook Duo 2300c

The 2300 was Apple's first — and last — PowerPC Duo. Like other Duos, the 2300 is super-light — only 4.8 pounds — and has a docking connector that fits all Duo docks and minidocks, as described in Chapter 12 (see "Duo 210/230"). Like the larger 5300-series PowerBooks, the 2300 contains a 603e chip running at 100 MHz.

The 2300 is faster than previous Duo models (although it feels very slow by today's standards). But it also has a better screen — a 9.5-inch active-matrix color display that's bigger and brighter. Unlike the PowerBook 5300, the 2300's trackpad lets you double-click simply by tapping on the trackpad, drag-lock with a down-up-down tap, and briefly lift up your finger during a long drag.

Price:	$3,700 then, $770 now
Apple code name:	AJ
On the market for:	1 year, six months
Processor and speed:	603e at 100 MHz
Memory:	8MB of RAM, expandable to 64MB
Equipment:	9.5" active-matrix color display (640 by 480 pixels); 750MB or 1.1GB hard drive; enhanced trackpad; docking port
System software notes:	System 7.5.2 or higher

PowerBook 2400c

As Apple's PowerPC-based PowerBooks have gotten more powerful and feature-laden, they've also gotten bulkier and heavier. A CD-ROM-equipped PowerBook 3400, for example, weighs 7.4 pounds; and a G3 PowerBook weighs in at close to 8 pounds.

But in May 1997, Apple introduced the smaller, sleeker, lighter PowerBook 2400 — an ultra-compact notebook computer that combines the features of a traditional PowerBook with the slim, lightweight design of a Duo (see Figure 13-10).

Figure 13-10: On the inside, the 2400 is based on the same high-speed PCI architecture as the PowerBook 3400, but on the outside, it's one of the lightest, most compact portables Apple has ever sold.

The 2400 weighs just 4.4 pounds — it's actually lighter than a Duo 2300 — yet it's got the guts of a PowerBook 3400 (described in a following section). That is, it's got a 180-MHz 603e chip; a vibrant, active-matrix 800-by-600 pixel screen; two PC card expansion slots; and a full array of ports: ADB, serial, video-out, SCSI, and sound (in and out). Like the Duo family, the 2400's floppy drive is an external unit that you can leave at home on the desk (although this time, the floppy drive comes with the package). Otherwise, though, the headaches of hunting down a dock are a thing of the past.

The 2400 has no CD-ROM drive, the tiny keyboard requires adjustment (this model was originally designed to be marketed only in Japan), and hooking up the external floppy drive when you need it can be a pain. But when you find yourself dashing between flights at LaGuardia, this sweet, light machine is the PowerBook you want in your shoulder bag.

Price:	$3,500 then, $1,400 now
Processor and speed:	603e at 180 MHz

Memory:	16MB of RAM, expandable to 80MB
Equipment:	10.4" active-matrix color SVGA display (600 by 800 pixels); 1.3GB hard drive; 1MB VRAM; slot for 2 PC expansion cards; built-in speaker; 16-bit sound in/out; ADB, serial, video, SCSI, sound ports; connector for external floppy drive
System software notes:	Mac OS 8 or higher

PowerBook 3400 family

Think of the PowerBook 3400 as a Power Mac 8500 crammed into a laptop. Based on the same PCI-slot architecture found in much of Apple's desktop line, the 3400s were the fastest, most expandable — and most expensive — laptops ever made when they were released in February 1997.

The 3400s are based on PowerPC 603ev chips running at 180, 200, or 240 MHz, making previous PowerBooks (indeed, previous laptops of any kind) look like turtles. Thanks to a 64-bit data pathway running at 40 MHz, data dances through the circuit boards of a 3400 with few bottlenecks, delivering impressive speed.

But the 3400 is about more than sheer speed. Its video features are also outstanding: while the pixels reveal the same 800 by 600 desktop area, they're larger dots, filling 12 inches diagonally (see Figure 13-11). A video output jack is backed by enough VRAM to fill an external monitor's 1024 by 768-pixel image.

Figure 13-11: The hefty, powerful PowerBook 3400 debuted as the fastest laptop in the world.

Of course, all of this speed and multimedia talent didn't come cheap: The 240-MHz version debuted at $6,400, making it one of the most expensive Macs in history. And weighing in at 7.5 pounds, the 3400 isn't the most portable of the portables, either. Nevertheless, demand for the 3400 was high from the moment it was released, as customers clamored for the power of a real PCI Power Mac in a laptop.

Price:	*3400/180:* $4,500 then, $1,250 now; *3400/240:* $6,400 then, $1,600 now
Code name:	Hooper
Processor and speed:	603ev at 180, 200, or 240 MHz
Memory:	16MB of RAM, expandable to 144MB
Equipment:	12.1" active-matrix color SVGA display (600 by 800 pixels); 256K level 2 cache; 1.3, 2, or 3GB hard drive; graphic-acceleration hardware; slot for 2 PC expansion cards; built-in 10BASE-T Ethernet; internal 33.6-Kbps modem; 4 built-in speakers; 16-bit sound in/out; 6X or 12X CD-ROM drive module.
System software notes:	System 7.6 or higher with PowerBook 3400 Enabler

PowerBook 5300 family

Apple introduced PowerPC technology to the PowerBook line in August 1995 with the 5300 series (see Figure 13-12). The four differently named models vary only in their screen technologies (see the specs below); the exorbitantly-priced 5300ce was the first PowerBook to offer the now-boring 800-by-600-pixel desktop. (The physical dimensions are no larger, but the pixels are much more tightly packed; see Chapter 11 for details.)

Three of these models contain a 603e chip running at 100 MHz — the same chip used in the 5300- and 6300-series desktop models. The 5300ce has a faster 603e chip — 117 MHz. Unfortunately, the 603e isn't the speediest chip on Earth, and these Macs don't have a level 2 cache for frequently used instructions. As a result, these PowerBooks are nowhere near as fast as their MHz ratings would seem to indicate. Running native PowerPC software, you get about the speed of the slowest Power Mac ever made (the 6100/60). And running *non*-native software — such as, alas, System 7.5 — these laptops can seem *very* slow.

Figure 13-12: The PowerBook 5300 series and the 190 share the same case design: the first totally black PowerBooks, crammed with more removable pieces and slots and compartments than any Mac before them.

The Assistant Easter egg

Not many people use Apple's PowerBook File Assistant, despite its many wonders (described in Chapter 5). Those who do, however, can play this little undocumented game, discovered by free book winner Robin Poirier.

If you press Option while choosing About File Assistant from the menu, you'll discover a series of names flashing away in the dialog box at warp speed. They continue racing by, too fast to read, until you release the Option key. When you do so, the display will freeze on the one name that happened to be blinking into place when you released the key. It's like an electronic game of musical chairs. Or maybe you'd call it a random name generator?

The 5300s are bigger and chunkier-looking than earlier PowerBooks, but Apple packed much more into them and introduced features that are now standard in the PowerBook line. For example, these laptops have removable floppy drives; you can pop the whole drive out of its bay and replace it with another device — or leave it at home if you won't be needing it when you travel.

In addition to the expansion bay, there are two PC-card slots. You'll need those slots if you want, for example, a modem or Ethernet hardware, because there isn't room inside the case for built-in versions of those features. PC cards, popular on DOS-based laptops, were formerly known, hopelessly, as PCMCIA cards. You can also buy PC cards that are little hard drives, pagers, and so on.

The 5300's innovative built-in infrared transceiver lets you connect and transfer files to any other Mac that has infrared capabilities. (If you don't have an IR-equipped desktop Mac, you can add an IR pod, such as the $70 Netopia Air Dock.) With the 5300's IR transceiver, you don't have to mess with cables to connect to a network; you just point the transceivers at each other (within a range of about six feet) and start transferring files.

The 5300's represented Apple's state-of-the-art PowerBook technology in every respect but one: They didn't have the improved double-clickable trackpad found on the PowerBook 190, 1400, and every PowerBook since — which allows you to double-click by tapping right on the trackpad. (See Chapter 14 for details.)

The PowerBook 5300 also has the dubious distinction of being the first and only Macintosh ever to be *recalled*. Shortly after the PowerBooks were released, Apple discovered that the new lithium ion (LiIon) batteries included with the 5300 models had an unfortunate potential to burst into flames. About 1,000 of the 5300 machines had to be shipped back to Apple, where they were refitted with nonexploding (and shorter-life) NiMH batteries.

Price:	*5300:* $2,200 then, $500 now; *5300c:* $3,700 then, $680 now; *5300cs:* $2,800 then, $530 now; *5300ce:* $6,500 then, $700 now
Apple code name:	M2
On the market for:	1 year, 1 month

Processor and speed:	PC 603e at 100 or 117 MHz
Memory:	8MB of RAM, expandable to 64MB via one RAM card expansion slot
Display:	5300: 9.5", 16-level grayscale, passive-matrix display, 640 by 480 pixels; 5300cs: 10.4", passive-matrix color display, 640 by 480; 5300c: 10.4", active-matrix color display, 640 by 480; 5300ce: 10.4", active-matrix color display, 800 by 600
Equipment:	Removable Apple SuperDrive; internal 500MB or 1.1GB hard disk; 2 PC Card slots (for two Type I or II PC Cards or one Type III card); Nickel-Metal-Hydride battery; 8-bit video output port; 16-bit stereo sound input/output ports; built-in speaker and microphone; trackpad
System software notes:	System 7.5.2 or higher with PowerBook 5300 Enabler

PowerBook G3

Among the glories of the PowerPC 750 chip (see "Power Macintosh G3," earlier in this chapter) is that, by a happy coincidence, it's a power-efficient, cool-running processor. Apple wasted no time, therefore, in packing the jaw-dropping power and speed of its G3 design into a portable.

The first G3 PowerBooks were released at the same time as the G3 desktop models, in November 1997. The PowerBook G3 is housed in the same hefty case as the PowerBook 3400 series (see Figure 13-11). Dramatically faster than any preceding PowerBook, the G3 PowerBook runs at 250 MHz, with a 512K level 2 backside cache and a 50-MHz system — all of which adds up to a laptop that, at the time it was introduced, was the fastest laptop ever made (of *any* kind).

All of Apple's best PowerBook technologies made their way into the G3: An expansive 12.1-inch active-matrix screen, 2MB of VRAM, a four-speaker stereo sound system, a 20X CD-ROM, a VGA video-output port, and built-in Ethernet and modem capabilities.

The G3's only drawback is its weight, which approaches 8 pounds with CD-ROM and batteries loaded. That makes it the heaviest portable Apple has introduced since 1989 — though it's nowhere near the 15.5 pounds of the Macintosh Portable, the original precursor to the PowerBook family.

Price:	$5,700 then, $1,450 now
On the market for:	5 months
Processor and speed:	PowerPC 750 at 250 MHz
Memory:	32MB of RAM, expandable to 160MB via 1 RAM slot
Equipment:	12.1" active-matrix color SVGA display (600 by 800 pixels); 512K level 2 backside cache; 5GB hard drive; graphic-acceleration hardware; slot for 2 PC expansion cards; built-in 10BASE-T Ethernet; internal 33.6 Kbps modem; 4 built-in speakers; 16-bit sound in/out; 20X CD-ROM drive module.
System software notes:	Mac OS 8 or higher

PowerBook G3 Series

Brace yourself: This gets confusing. Just five months after shipping the PowerBook G3, Apple replaced it with three new models called the PowerBook G3 *Series*. The names are nearly identical, but the new PowerBook G3 series computers look and feel nothing like the PowerBook G3 they replaced

All three models in the G3 series feature the best PowerBook case to roll off the Apple assembly line in years — a beautifully contoured, multi-textured enclosure that makes for easy gripping and carrying. These cases are nearly an inch larger in each dimension than previous PowerBooks, making them even less handy for use on an airplane tray table. But the extra size accommodates a choice of bigger, brighter screens and a truly full-sized, superb keyboard. These models also offer longer battery life, faster speed, and — a first on a PowerBook — the all-white Apple logo that Steve Jobs began rolling out in 1998.

These PowerBooks come in three basic flavors (although by ordering from Apple's Web page, you could specify your own combination of speeds and features). The high-end model (originally code-named Wall Street) came with an incredible 14.1-inch active-matrix color display — the largest ever on a PowerBook — and ran at 292 or (in a September 1998 overhaul) at 300 MHz.

The middle model offered a 250-MHz processor (later bumped to 266) and was originally equipped with a 13.3-inch screen — still over an inch larger than the original PowerBook G3 screen. (Bargain hunters noted with glee that this "smaller" screen showed, in fact, exactly the same amount of screen *area* as the much more expensive 14-incher — just slightly smaller. The middle-of-the-line PowerBook got a 14-inch screen anyway during the September 1998 bump-up.)

The low-end model in the series (originally code-named Main Street) runs at 233 MHz and originally came with a 12.1-inch, passive, fast supertwist nematic (FSTN) LCD screen, which isn't nearly as bright and crisp as the other displays. (It was replaced with the delightful 14-inch screen with the 9/98 crop of revved models — and the low-end PowerBook gained a L2 cache at the same time.)

The PowerBook G3 series models represent portable Mac computing at its best, with dual expansion bays that can each be fitted with a battery for double-long battery life; a 66-MHz system bus (instead of the 50-MHz bus found in the first PowerBook G3); and a 20X CD-ROM drive. The September 1998 overhaul even introduced a first-time feature to PowerBooks: the ability to change the screen resolution, despite having LCD screens with fixed pixel sizes (see Chapter 11).

Price (examples):	$2,300 for 233 MHz/12.1-inch model; $2,730 for 250 MHz/13.3-inch model; $5,600 for 292 MHz/14.1-inch model; September 1998 models faster and priced somewhat differently
Processor and speed:	PowerPC 750 at 233, 250, or 292MHz
Memory:	32MB or 64MB of RAM, expandable to 192MB
Equipment:	12.1-, 13.3- or 14.1-inch active-matrix color display; 5GB hard drive; graphic-acceleration hardware; two hot-swappable expansion bays; built-in 10BASE-T Ethernet; S-video out capability on 13.3-inch and 14.1-inch configurations; 4 built-in speakers; 16-bit sound in/out; 20X CD-ROM drive module
System software notes:	Mac OS 8 or higher

PowerPC Mac Secrets ────────────────────────

The extension hazard

Worth Learning

As we've mentioned, software that isn't specifically written for Power Macs can really slow down your machine. It follows, therefore, that non-native *extensions* are particularly problematic — because these programs run *constantly* in the background. Versions of ATM before 3.8, for example, slow a Power Macintosh by as much as 15 percent. Do a clean install of your System Folder (as described in Chapter 36) after months of adding fun junk to your Power Mac, and you're likely to be shocked at how much faster it is *without* them.

CD

So how can you tell if your entire system is being dragged down by a few non-native extensions? Use Conflict Catcher (or the demo, included on the CD-ROM with this book). Open the control panel, click the Report button, and choose Patched System Traps from the pop-up menu. Read the list of your extensions. Those with multiple asterisks beside their names are probably dragging your entire Mac into the slow lane.

You can also use a freeware utility called PowerPeek (available on the Web at www.zdnet.com/mac/download.html). Among other things, PowerPeek lists all the native files on your system, so you know exactly which of your programs are and aren't run under emulation. PowerPeek also flashes an indicator light in the upper-right corner of your screen to tell you whether or not your Mac is running native code. The indicator flashes green when you're running native code and red when you're running under emulation.

Not all slots are created equal

Speed Tip

A Power Mac 9500 has six PCI slots — but don't fill them arbitrarily. Cards in the top three slots run slower than those plugged into the bottom three. The speed difference has to do with the PCI architecture, which requires one controller for every three slots. Evidently, Apple's design taxes one trio of slots more than the other. So if you have a choice, fill your slots from the bottom first for the best performance.

Identifying a chip's type and speed

Apple has used five different types of the PowerPC chip in its Power Macs, running at speeds ranging from 60 MHz to 366 MHz. How can you tell which chip is in *your* Power Mac and determine its actual clock speed? Is there any way to tell what chip is running your Mac just by looking at it?

Yes. Open your Mac's case and take a look at the FCC ID label located on the back of the processor card. The number on the FCC ID label contains nine characters, the last six of which identify the processor and the speed. For example, if the FCC ID ends in 604132, it means you have a 604 processor set to run at 132 MHz. On a G3 machine, the digits on the back of your chip end, for example, 750DIP300CH. That tells you you're running a PowerPC 750 (G3) chip at 300 MHz.

The most expensive Macs of all time

What do the PowerBook 5300ce, Mac Portable, Mac IIci, and Mac SE/30 have in common? They are all among the ten most expensive Macs ever released.

True, by today's standards, you would hardly think of the IIci as a powerhouse computer (or consider the leaden Mac Portable much of a laptop). But at the time of their release, these machines represented Apple's cutting edge—and people paid top dollar to get that new technology into their own hands. Amazingly, people paid $8,800 to get a brand new IIci in September 1989—enough money to buy *five* Power Macintosh G3s!

You could argue that the single most expensive Mac model ever released was the almost universally ignored Mac XL, originally called the Lisa, which predated the original Mac 128K by a full year. (Though many people don't consider the XL a real Mac, it *could* run Mac software—up to System 3.2—and was written up in the earliest issues of *Macworld*.) The Mac XL debuted in January 1983 with a whopping price tag of $10,000.

Here, for the record, are the nine other top-dollar Macs, listed with their original prices:

Model	Released	Original price
Mac IIfx	March 1990	$9,870
Mac IIx	October 1988	$9,300
Quadra 950	May 1992	$8,800
Mac IIci	September 1989	$8,800
Quadra 900	October 1991	$8,500
Twentieth Anniversary Mac	February 1997	$7,500
PowerBook 5300ce	August 1995	$6,500
Mac SE/30	January 1989	$6,500
Mac Portable	September 1989	$6,500

Oh, all right—there *is* a much simpler way. Simply run Clockometer, which is included on the CD-ROM with this book (see Figure 13-13), or your own copy of Apple System Profiler.

CD

Clockometer
NEWER TECHNOLOGY GAUGE SERIES
Processor: PowerPC 750
Processor speed: 300.69 MHz
Cache Bus speed: 150.34 MHz
System Bus speed: 66.82 MHz
Recalculate
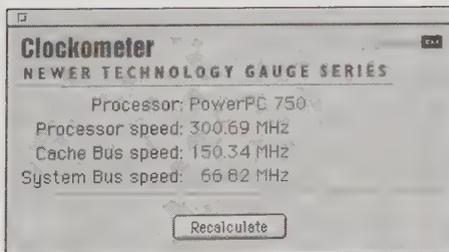
Figure 13-13: The Clockometer program tells you instantly what chip's inside your Macintosh.

Zapping PRAM — the PCI way

We mention zapping your Mac's PRAM (parameter RAM) several times in this book; it's a useful troubleshooting technique for stopping crashes and clearing odd glitches from your system. However, PCI Macs store certain information, such as data related to your video-display options, in *nonvolatile RAM* (NVRAM) instead of PRAM.

So here's how you can zap both at the same time. First, shut down your Mac. Then start it again holding down the usual zap-the-PRAM key combo (⌘-Option-P-R). After you hear the second startup chime, press Shift so that your Mac starts up with extensions turned off. Finally, drag the file called Display Preferences out of the Preferences folder in the System Folder and into the Trash — and restart.

The classic Power Mac car-crash sound

When something goes wrong on a Power Macintosh, you hear neither the four tones of a Mac II-class machine nor the *Twilight Zone* theme of the Quadras. Instead, you hear a horrific digitized recording of a car crash.

Want to hear it for yourself without actually damaging anything? The next time you start your Power Mac, press the Interrupt switch *just* after the machine begins to start up (before the screen even lights up). You'll hear it, all right. (See Chapter 7 for the locations of this switch.)

How to tell if it's a native application

Life sure is confusing now that there are two strains of Mac software — native and non-native. Wouldn't it be nice if you could tell at a glance whether some program was native or not?

You can. Just highlight an application's icon and choose Get Info from the File menu. If, at the bottom of the Get Info window, you see a message about turning on virtual memory (and how much real memory you'll save as a result), you've got native software on your hands.

If not, not.

Memory savings recapped

In case you missed it: The most important money saver on a PowerPC Mac is the virtual-memory oddity. Turn *on* virtual memory, even a little bit (or install RAM Doubler), and each native program requires as little as *half as much memory.* (Look at the Get Info box for a native program and see for yourself!) (See the sidebar "Why a Power Mac needs more RAM" for the reason.) This is one hunk of hard-disk space that's well worth trading away.

When 168 doesn't equal 168

It's obvious that you can't use the 72-pin SIMMs from your old Power Mac 7100 in your new G3 machine, which requires 168-pin DIMMS. Here's what's not so clear: The 168-pin DIMMS from any earlier Power Mac, such as the 7300 or 8600, fit perfectly into the slots of new G3 Power Macs — but you can't use them, either. The memory chips may look the same and have the right number of pins, but the G3 machines use a special kind of memory called *synchronous dynamic random-access* memory that's incompatible with earlier models.

The same is true, by the way, of video memory (VRAM); you can't use VRAM from earlier Power Macs in the G3 models, even though the DIMMS contain the same number of pins.

A deeply buried credit

You need MacsBug, Apple's debugging software for programmers, for this one. (It's available on this book's CD.) Ask MacsBug to display memory address 40B2E280.

CD

You'll get a testimonial to Gary Davidian, the Apple software genius who single-handedly wrote the 680x0 emulator code that lurks inside every Power Mac — and just may have saved the company.

TRUE FACT

Why a Power Mac needs more RAM

When you double-click a program's icon, the hard drive spins and your Mac reads the program's code into memory.

The PowerPC chip doesn't handle this hard-disk-to-RAM process the same way the 68000-series chips did. Older Macs could read *pieces* of program code from the hard disk — and get rid of that code — as necessary. For example, when you print, your program loads the printing code from the hard disk into RAM; when the printing is finished, those printing instructions are dumped out of memory.

Power Mac programs, on the other hand, can't read and dump code fragments as necessary. Their code is stored on the disk as one giant chunk. That's one of the reasons a native PowerPC program requires much more RAM than its non-native counterpart; such a program must load *all* program code into RAM when you launch it. As a result, a native program takes longer to load.

Fortunately, there's a way to let a Power Mac handle a native program in a code-fragments-as-necessary fashion, just as non-native programs do. Turn on Virtual Memory (see Chapter 9). Set that virtual memory amount to 1MB or 2MB more than your actual installed memory. Or, alternatively, install RAM Doubler.

Because virtual memory, at heart, is a method of rapidly swapping information between the hard drive and RAM, it works beautifully on a Power Mac. Microsoft Excel, for example, requires *6,500K less* memory when virtual memory is on or RAM Doubler is installed.

The much-too-colorful Mac

Purchasers who laid down multiple thousands to become adopters of Power Mac technology are in for a fascinating surprise. On almost any Power Mac except the 6100, a couple of important choices are missing from the Monitors' control panel — namely, any color settings below "256." You read that correctly: these Macs *cannot* be switched to black-and-white! And not just black-and-white — you can't switch these Macs into 4- or 16-color mode, either.

The only people who'll care are those several million Mac fans who have games and CD-ROM discs that require 16-color or black-and-white modes to run. Or people who want fast screen redraws. Or people who want to take screen-capture PICT files that aren't enormous on the disk. Or, . . . oh well.

On first-generation Power Macs, this quirk kicks in if your monitor is connected to the Power Mac's *extra* video jack (the PDS video card's output), not the built-in video jack at the bottom of the case. On later Power Macs, you've only *got* one video jack — you're stuck forever in 256 colors or higher.

We called one of our friends in the engineering department at Apple. We got the classic response: "It's a feature, not a bug."

(What he meant, of course, was "It's less expensive this way.")

What to do with those old NuBus cards

Bought one of those spiffy new PCI-slotted Power Macs? Got a couple NuBus cards left over from your previous Mac? You don't have to dump them. You can buy a NuBus expansion chassis from Second Wave (512-329-9283) that lets you use those cards in your PCI slots.

Ditch the 68000 code

Some of today's programs are labeled "fat binary," meaning that they contain the program code for *both* kinds of chips — both the PowerPC and the previous 68000 series. Of course, if you have only a PowerPC, you might not care to waste all that disk space for storing code you'll never use. And if you have only a Quadra, you could happily do without the bulky PowerPC code. Yet, a fat-binary program is represented by only a single icon! How can you strain out the unneeded code?

Use PowerPCheck, included on the CD-ROM with this book. It strips out the kind of code you don't need, leaving you with a much smaller, more compact program.

CD

Macintosh Clones: Here and Gone

In 1994, Apple announced that it would begin licensing System 7.5 and the PowerPC Macintosh ROM chips to other computer makers so that they could begin building *Macintosh clones*. No single event in history produced more shock waves in the Mac community.

Until 1995, the only computers on Earth running Mac software were the Macs that had rolled off Apple's own assembly line. Now, Apple would let other companies license its trademark operating system. Suddenly the distinguishing characteristic of a Mac was no longer to be the computer itself but the Mac OS. (This change of philosophy was first visible in System 7.5.1, which started up not with the traditional "Welcome to Macintosh" message but the updated "Mac OS" logo. And then came System 7.6, where the first command under the menu said "About This Computer" instead of "About This Macintosh.")

In sanctioning such a change, Apple hoped that its loss of the monopoly on Mac-making would be recouped by collecting licensing fees — and the further proliferation of Macintosh. Apple also hoped that by carefully controlling and supervising the clone-maker licensing process, it would spare the world from the kind of compatibility nightmares caused by a clone-making free-for-all (as happened in the DOS world).

The clones arrive

By the spring of 1995, the very first Mac clones arrived, manufactured by a small, new, Texas-based company called Power Computing. Shortly thereafter, Radius, DayStar Digital, Motorola, APS, and UMAX started bringing clones to market. All the clones were 100 percent Mac-compatible — although Apple wouldn't allow any of them to be *called* Mac or Macintosh.

In fact, clone sales took off as most clone companies offered more powerful machines at prices that were 10 to 15 percent less than equivalent Apple machines. And because companies like Power Computing were selling computers in far lower quantities than Apple, the cloners were often able to include the very latest and fastest PowerPC chips — at a time when these chips were still too scarce for Apple to consider. After just two years, about 25 percent of all new Mac systems were being sold to companies *other* than Apple.

Apple backs out

By the summer of 1997, Apple realized it was in serious trouble. The clone makers *weren't* expanding the Mac OS market, as Apple had hoped — they were simply stealing sales from Apple itself. At first, Apple tried to make up for some of the loss by negotiating higher licensing fees from the clone manufacturers. Ultimately, though, under the direction of acting CEO Steve Jobs, the company decided it needed to get out of the licensing business; it just couldn't compete.

In September 1997, Apple bought out the largest of the clone makers, Power Computing. Apple said it would not license future versions of the Mac OS to companies that wanted to compete in Apple's markets.

One by one, the clone makers abandoned their Mac-compatible operations, selling off their inventory at incredible closeout prices.

Licensing was just another in a series of financial disasters for Apple, but from the customer's point of view, the Mac clone era was great. Mac clones generally offered the same variety of video options, ports, expansion slots, and drives found on genuine Power Macs, at better prices and with greater availability. During those two and a half glorious years, it was easier than ever to buy a great Mac at a great price.

PowerPC and the Future

The G3 Power Macs are certainly a major leap forward, but some of the biggest leaps are yet to come. Already, IBM has demonstrated G3 chips that run as fast as 480 MHz.

If that's not fast enough for you, IBM and Motorola also have prototypes of the next-generation PowerPC *G4* chip, which is expected to run at speeds of 1,000 MHz or more. (We envision having no problem adapting our lingo to measure computer speeds in *gigahertz* — GHz — instead of *mega*hertz.) One proposed technology calls for a new G4 chip that will combine up to four PowerPC 750 processors *on a single chip*.

As Microsoft might say, where do you want to go today — *fast?*

Chapter 14

PowerBooks Exposed

In This Chapter

▸ Working with the PowerBook screen

▸ Secrets of the wall outlet — and the battery

▸ The RAM-disk, four-hour-battery trick

▸ Sleep mode

▸ Getting files in and out

▸ Infrared networking

▸ SCSI disk mode

If you own a PowerBook, you already know the secret little pleasures associated with this strain of Macintosh: the hedonism of lying in bed with the computer on your stomach; the joy of getting off the plane having done meaningful work en route; and the intoxicating pleasure of sitting someplace cool, green, and shady while word processing to the accompaniment of birdsong until you run out of battery juice.

A Little History

It wasn't that it never dawned on Apple to make a laptop Macintosh. Believe us, they wanted to. The ill-fated, *16-pound* Macintosh Portable was evidence of that.

No, the complicating factor was miniaturization. A computer has lots of components inside, and some of them are pretty chunky. (Pop off the lid of a regular Mac and you'll see what we mean.) Each PowerBook part is a fraction of the size of the equivalent desktop-Macintosh component. The hard drive is the size of a deck of cards; the main circuit board is a quarter of the size of a regular Mac's; even the RAM boards are smaller.

The most brilliant aspect of the PowerBook is that, in a thousand glorious ways, it's exactly like a regular Macintosh. The software works the same way; the interface is the same; the keyboard shortcuts are the same.

Yet life with a PowerBook is distinctly different from life with a desktop Mac, even if you never budge from your desk. This chapter is dedicated to documenting the ways in which PowerBook computing *differs* from desktop computing:

- Working with flat-panel screens

- Working from a wall outlet

- Working from a battery

- Working off a RAM disk

- PowerBook sleep mode

- Getting information into and out of the PowerBook

- Actually traveling with the PowerBook

We'll consider these topics one by one. For specifics about particular PowerBook *models,* see Chapters 12 (for models 100 through 540) and 13 (for PowerPC models).

The Screen

If you've ever seen a PowerBook's screen and realized that it's about as thick as a Wheat Thin, you understand that it can't work the same way as a standard Mac monitor. Regular TV-sized CRT monitors must be a foot deep or more, to allow the electron gun a little perspective on its target, but a PowerBook's screen is only a fraction of an inch thick.

Mac Basics

PowerBook screens use a completely different technology, having nothing to do with the weight, depth, or electrical emissions of its desktop relations. It's called LCD, for liquid-crystal display. That's the same technology used in digital watches, PalmPilots, and other portable electronics.

Liquid crystal is an oily goop that's sandwiched between two pieces of plastic. This liquid is filled with crystal molecules that, under normal circumstances, naturally curl into a spiral. This twisted macaroni shell of molecules effectively blocks any light reflected from the back of the screen (from the light bulbs at the edges of the screen or from daylight). The result is a dark spot (shadow) on your screen.

But when an electric current is applied to the electrodes in front and back of this liquid sandwich, the molecules uncurl. They align themselves into a parallel pattern perpendicular to the screen. In other words, they no longer block the light, and a bright spot appears on your PowerBook screen.

Strange But True

If you were able to follow this description even somewhat, then you'll realize that a *light* pixel on a PowerBook screen is *on,* and a dark spot is a pixel that's *off.* That may seem backward, but that's how it goes.

All of this sandwiching and layering fits between a couple of plastic or glass plates that can be a fraction of an inch thick. That's why LCD screens are flat

panels instead of deep boxes (like CRTs). These flat-panel screens also require less power — another plus for use in laptop computers.

We've heard it predicted that *all* computer screens will one day be flat-panel displays. In addition to their small size, weight, and thickness, they also don't emit the ultra-low frequency radiation that CRTs do (a rumored, but unproven, health hazard). You can buy flat-panel monitors for desktop Macs today (one was even built into the Twentieth Anniversary Mac), in fact, but they're pricey.

Passive-matrix, dual-scan, and SFT screens

Passive-matrix screens adorned the lower-priced PowerBook models of old: the grayscale Duo 210 and 230; PowerBook 160, 165c, 190, and 5300; and so on. Passive-matrix screens have one big advantage: They cost about $800 less than *active-matrix* screens, described later. Passive screens have a couple of downers, however: *submarining* and *ghosting*. Submarining occurs when the cursor fades out for a moment if you move it too quickly. Remember those twisted-molecule strings? It takes them ⅛ second to twist or untwist. If there's anything on the screen moving faster than eight pixels per second (such as the cursor or a QuickTime movie), the passive-matrix LCD screen won't be able to keep up. The result is blurring.

Ghosting is something you'll have to see on a PowerBook to understand. It's the faint outline of window edges, or some other rectangular structures, superimposed on the screen. You can eliminate these ghosted horizontal and vertical lines by fiddling with the contrast controls, but that sometimes makes what you *want* to see (your text, for example) too light.

A passive-matrix screen also requires more adjustments than more-expensive technologies. Every time you start PowerBooking in new lighting or at a new temperature, you must fiddle with the contrast and brightness controls on the corner of your screen/lid.

Passive screens also have a narrower viewing angle than active ones. If you try to view the PowerBook screen when you're not seated directly in front of it, you see a sort of bluish, milky cast over the whole screen. That's good when you want privacy. That's bad when you're trying to demonstrate something to onlookers.

Technically, Apple doesn't even make PowerBooks with straight passive-matrix screens anymore. More modern PowerBooks in the less-expensive lines (5300cs, 1400cs, the least expensive G3) come with newer, hybrid technologies called *dual-scan* or *SFT.* The idea is the same — the image isn't quite as crisp and responsive as active-matrix or TFT screens — but they look a lot better than the original passive-matrix screens.

Active-matrix and TFT screens

The higher-priced PowerBooks (180, 540, 5300c, 1400c, Duo 280 and 2300c, 3400, most G3s, and so on) feature an *active-matrix* LCD screen. *Every single pixel* on an active-matrix screen has its own private transistor. This transistor

is responsible for turning its one pixel on (black) or off (white). On a passive-matrix screen, by contrast, one row of electrodes goes horizontally, and another vertically; their intersections govern the surrounding pixels — an arrangement that offers much less precision.

As a result, an active-matrix screen has none of the visual problems associated with passive-matrix ones. There's no ghosting and no submarining. As *another* result, however, these screens are expensive to create, and they drain the battery faster than passive ones.

Furthermore, if any individual transistor goes on the fritz, its corresponding pixel is simply broken. (Apple says the pixel is *voided.*) It's almost inevitable, actually; a PowerBook G3's *TFT* screen, for example, has 480,000 individual pixels or more! The point is that you're pretty lucky to get an active-matrix screen on which every single pixel works. Apple won't even give you a replacement screen unless you've got more than *five* voided pixels.

PowerBook Screen Secrets

Passive-matrix: Angle is everything

Worth Learning
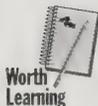
Fiddle with the angle of your PowerBook's lid/screen just as much as you do with the contrast and brightness controls! Looking straight into the faces of those tiny pixels can make a dramatic difference in the screen's overall clarity.

Passive-matrix: Contrast is also everything

In any given lighting/temperature situation, you can definitely find one contrast setting that makes the passive-matrix screen look absolutely great. Get into the habit of adjusting that little knob, slider, or button every time you whip open the lid.

Passive-matrix: Finding the cursor

Not only is cursor submarining sometimes a problem on passive-matrix screens, but it's even possible to lose the cursor altogether!

We have two solutions. The hard way is to roll the trackball or trackpad furiously in the upper-left direction. Eventually, your cursor will have no choice but to bump into the corner where the Apple menu is — and stop. You can now start hunting for it, knowing exactly where to look and wasting no additional time.

CD

A better solution, in our opinion, is to use special software. Some people enjoy that old shareware gem called Googol Eyes (included on the CD-ROM with this book), which puts a pair of cartoony eyes on your Desktop — and they always look at the cursor, wherever it may be. Various other shareware and commercial programs are designed more specifically for PowerBook screens, offering animated "Here I am!" cursor displays when you press a certain keystroke.

Why a PowerBook two-page display isn't really one

If you've perused our Monitors chapter, you know the beauty of today's 16-inch monitors: With only a visit to the Monitors control panel, you can change resolutions. A 16-inch multisync monitor can show 640 by 480 largish pixels (like a 14-inch display), 800 by 600 smaller pixels (like a two-page display), and so on.

Not until the September 1998 G3 PowerBooks could you change screen resolution—and even then, you get only a simulated, blurry-edged version of the additional resolution choices.

Working from a Wall Outlet

What's great about the PowerBook is that you don't need a separate recharger. The battery is recharging whenever the computer is plugged into a wall outlet, whether you're working on it or not. (Recharging is faster, of course, when the computer isn't on.)

And where might the PowerBook-wielding soul find publicly available juice? It's not always easy, but it's almost always possible. Look for electrical outlets in every airport, train station, and bus terminal. When you're desperate for a charge—between legs of a flight, say—they're a godsend. (Amtrak trains, by the way, have two seats per car equipped with outlets. Board early!)

To find these cherished AC dispensers, you need to think like a janitor. These outlets, after all, are provided for the benefit of the vacuum cleaners and floor polishers that come out in the middle of the night. In various airports, we've found outlets as follows:

- At the bases of pillars
- Next to the gate agent's station, set into the floor
- In the wall, but covered with a silver spring-loaded cap to hide it
- Right next to the door you use to go onto the plane, at waist height
- In the airport's overpriced fast-food joint or bar

The battery gauge

Every modern PowerBook comes with a tile on the Control Strip (see Chapter 4) that serves as a battery gauge/recharging indicator. Its numerical "time remaining" display is an extremely useful gauge. You may have noticed, however, that this meter's accuracy falls somewhat short of NASA-quality precision.

Because the chemical changes in a battery are subtle and unpredictable, and because your work's demands on the PowerBook components change from moment to moment, software gauges of this type face an impossible task. Still, if you study this Control Strip tile's behavior, you'll get an appreciation for how hard it tries to be accurate. For example, when the hard drive isn't spinning, the "time remaining" counter revises itself upward. Launch a Microsoft product, and the counter slips downward. In each case, it's extrapolating, making calculations as though your current power usage will remain steady (see Figure 14-1). It's saying, "Well, if you're going to keep using your PowerBook *this* way . . ."
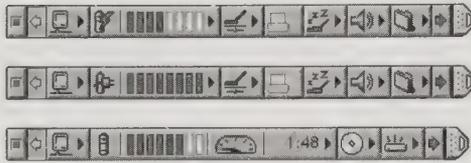
Figure 14-1: The three states of the Control Strip battery meter. Top: the lightning-bolt-on-a-battery icon (left) is the international symbol for: "I'm charging now, thank you." Middle: "I'm plugged in, but I'm all finished charging your battery." Bottom: "I'm running on battery, and this is my latest guess as to how much time you have left."

Power-outlet Secrets

Nothing to fear when overseas

Your PowerBook is smarter than you think. It can automatically convert foreign countries' currents into the correct voltage for the PowerBook, be it 110V or 220V.

Before you go abroad, however, you still need to buy a *plug adapter* for the country you'll be in. It doesn't affect the current—we're talking about a simple prong adapter that lets you plug the PowerBook into a differently shaped outlet. (The outlets in most of Europe and Australia, for example, look like Figure 14-2.)

Parts of Africa, Europe, Greenland, Iceland, former USSR countries, Middle East, etc.

England, Hong Kong, Parts of Africa

Australia, New Zealand, South Pacific, China

Figure 14-2: Outlets around the world. Get the appropriate plug converter here before you travel. (Japan uses the same outlets as the U.S. two-prong variety.)

You'll discover that it's much easier to find the appropriate converter plug *here,* before you travel — at a Radio Shack store, for example — than to find one in the foreign country itself.

Juice in the air

There used to be a little *razor outlet* in every plane's bathroom. Pathetic though it feels to sit there on the little toilet just for the sake of eking out some work while drawing juice from that razor outlet, it's an emergency measure that's worth remembering.

We're mixing our tenses in this paragraph deliberately, because over the last ten years, airplane designers have stopped putting razor outlets in those bathrooms. (Obviously, they've never owned PowerBooks.) About a third of the planes we've traveled on in the last couple of years still have outlets on board. But the newer planes have no outlets, nowhere, nohow. If your last PowerBook battery dies, your hope dies with it.

A few new planes actually have outlets built into the *armrests,* which, to PowerBook owners, is like a gift from the gods. Unfortunately, they're available only in the business-class or first-class sections. Jeez...the rich get all the breaks.

Tales of the Trackpad

Beginning in 1994, the PowerBook trackball gave way to a *trackpad,* which lets you control the cursor by dragging your fingertip across a two-inch plastic square. We know plenty of people who still mourn for the easy-to-control, easy-to-understand trackball; we can only assume that those people forgot how often the trackball got clogged with grease and lint.

Anyway, today's trackpad — present on all 1995-and-later PowerBooks except the 5300 line — lets you do more than move the cursor. It also lets you click, drag, and double-click without even touching the "mouse button" clicker.

Many PowerBook owners are unaware of these options; out of the box, the PowerBook comes with these clicking features turned off. But visit your Trackpad control panel (see Chapter 4) to view the three checkbox options:

- **Clicking:** When this option is on, you can tap the trackpad surface itself to "click the mouse button," and even double-click on the pad to "double-click."

- **Dragging:** This option lets you "drag the mouse" by tapping *down-up-down* (and moving your finger once it's down for the second time); you can even continue a long drag after lifting your finger briefly.

- **Drag lock:** The little animated demonstrations in the Trackpad control panel don't make quite clear the function of this third option. In fact, this option is by far the most useful, because dragging icons across the screen

or adjusting sliders is otherwise very difficult on a PowerBook. When this third checkbox option is on, you can double-click the trackpad—but if you begin moving your finger after the second click, the Mac *doesn't* "release the mouse button" when you lift your finger—even if you lift it forever. You must tap the trackpad again to release the drag lock.

Trackpad secrets

The importance of dry fingers

In general, we actually prefer the trackpad (which never needs cleaning and never sticks) to the previous PowerBook models' trackball. However, the trackpad's value plummets if your hands are damp, sweaty, or lotioned ... the electronic sensors inside the pad get confused.

Several easy solutions await. For example, if you have just washed your hands and are in a hurry to use the PowerBook, put a piece of paper over the trackpad as a temporary measure. Alternatively, you can tape some plastic food wrap over the pad surface—or buy a Teflon appliqué from a mail-order company. Finally, there's Apple's Trackpad Climate Control extension, introduced with the PowerBook 1400; it makes the trackpad less susceptible to inadvertent cursor jumps because of damp fingers or high humidity.

Trackpad tricks

Place your fingers on the trackpad about a half inch apart, and move them, very slightly, in opposite directions. Interestingly, the cursor jumps from one side of the screen to the other. It's a useful trick for moving the cursor long distances quickly and accurately—especially if you've hooked up a larger external monitor to your laptop.

Strange
But True

Here's a related tip, useful for leaping into the corners of your screen. Try moving your thumb or index finger a short distance in the direction of the corner you seek—and then tap the pad with the next finger, an inch or so from where your first finger was moving. You've just fooled the thing into thinking that your finger covered the distance between the fingers instantaneously, and it teleports the pointer directly to the corner of your screen.

Working from a Battery

Working with a PowerBook on battery power is a strange feeling. Even if you're not trying to beat a deadline, the battery's imminent demise can leave you *feeling* as though you are. Unless you have extra batteries, you feel the continuous tick of the clock at your back. Every time you hear the hard drive whir into action, you wince because you know it's draining precious battery

power. You fiddle with the backlighting to the lowest readable level, hoping you'll be granted a few extra working minutes.

If you want to study our battery-conservation secrets, please do; we're confident that the secrets to follow include every suggestion ever made for conserving juice. Every now and then, though, remember that a new PowerBook battery doesn't cost more than a couple of nice dinners for two. If you ask us, a second or a third PowerBook battery is a better investment than worrying yourself sick.

Meet your battery

Apple never stops fiddling around with the design for batteries. Each new generation of battery can power your laptop for yet another 30 minutes or so.

The batteries have been based on three basic chemical energy-cell types. There was the *nickel-cadmium* batteries (or NiCad, as on PowerBooks 140 through 180); the *nickel and metal hydride* ones (NiMHs or NiHy — the Duo and PowerBook 500 lines); and, more recently, the *lithium ion* (LiIon) batteries of the 3400 and G3 models.

All these batteries have one thing in common, both with each other and with batteries in PC laptops: They don't deliver nearly the amount of power advertised. The original NiCads (advertised to last 2–3 hours per charge) typically ran a PowerBook for about an hour; the state-of-the-art LiIons deliver about two hours of actual use. Of course, your mileage will vary depending on how much you use your hard drive and backlighting — but we'll get to that.

Charging batteries

PowerBook batteries are good for about 500 chargings. That, as well as common sense, should be your cue to use the PowerBook plugged into the wall whenever possible. You'll know when it's time to retire a battery when it just won't hold a charge anymore (see the next section for details). At that point, don't chuck this lethal chunk of toxic chemicals into the garbage; return it to an Apple dealer, who will send it back to Apple's battery-recycling program.

Consider affixing a label to each of your batteries that gives a battery number (1, 2, or 3, say) and the date you started using it. Keeping track of the numbers will make it easier to rotate your batteries evenly. And if a battery doesn't seem to be able to charge anymore, the date will help you decide whether or not old age is the problem.

The memory effect

The memory effect is a problem unique to the NiCad and NiHy batteries (and, to a lesser extent, in NiMH ones). Here's the symptom: Your battery suddenly

loses half its capacity, and you find that it now gives up the ghost after, say, 45 minutes.

Mac Basics

The problem is the memory effect. If you repeatedly discharge a battery only to its halfway point, eventually the battery "remembers" that point, and decides that that halfway point is the *full* point. Thereafter, it quits recharging itself when it reaches that halfway point, thinking that it's full.

This effect — which affects camcorder batteries too — has been overpublicized. Actually, avoiding the problem is simply a matter of letting each battery run down completely every couple of months. That's also how you cure a battery that does exhibit the memory effect — just leave the Mac on, even past the low-battery error messages, until it shuts itself off. (They call this "deep discharging." Today's PowerBook models include a program called Battery Recondition that does this reconditioning for you.)

Then plug it in. The battery will have forgotten its halfway-recharging point and will recharge fully.

CASE HISTORY

The Sticky Trackball Solution

Reader Jay Lindell sent us the following secret. Not only is it a good one, but his e-mail was so hilarious that we decided to reprint it here just as he sent it:

"After a Whopper or a handful of Cheez Doodles, your trackball is going to respond about as nimbly as Bob Dole to a telephone call from Hillary Clinton. The reason? Oil and particles transferred onto the ball then form a slippery gook when they're transferred to the roller pins under the trackball.

"Apple's fix: take an Exacto blade and GENTLY SCRAPE THE GUNK OFF THE ROLLER!!! Scrape...slash...shades of the shower scene from *Psycho!* If you sneeze during the process, you better start thinking of a good one you can tell 800-SOS-APPL!

"Here's what I told Apple Tech they should be telling 'the rest of us' instead: Take a 2-inch piece of magic Scotch tape (better than the shiny/yellowy kind). Remove the trackball's retaining ring and the ball itself. Hold the tape between your thumb and index finger at the top of one of the long ends, sticky side down. Place the tape inside the hole with the area closest to your fingers directly over (but not yet touching) one of the rollers. Take the index finger from your other hand and gently press the tape against the roller. Now, just pull up on the tape. Take a look...isn't that amazing?! The tape lifts the gunk off just like magic!!

"Repeat the process a few more times, being sure to use (and, therefore, make) a different 'lane' on the tape. Repeat this procedure, with a new piece of tape, if necessary, on the other roller. Scotch tape also works great for cleaning that saturated-fat film festival sitting invisibly on the trackball itself. How's that for non-invasive?

"Apple must have liked it...they sent me a FREE locking ring. I'm guessing they gave it to me because of how easy it is to clean the trackball assembly this way...OK, and because of my refusal to stop working and eating lunch at the same time."

Battery-swapping notes

Worth Learning
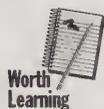
When you swap batteries on a PowerBook, start by putting the machine to sleep (except on 100-series models, which you must shut down or plug in). You don't have to be frantic. You have four minutes. Everything in memory, everything on the RAM disk, any programs you were running, will all remain exactly as they were, even with no battery or power cord in the machine.

Conserving battery power

As we've mentioned, the best experience using a PowerBook is when you don't have to worry about battery power at all. That's why PowerBooking in a hotel room is a completely different experience than PowerBooking on the plane.

Still, we've got dozens of techniques for saving juice. We'll pile them into one section — the secrets coming up. In the meantime, remember that the biggest consumers of your battery power are:

- The hard drive spinning

- The neon light bulbs that illuminate the screen

- The built-in modem, if you have one

- AppleTalk

Most of our battery-saving secrets dwell on these items and ways to reduce their appetites.

The most dramatic trick of all, however, is the RAM-disk trick. This is a powerful method for doubling or tripling your battery charge's life span, and we've provided step-by-step instructions on how to do it. In fact, we've devoted a separate section to it, following this more general discussion of battery-saving tips.

Battery Secrets ─────────────────────────────■

Cut down on the backlighting

The screen is a big consumer of your battery juice. When you're desperate to conserve power, dim the backlighting.

Along the same lines, consider not using the backlighting at all. This is feasible under two conditions: first, when you're sitting in sunlight (see "The Screen," earlier in this chapter, for the rationale). Second, if you're sitting in a meeting and typing notes, it sometimes works well to type blind, even when you can't see what you're typing.

Finally, you can use the PowerBook control panel or, on the PowerBook G3 series, Energy Saver control panel (see Chapter 4) to control automatic dimming of the backlighting. You can set the dimming to take place after a specified

period of inactivity on your part. After the lighting blinks off, it comes back on when you move the mouse or touch any key.

Avoid the hard drive I: Minimize usage

The hard drive is the #1 power drain on your PowerBook. When it's not actually spinning, however, it hardly drains anything at all. It drains the most energy when it's just *beginning* to spin. Your goal, therefore, should be to make the drive stop spinning whenever you won't be needing its services for a minute or so, but to let it continue if you'll be needing it shortly.

Obviously, this presents a question: How can you tell if it *is* spinning? If you're in a quiet place, you can *hear* it grind into gear. If the environment is noisy, the Control Strip (see Chapter 4) gives you a visual indicator.

The best way to avoid using the hard drive is to load your entire work session onto a RAM disk, as described in the next section.

The next best way is to use programs that don't need to read information from the hard drive very often. If there's no need to read from the hard drive, then the drive can sit idle. Unfortunately, Microsoft programs, among the most popular, are also among the most disk-intensive. Word, for example, seems to make the disk spin all the time.

Of course, using the Save command from *any* program makes the disk spin, but that's a little juice worth expending.

Avoid the hard drive II: Control its spin-down

The PowerBook or Energy Saver control panel lets you specify when you want the hard drive to "spin down" (stop spinning) — between 30 seconds and 15 minutes after the last time its services were called for. Better yet, if you know the secret, you can make the drive spin down on command!
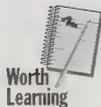
For example, PowerBook Assistant Toolbox extension, included with System 7.5 and built into later system versions, lets you make the hard drive stop spinning when you press ⌘-Shift-Control–zero. Likewise, the Control Strip gives you a pop-up Spin Down command. In either case, at your command, at any time, the hard drive will stop spinning.

Suppose, for example, that you've been merrily typing away into ClarisWorks for 20 minutes. The hard drive has been peacefully still. But now you want to save your work. The drive spins into action, and your file is saved. Now, as far as you're concerned, the drive's work is done. If left unattended, the drive will continue to spin needlessly for another 15 minutes (or whatever period you've specified using the PowerBook control panel). That's 15 minutes of hard-drive juice you can save yourself by pressing the predefined keystroke instantly after saving.

Rest mode (processor cycling)

The PowerBook's brain, as on any Macintosh, is its CPU (its Motorola 680x0 or PowerPC chip). As with a human being, the more alert and lively it's asked to be, the more energy it uses up.

Therefore, PowerBooks have a clever battery-saving feature that kicks in without your even knowing about it. When you're not actually doing something with the keyboard or mouse (when you're just reading something, for example), the laptop goes into *processor rest*. That is, the CPU quits worrying about doing calculations and more or less dozes off, requiring less energy and producing less heat. In fact, the PowerPC processor can kick into additional levels of chip-sleep, known as nap and doze modes, to conserve power.

Then, upon the least indication that you're at it again (such as a touch on the trackball or keyboard), the CPU springs to full alertness.

All of this happens behind the scenes. You'll probably never even notice this on/off CPU cycling unless you're running, say, a screen saver and it seems to be acting sluggish.

Speed Tip

You *will* notice it, however, if you're trying to play QuickTime movies. Turn Processor Cycling off for a huge movie-playback smoothness improvement. If you have a PowerBook control panel (see Chapter 4), open it. While pressing the Option key, move the Easy/Custom switch into the Custom position. (If it was *already* in that position, slide it to Easy and then back to Custom.) You'll see the secret new option ("Allow processor cycling") listed as a checkbox.

If you have Mac OS 8.1 or a PowerBook G3, you may have the enhanced Energy Saver control panel instead (again, see Chapter 4). In that case, open it, click the Advanced Settings button, and turn on the "Allow processor cycling" checkbox.

PowerBook G3 battery savings

The same enhanced Energy Saver control panel (see the previous secret) brings a few extra battery-saving options to the lightning-fast PowerBook G3 series. (Again, they're hidden in the Advanced Settings panel.)

In addition to "Allow processor cycling," you're now offered a "Turn off the PowerBook display instead of dimming it" choice. Turn this option on for the ultimate screen saver: after the amount of inactivity you've specified on the main Energy Saver panel, the laptop will cut power to its screen completely, saving you considerable battery juice. (Press a key to turn the screen back on.)

"Turn off power to inactive PC Cards" is the same idea, except this time, after the period of inactivity, the laptop shuts off current to any inserted PC cards (such as modems or Ethernet cards). This, too, saves power, except that not all PC Cards are designed to respect the PowerBook's "power down!" command.

ANSWER MAN

Why are there all those warnings?

Q: When my battery is running down, the Mac starts displaying warning messages about finishing my work and putting the PowerBook to sleep. Why does it show three? Which one should I believe?

A: Actually, each message is more dire than the previous. And these days, you don't *get* three warnings — only two.

The first message says it's going to dim your screen. (It's trying to squeeze out a little more work time for you.) You can basically ignore this message. You've still got about 12 minutes of solid work time left. In System 7.6.1 and later, this message doesn't even appear.

The second warning — the first warning in System 7.6.1 and later — says: "Very little of the battery's reserve power remains." Now it's serious. At this point, you've got about three minutes of power left. You should, as the message suggests, save your work and prepare to change batteries (or stop working).

The last warning, one of our favorites, announces: "The Macintosh will go to sleep within 10 seconds. Good Night." (We *love* that.) This message does *not* mean you'll lose any work or data. It simply means that the machine is going into sleep mode. All your work will remain frozen in RAM, just as it was when it went to sleep.

After this, you have two days in which to find a power outlet and plug the machine in. When you do, or when you swap in a freshly charged battery, you can wake up the PowerBook to find everything just as you left it.

Finally, the "Reduce processor speed" slows down your blazing G3, which normally runs at several hundred MHz, down to a feeble 25 MHz. To be sure, this is an option of dire last resort — but when the battery warnings are coming up, you've got an hour to go before landing, and all you're doing is finishing your speech, this option may be just the ticket.

Battery shelf lives

Different kinds of PowerBook batteries have different shelf lives. The old PowerBook 100's lead-acid battery retains its charge for several months. More-recent batteries, according to Apple, lose their charge much faster; after about two weeks on the shelf, their charge is half gone. (Presumably they would be completely depleted after a month or so.) Batteries are extremely temperature-sensitive, though, and high or low temperatures can affect shelf life dramatically.

A word about AppleTalk . . . and battery juice

When one of your cheerful authors first purchased his PowerBook, he was truly appalled at the short life of each battery charge: about an hour and ten minutes. *This* was three hours!?

At last a friend alerted him to the problem: AppleTalk. This feature's purpose in life is to monitor your printer port for signs of network activity—which requires electricity. Fortunately, AppleTalk may be switched on and off from the Chooser desk accessory—or with the Control Strip.

Worth Learning

So when you want the most out of each battery charge, turn AppleTalk *off!* It saps nearly 30 minutes out of any battery charge.

AppleTalk . . . and Remote Access

If you're using Apple Remote Access (ARA—see Chapter 30), don't follow the advice of the previous secret. To make ARA (and some other kinds of network software) work, you need AppleTalk to be on. Yet you *don't* need your Mac to expend power by monitoring your printer port.

The handy solution: Open your Network or AppleTalk control panel and select Remote Only as the network type. You've just turned on the *software* features of AppleTalk, thus permitting ARA to work, without turning on the *hardware* features that drain your battery.

Another power user: The modem port

If your PowerBook has a built-in modem, keep in mind that it's drawing battery power whenever a terminal-style program (such as Zterm or MicroPhone) is open. When you finish reading messages on your favorite BBS, for heaven's sake, quit Zterm (or whatever front-end program you use) when you log off. (Fortunately, graphics-based programs—such as America Online, MacCIM, and so on—do *not* present this concern. They access your modem port only when you're actually connected to those services.)

A few more battery-sappers

A few other PowerBook items use up battery power. They're all fairly negligible, but here they are:

First, there's the speaker. Use the Control Strip (or the Sound control panel) to set the volume to zero if you're absolutely maniacal about conserving juice. Then there's the ADB port, better known as the keyboard/mouse jack. It, too, sucks its life-giving power from your Mac's battery when something's plugged into it.

And don't forget the monitor jack. Actually, only Duo dock or minidock owners need to think about this, because the full-sized PowerBooks can't even drive an external monitor *unless* they're plugged into the wall. Duo owners may simply want to note that an external monitor draws some power from the battery, even if it (the monitor) is plugged into a wall outlet.

Battery savings and virtual memory: Mutually exclusive

The PowerBook manual is pretty clear on this topic. So is the software; if you try to turn on virtual memory in the Memory control panel, a message appears warning you that this isn't a great idea.

Mac Basics

The point is that (as you can read in Chapter 9) virtual memory is a scheme that treats the hard drive as extra RAM. It requires the hard drive to spin continuously. As a result, your battery is likely to drain *very* fast.

However, we pooh-pooh the notion that you shouldn't use virtual memory on a PowerBook! Virtual memory is *great* on a PowerBook: when you're at your desk at home and trying to run three big programs; when you're in the hotel room, touching up a giant presentation; and so on. And on all PowerPC-based PowerBooks, turning on virtual memory permits *file mapping,* the speed and memory enhancement described in Chapter 9 (in the sidebar "Why Power Mac programs are RAM hogs").

It's only to be avoided when you're desperate to conserve battery power. Whenever you're plugged in, turn on virtual memory, by all means! This is especially true with PowerPC-based PowerBooks, which run faster when virtual memory is on.

Of course, the best solution of all is RAM Doubler, which provides the memory-adding features without the battery-using downside.

When a battery is depleted

Recharge your battery as soon as possible. If you leave a battery empty for longer than two weeks, especially in a hot place like a car trunk, it may never be rechargeable again.

The Four-Hour Charge (RAM-Disk) Trick

If you learn nothing else from this chapter, learn the following technique. It's a time-saving, money-saving, easy-to-use gadget that you already own.

As you discovered in Chapter 9, a RAM disk is a portion of memory that's treated like an additional floppy disk in some imaginary drive. It shows up on your Desktop like any other disk icon (see Figure 14-3).

However, a RAM disk is made of RAM. It delivers information to the Mac's brain with immense speed (when compared with real disks). RAM disks were invented, then, for the purpose of speeding up Mac computing.
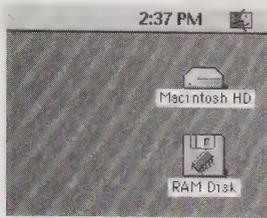
Figure 14-3: A RAM disk is, as far as the Mac is concerned, just another disk. But there's a big difference.

But the RAM disk, while still speedy, is useful on the PowerBook for a different reason: It's a disk that requires no additional electricity. Because the largest consumer of PowerBook battery power is the hard drive, the less you make the hard drive work, the longer a battery charge will last. When you let your RAM disk do the work of a hard drive, you render the hard drive completely redundant, and it *never* needs to spin. A fresh PowerBook battery will last a *minimum* of four hours per charge using this secret.

Here, step by step, is how the RAM-disk trick works. We're not saying it's simple to set up; we're just saying that it's amazing.

Choosing the right size for the RAM disk

First, figure out how much disk space your RAM disk contents will require. In other words, how many files are there on your hard drive that you want to use?

You're *always* using the System Folder, whether you like it or not. You'll probably also want to use a word-processing program. Finally, there's the document you're working on.

Look at those files on your hard drive and add up their sizes on disk. (Do a Get Info on each.) Unless your PowerBook is spectacularly rich in upgraded RAM, you won't be able to fit a *full-sized* System Folder, word processor, and document onto a RAM disk.

You can, however, create a stripped-down System Folder that *will* fit. Use the System Folder on your Disk Tools disk, for example. It has no control panels, no fonts to speak of, and few frills, but it's tiny; a System Folder from the Mac OS 8 Disk Tools disk takes up only 987K.

That's a *really* stripped-down system, however, without printing features, control panels, fonts, or anything else. You might also consider building a stripped-down System folder manually by selecting components from your hard drive's existing one; you won't crunch a Mac OS 8.5 System folder into much less than 12MB, but older system versions are much smaller.

As software goes, Microsoft programs are terrible choices for use on PowerBook RAM disks. They're huge, and they need to read information from the hard drive a lot. Still, if you're strapped, Word 5.1 is OK; if you really want

to get serious, consider Mariner Write (Mariner Software, 502-222-6695), which is only 990K on the disk.

To help you compute the size of your RAM disk, here are three typical scenarios. We'll assume your document is 100K.

Duo 250 with 8MB of RAM

Pleasantly outfitted System 7.1 folder =	2,200K
Microsoft Word 5.1 =	880K
A document =	100K
Grand total =	3,180K; make a **3,500K RAM disk**

PowerBook 1400 with 12MB of RAM

Very basic System 7.5.3 folder =	3,800K
ClarisWorks 4.0, no support files =	2,000K
A document =	100K
Grand total =	5,900K; make a **6,200K RAM disk**

PowerBook G3 with 32MB of RAM

Very basic Mac OS 8.1 folder =	10,900K
ClarisWorks 5.0, no support files =	2,700K
A document =	100K
Grand total =	13,700K; make a **15MB RAM disk**

In each of those scenarios, you'll note that we've allotted some extra disk space. The RAM disk, even though it's actually a piece of memory, behaves as though it's a *disk*. Your Mac still has to have enough free memory left over to *run* the programs on that disk.

In the PowerBook G3 example, then, you start with 32MB of memory. Of that, Mac OS 8 itself uses 6.5MB just to turn on the Mac (we're talking memory now, not disk space). Subtract the 15MB that your RAM disk eats up. ClarisWorks runs in 2.5MB of memory. Grand total: about 24 megs of RAM used. You still come in well under your 32MB total.

Creating the RAM disk

Open your Memory control panel and click the RAM Disk On button. Move the slider to the right, and then drag the little handle to the right (see Figure 14-4) until it shows the size you calculated.

If you have RAM to spare, make the RAM disk slightly bigger; a little extra space is always good to have. After you set the slider to the size you want, close the control panel and restart the Mac.
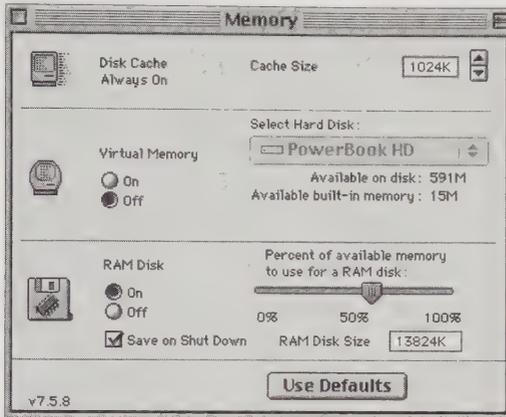
Figure 14-4: The little RAM disk size slider slides toward its target size, 15MB, which is about the minimum size for a G3-based PowerBook System folder.

Loading up the RAM disk

When you restart the Mac, you see the RAM disk at the right side of the screen (see Figure 14-3). Wild, isn't it? Now you're ready to copy your files onto it. For best results, we're going to suggest that you put five items there:

1. Drag your specially prepared, stripped-down System Folder onto the RAM disk (from your Disk Tools floppy, for example). *Be sure to include any system enabler your PowerBook needs to run!* And if you're using Mac OS 8 or 8.1, *be sure to include the Appearance extension!* Your Mac won't start up without it.

   You'll notice that things copy very quickly onto a RAM disk; memory is a much faster medium than any disk. (Alternately, you can use the normal System Installer to install a Minimal System onto the RAM disk. Apple recommends this method, but we find it to be a great deal of effort.)

2. Copy your word processing program and your documents onto the RAM disk.

3. Make an alias of your hard drive. Copy the alias onto your RAM disk. You'll use this later to bring your hard drive *back* onto the screen; details to come.

4. Finally, for added convenience, choose Control Panels from your   menu. Make an alias of the Startup Disk control panel, and put that alias onto your RAM disk, too. Your finished RAM disk should look something like Figure 14-5.

If not everything fits, then you may have to do some further stripping down; ditch some fonts, trash your Preferences. Double-click the RAM disk's System *file* and throw away some sounds and keyboard layouts.
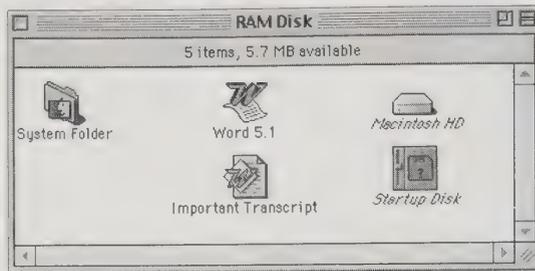
Figure 14-5: Your PowerBook RAM disk, ready to fly.

If everything fits, though, be smart: preserve your carefully assembled RAM disk contents on your hard drive, so that you can re-create this setup the next time you want to use it. Here's how:

■ Check your Memory control panel. If you see a "Save on Shut Down" checkbox (as shown in Figure 14-4), turn it on. When you shut down the PowerBook, the contents of your RAM disk will be automatically copied onto the hard drive before the lights go out. And when you turn the Mac on again, the RAM disk's previous contents will be automatically copied back onto it.

■ Free book winner Jerry Byers actually figured out where the RAM disk's contents are stored: in your Preferences folder, as a file named Persistent RAM Disk that's the same size as your RAM disk. (So *that's* where that 15MB of disk space went!) He notes, by the way, that this file isn't deleted when you turn off the RAM disk option. That's good, since it means your RAM disk will be automatically re-loaded the next time you turn on the option in your Memory control panel, no matter how far in the future. (That's bad, however, if you mean to try the RAM disk only once, while reading about it in *Mac Secrets;* that 15MB file gets forgotten in your Preferences folder, eating up space.)

■ If your PowerBook model doesn't offer the "Save on Shut Down" option, drag the RAM disk icon to your hard drive, where it gets copied as a RAM disk *folder.* Name it "RAM disk 15MB," or whatever its size is, so that you'll remember its size the next time you need to create it. (Some people even compress that RAM disk folder, using a compression program like StuffIt.)

Later, you can just open this folder and drag its contents to a fresh RAM disk.

Putting the RAM disk in charge

After the RAM disk is set up, you still have to tell the Mac that you want *its* System Folder, and not the one on the hard drive, to be the System Folder in charge.

Open the Startup Disk control panel (see Figure 14-6). Click RAM Disk and close the window.

Figure 14-6: How you put the RAM disk in charge.

Then restart the Mac. You'll be shocked at how fast your Mac starts up from a RAM disk. When you reach the Desktop, the RAM disk is in the top right corner of the screen. At this moment, however, your hard drive is still spinning; you aren't, in fact, getting any extra battery mileage at all. That's where the really wild technique comes in.

Trashing your hard drive

Drag your hard-drive icon *to the Trash!* (The File menu's Put Away command also works.) The Mac will warn you that you're doing something kind of nutty; click OK. But if the hard drive is off the screen completely, there's no chance that it can spin up unbidden and deplete additional power.

Yet, even after your hard drive's icon is gone, you may *still* hear it spinning. If you're patient, it will stop on its own after a few minutes (depending on your settings in the PowerBook control panel). If you're not patient, make it stop spinning using any of the techniques described in "Battery Secrets," earlier in this chapter. (If your hard drive won't spin down, try turning off the Assistant Toolbox extension, if you have it.)

At last you've arrived at an amazing point. Your PowerBook is absolutely *silent,* runs about three times faster than it ever did before, barely using any battery juice at all. You can type and scroll and save and trash things, and you'll never get that sinking feeling of hearing your hard drive spin up.

Now you're wondering: Well, great, but how do I get my hard drive *back?* That's why you made the alias of it. At any time after the real drive icon is gone, you can summon it back to the screen simply by double-clicking the alias.

PowerBook RAM-Disk Secrets ━━━━━━━━━━━━━■

Saving and being safe

The usual warning about using a RAM disk is this: Never put a document on a RAM disk, because a RAM disk is a fleeting, fragile thing. If the power goes out on the Mac, so the scare-tactic goes, then your document disappears into the ether.

This is *not* true on a PowerBook. Anything on a PowerBook RAM disk *stays* there, even if (a) you restart the computer; or (b) the battery dies and you leave it in the machine, dead, for up to two days; or (c) you have a system crash.

All you have to do is remember this critical phrase: *Never shut down the PowerBook — only restart it!*

If you have a system crash, press the computer's Reset switch (which restarts it). On all PowerBooks since 1994, that means pressing ⌘, Control, and the power button simultaneously.

When you return to the Desktop, your RAM disk will still be safe.

All of this is not to say, however, that you can be reckless. Every hour or so, save your document; double-click your hard-drive alias (to bring your hard drive back onto the screen): and drag-copy your RAM disk-based document back onto the hard drive. Paranoia pays in the computer world.

Removing or resizing the RAM disk

Getting rid of the RAM disk is a little tricky. For starters, you can't very well kill the RAM disk while it's the start-up disk. The first step, then, is to double-click that Startup Disk alias (which we instructed you to copy onto your RAM disk). You'll see the image in Figure 14-6. Click the name of your hard drive and close the window. Then restart the Mac. When it awakens, the RAM disk will no longer be the disk on top.

Next, you have to get *everything* off the RAM disk. Click the RAM disk and choose Erase Disk from the Special menu. Confirm your decision by pressing Return. Wipe that disk clean. Only then may you open your Memory control panel and turn the RAM Disk option off — or resize it.

Finally, you have to restart *again*.

Sleep Mode

When a PowerBook is sleeping, nothing moves. The hard drive and all other components are still and dark. The only thing that lives, in fact, is whatever was in the computer's memory.

That's a great thing. It means that the next time you want to use your computer, there's no five-minute start-up period, no start-up chime, no parade of icons across the bottom of the screen. You press a single key — any key except Caps Lock — and your entire work world springs to life, exactly as you left it.

Sleep versus restart

This is going to sound radical. But we advise you to leave the PowerBook in Sleep mode *all the time*. We can think of only a few instances when you actually have to shut down a PowerBook:

- When you want to start up with a different assortment of extensions and control panels
- When you want to make it part of the SCSI chain of a desktop computer
- When you want to attach or remove an external monitor
- When it's a Duo, and you want to insert it into a Duo Dock
- When you want to ship the PowerBook

Otherwise, there's no practical reason to restart the Mac, ever. It's even OK to connect keyboards, mice, modems, printers, PC cards, drive-bay CD-ROM or Zip drives, and floppy drives to PowerBooks while they're sleeping. They don't have to be off.

It's perfectly all right to travel while sleeping (the PowerBook, not you). Even ultra-conservative Apple admits that it's OK to carry a sleeping PowerBook.

How much time you have

After your PowerBook is asleep, a tiny trickle of battery power keeps the contents of memory intact. The computer can sleep for as long as there's any battery power remaining. On a fully charged battery, that's about a month. In fact, even if your battery has gone dead while you were using it, saying that no "reserve power" remained, you'll still have two days of trickle-juice left in the battery.

Shut up and go to sleep

Q: I absolutely hate the way the PowerBook always gives me that stupid warning box about network services, whatever they are, when I try to put it to sleep. Isn't there any way to make it stop?

A: First of all, *network services* basically means (a) your connection to other Macs, and (b) your laser printer. It's just warning you that if you put the Mac to sleep, and later awaken it, the laser printer might need to be reselected in the Chooser. Or you might need to re-establish your hookup with the other Macs.

In the meantime, there *is* a way to make this box stop appearing. Several ways, really.

First, if you *never* want the message to appear, open your Chooser and turn off AppleTalk. Of course, then you'll *really* lose network services — you won't be able to laser print or hook up to other Macs at *all* — but at least you won't get this message. You'll also get another half-hour out of each battery charge. (If you have Apple Remote Access, you can instead open your Network control panel and choose Remote Only, as described earlier.)

Another trick: Install AutoRemounter, a control panel described in Chapter 4 (and incorporated into the PowerBook G3 Energy Saver control panel described in Chapter 4). Among other functions, it lets you keep AppleTalk on without making you suffer through that "network services" message every time you put the laptop to sleep.

Sleep Secrets

50 ways to sleep your laptop

You're probably familiar with the most common method of putting a PowerBook to sleep: choosing Sleep from the Special menu.

That involves returning to the Finder, though, which is an extra (and, given the crankiness of the trackball/trackpad, difficult) step, requiring you to choose Finder from the application menu.

You can make the PowerBook sleep on command, though, without leaving the program you're in. In System 7.5 and later, there are two ways: press ⌘-Shift-Control–0, or use the Control Strip's one-click Sleep command (see Chapter 4).

Other programs can put your PowerBook to sleep, too. QuicKeys and OneClick offer key combinations that get that Mac snoring.

Speed Tip Yet another approach: In systems before Mac OS 8.5, Control-click your menu-bar clock (created by the Date & Time control panel).

Waking the thing up smart

To wake up a sleeping PowerBook, the best key to press is the Shift key. Pressing a letter key does the trick, too, but you risk *typing* that letter into whatever document you left open on the screen.

Getting Info In and Out

When Apple designs a PowerBook, one of its objectives clearly seems to be to give it as many ports and connectors as a desktop Mac. True, most have only a single printer/modem jack, but the back of a modern PowerBook otherwise has all the same jacks as a desktop Mac.

This is critical for several reasons. For one thing, suppose that you own both a PowerBook and a desktop Mac. Every time you return from a trip with your laptop, you'll probably want to copy your files back to the larger Mac.

Furthermore, one of the huge selling points of a PowerBook is that it's an ideal portable presentation machine. Hook it up to a projector, a large monitor, or even a TV, and suddenly you can give color presentations for large groups, driven only by this diminutive machine.

Another of the laptop's most important features is its capability to send information over the phone lines — dialing into the home office, for example. We'll cover this capability, called *Apple Remote Access,* in Chapter 35.

Of CD-ROMs, Zips, and floppies

Thanks to good engineering, there aren't any secrets pertaining to swapping CD-ROM drives, the VST Zip drive, and the floppy drive in and out of modern PowerBooks. Beginning with the 1997 line, Apple created laptops whose "storage bay" (as that hole on the side is called) can be filled by different kinds of drives without even putting the machine to sleep! (On the PowerBook G3 line, a special Control Strip module indicates visually what's in each bay.)

In the lingo, this bay is *hot-swappable.* You can only do it if the current gadget in the bay is *empty;* eject whatever Zip, CD, or floppy is in it before attempting to remove the drive itself. Once that's done, a spring-loaded switch on the bottom of the gadget lets you unhook it from the PowerBook's innards and slide it out, ready for replacement by whatever other storage doodad you want to insert.

Don't try *that* on a Windows laptop.

Transferring files from a PowerBook to another Mac

When it comes to transferring information between a PowerBook and another Mac, you have several options:

- Pass files back and forth on a floppy disk—a *very* slow procedure.

- Pass files back and forth on a Zip drive (if you've bought one for your PowerBook).

- Attach the two computers as though they're a little network. Transferring files this way can be slow, too, but it's certainly easy. We'll show you how to set up a mini-network between them, step by step, in Chapter 35.

- Recent models (since 1995): Use your infrared transmitter, a Netopia AirDock (about $70), and the IR File Exchange program that came with your Mac. Fast, simple, and much easier to work than using regular LocalTalk file sharing—no passwords, privileges, or setup. (If the second Mac *is* a PowerBook or an iMac, you don't even need the Netopia AirDock; just beam from machine to machine.)

- Attach a hard drive, Zip drive, Jaz drive, or SyQuest to the PowerBook. Copy files onto the external drive, shut everything down, and then attach the drive to the desktop Mac and copy files onto it from the disk. This is way too much trouble.

- Plug the PowerBook directly into a desktop Mac as a SCSI device itself. It's fast, cheap, and convenient.

We'll cover these last three methods one by one.

Infrared Beaming

One of the PowerBook's neatest features is also among the most overlooked: its ability to transmit and receive information *through the air,* thanks to the infrared transceiver on the back panel. (It looks like a dark translucent plastic plate.) All PowerPC-based laptops have this transceiver. (So does the iMac.)

Sending and receiving infrared data is easy, fairly quick, and, darn it, *cool.* There's just nothing like seeing a nearby PowerBook's name and icon show up on your screen without connecting a single cable.

Before you begin, note that there are two different "languages" your infrared port can speak. There's *IRTalk,* which is a Macintosh-only language that's a lot like LocalTalk (described in Chapter 35).

Modern PowerBooks (that is, all PowerPC models except the 5300 and 1400) can also speak *IrDA,* a faster, more universal networking scheme that the Apple Newton, eMate, Windows laptops, and even some Hewlett-Packard printers can also understand. If you want to use this option, your Control Panels folder must contain the Infrared control panel, and your Extensions folder must contain the files called IrDALib and IrLanScannerPPC. (On the other hand, at this writing, no other devices we know of—including HP

printers — have the necessary *software* to support IrDA beaming from the Mac, so what's the point?)

You also need the Open Transport extensions (see Chapter 4) to do *any* kind of networking.

Here's how it works:

1. Open your AppleTalk control panel. (If you don't have Open Transport, use the Network control panel instead.) Choose Infrared Port from the pop-up menu. (You've just told the Mac what connection to use for its networking.) Close and save the control panel.

   If your Mac has the Infrared control panel, now open it, click Options, and select either IRTalk or IrDA, whichever you and your fellow beamer have agreed upon. Close and save.

2. Launch Apple IR File Exchange. (It's a program in the Apple Extras folder that comes on every PowerBook hard drive. If you're using the AirDock on a desktop Mac, you'll have to special-install this software from your Mac OS 8.x CD.)

3. Position the two Macs a few inches apart, back to back, so that their transmitters are facing each other. As shown in Figure 14-7, the icons of any PowerBooks in range show up as "drop-box" folder icons.

4. The person sending the files or folders simply drags icons *from the desktop* onto the appropriate folder, as shown in Figure 14-7.

5. Wait. When the progress bar indicates that the job is over, the recipient should open the Apple IR File Exchange folder. Inside is a folder called IR Receiver — which contains the stuff that was beamed through empty space!
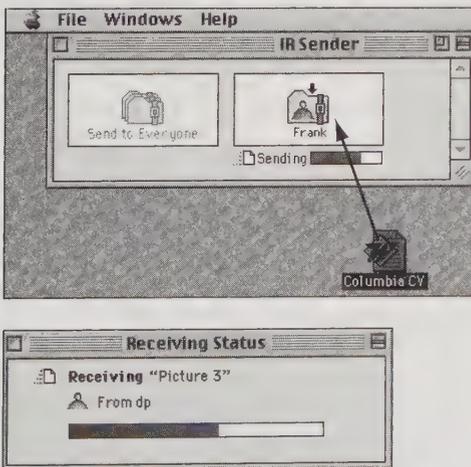
Figure 14-7: Top: Drag icons onto your friend's folder to commence beaming. Bottom: What the recipient sees on the screen as the beaming goes on.

SCSI: When the PowerBook is the computer

Connecting SCSI devices to a regular PowerBook isn't tough. You do, however, need a special cable; Apple's is called the HDI-30 SCSI System Cable. (A better idea is the SCSI Doc connector from APS.) If you look at the back of a PowerBook or a MiniDock, you'll see why: The standard, wide SCSI connector has been replaced by a smaller, nonstandard square jack.

If you, like millions before you, can't tell this cable apart from the identical-looking HDI-30 SCSI *Disk* Adapter cable, described below, the trick is this: the SCSI *System* cable is light gray, and its smaller end appears to be missing one pin. Apple's *Disk* Adapter cable is dark gray and has all 30 pins.

With the HDI-30 System cable attached, the PowerBook behaves just like a desktop Mac. The SCSI address of its internal hard drive is 0, as it is for any Mac. As always with SCSI devices, turn on the external devices before you turn on the PowerBook.

There's one dramatic difference between PowerBooks (not Duos) and desktop Macs when it comes to *terminating* interconnected SCSI devices, however. The normal method of attaching terminator plugs is to fasten one to each end of the chain of SCSI devices. But because the internal hard drive of any Mac is self-terminating, you normally only have to worry about the *far* end of the chain.

But the non-Duo PowerBook, for all practical purposes, *has* no internal terminator. Therefore, despite the complicated-looking series of rules in the PowerBook manual, the PowerBook difference actually boils down to this:

Put a terminator plug at the far end of the HDI-30 cable, where it attaches to the first SCSI device.

You still need a second terminator plug at the far end of the chain of SCSI devices, as detailed in Chapter 33. It doesn't matter if there's one device or several.

For a PowerBook Duo, on the other hand, follow the rules of termination exactly as we've stated them in Chapter 33 — no funny business.

SCSI Disk Mode: When the PowerBook is the external hard drive

This arrangement, where the laptop acts as an external hard drive for another Mac, is called *SCSI Disk Mode*. (The PowerBook 14x, 150, and 170 models don't offer this feature.)

Because SCSI is a very fast method of transferring files, it's the only way to go when you have a lot of stuff to transfer to or from your PowerBook. After you've mastered this technique, you'll absolutely love it. Getting going, though, requires crossing some oddball technical terrain. Here's the step-by-step guide. Keep in mind that the PowerBook must be the *last* device in the chain of SCSI machines (if you have any others).

1. Buy an HDI-30 SCSI *Disk* Adapter cable.

   This is not the same as the HDI-30 SCSI *System* Cable we mentioned earlier, despite the similarity of name, catalog number, price, and appearance. Don't use the wrong cable. Nothing will blow up, but nothing will work, either. (Once again, the little adapter called the SCSI Doc, from APS, is a better alternative. It can serve as *either* a normal SCSI adapter *or* a SCSI Disk Mode adapter — you just flip a switch.)

2. Open the PowerBook Setup or PowerBook SCSI Dish Mode control panel (see Figure 14-8). Select a SCSI address for the PowerBook.
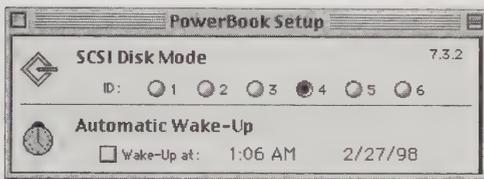
Figure 14-8: Choose a SCSI address for your PowerBook.

   If you've read Chapter 33, you know that a Mac's SCSI address is always seven and its internal drive's address is always zero. In SCSI Disk Mode, though, this Mac is *not* going to be a Mac; it's going to be an external hard drive! So choose an ID number between one and six. (If your desktop Mac has a CD-ROM, don't use 3.) If you plan to daisy-chain other SCSI devices with the PowerBook, make sure that their numbers are different.

3. Shut down both Macs and turn off any other SCSI equipment.

4. Connect the PowerBook to the SCSI Disk Adapter cable you bought. If the PowerBook will be the only SCSI device attached to the desktop Mac, you don't need a terminator. (If you're going PowerBook to PowerBook, you *can't* use a terminator.) If other SCSI devices will be joining your PowerBook, however, connect a terminator to the fat end of the Disk Adapter cable.

5. Connect the terminated end of the SCSI Disk Adapter cable either to the desktop Mac or to the last SCSI device on the chain.

   If you need a walk around the block at this point, please indulge. Then:

6. Turn on the PowerBook!

   This has to be the *weirdest* thing you've ever seen a Mac do. Across the face of the otherwise completely blank PowerBook screen marches a *huge* SCSI logo (some models' screens may remain blank instead). Inside it is a large digit, representing the SCSI address you selected. And we mean it *marches*. It actually moves across the screen, bouncing off the edges like some kind of Neanderthal screen saver.

7. Turn on any other SCSI devices. Finally, turn on the desktop Mac.

It works like magic — the PowerBook's hard drive icon shows up on the desktop Mac's screen just as though it were an external hard drive. You can drag huge amounts of files back and forth and revel in the speed of the copying.

To reverse the procedure, turn off the desktop Mac first, then the PowerBook, and then the other SCSI devices, if any.

If you plan to connect and disconnect your PowerBook from the SCSI chain regularly, you can actually leave the special dark gray SCSI cable dangling, unattached, from the end of your SCSI chain. Your desktop Mac will work fine. Whenever you need to transfer files, just shut off all the Macs, hook up the PowerBook to the dangling cable, switch it on first, and you're rolling.

Keeping track of which files are current

As you toss files back and forth from PowerBook to main Mac, keeping track of which copy of which file is the most recent can get to be a headache. The truly nightmarish scenario unfolds when you realize you've done *some* editing to a certain document on *each* machine, and you no longer remember which sections of the document are the most current!

The only way to avoid these situations is to practice safe *file synchronization* techniques. A zillion programs on the market are designed expressly for this purpose — such as Apple's own PowerBook Assistant or File Synchronization, which comes with System 7.5 and later. Such a program compares the contents of two folders (one on each Mac). Then it replaces older files with newer ones, regardless of which Mac contains each. When it's done, both Macs contain the newest versions of all files.

Making presentations

Except for our multimedia tips in Chapter 23, we're going to leave the headache of *creating* your presentations up to you.

We can, however, advise you as to how to *project* your presentation. The more expensive PowerBooks of each year's crop (including the 500, 5000, 3400, and G3 lines) have built-in video-output connectors. (The PowerBook 1400 requires an add-on card for this purpose.)

You can hook up a few things to this video port. Of course, you can always plug in a regular Mac monitor. Even if you have a grayscale screen on the PowerBook, the external monitor can show color.

You can also hook up an LCD projection pad. This item looks like a metal-framed, two-inch-thick slab of glass. You plug it into the Mac's video output jack, and then you set the slab atop an ordinary overhead projector (yes, the same overhead projector they've used to show transparencies in sixth-grade biology class since time immemorial).

We're not sure if you've seen these projectors recently, but they look *great*. The black-and-white ones cost about $1,400; the nice color ones cost $3,000 or more. Most of these projection slabs expect your laptop to have a PC-style (VGA) video-output jack instead of a standard Mac monitor jack. That's why all modern PowerBooks (3400, 2400, G3s, and so on) have standard VGA monitor jacks in the back instead of Mac monitor jacks. (An adapter cable for Mac monitors comes with the PowerBook.)

Video mirroring

Video mirroring was a great feature of pre-1997 PowerBooks. When an external monitor or projector is connected to video-output-equipped, pre-1997 PowerBooks, the PowerBook Display control panel lets you choose one of these two options:

■ View the same image on the PowerBook screen and on the external monitor. (This is the *only* option on modern PowerBooks.)

■ Treat the external monitor as an extension of the PowerBook's monitor, exactly as though you're working with a multiple-monitor setup (see Chapter 11 for details). (This is the option Apple took out of PowerBook models, beginning with the 3400.)

Interestingly, a PowerBook has two different chunks of VRAM (video RAM, as described in Chapter 11) — one for its own built-in screen and any external monitor you connect. Modern PowerBooks, such as those with G3 processors, have 2MB or 4MB of external-monitor VRAM — enough to fill a 21-inch monitor in "millions of colors" mode. All previous PowerBooks, however, have only 512K of external VRAM, enough to create a 256-color, 640 by 480-pixel image on the external monitor.

Unfortunately, 256 colors mean splotchy, ugly photographs or QuickTime movies. Victims of those PowerBooks' 256K external-monitor VRAM have three choices:

■ Turn the photographs into graphics files in *indexed-color mode,* as described in our Photoshop Secrets in Chapter 20 — period.

■ Buy a video card for your 5000-series (or later) PowerBook. It boosts your PowerBook's VRAM to 1MB or more, making it possible to display more colors on larger monitors.

■ If you have a Duo, you can insert it into a Dock with upgraded VRAM.

Making the screens match

On *all* video-output-equipped PowerBooks, a few anomalies may haunt you when it comes to seeing the same thing on both the PowerBook screen and the external monitor (or LCD projector).

For example, if you're using an older PowerBook, it may alarm you that the image on the external monitor is much smaller than normal. That's because older PowerBook screens are 80 pixels *shorter* (vertically) than the usual 14-inch Mac monitor. Video mirroring, of course, is designed to mirror on the external

monitor *exactly* what you see on the PowerBook screen — which means the external monitor will display an extra 1.1 inches of black at the top and bottom.

Conversely, if you're using a PowerBook 5300ce, which has an 800 by 600-pixel screen, you may see a fat black border around the *PowerBook's* screen. Once again, video mirroring ensures that the built-in screen and external monitor show the same image — 640 pixels wide and 480 pixels tall. The PowerBook will, therefore, crop its own display to those dimensions.

How to control mirroring on modern PowerBooks

Strange
But True

As noted above, 1997 and later PowerBooks (3400, 2400, G3, and so on) can't treat an external monitor as an extension of the built-in screen. The second monitor can only act as a *duplicate* of the PowerBook's screen, and even then *only* at the identical resolution. (See Chapter 11 for more on monitor resolutions.)

Even then, making everything work perfectly may require several attempts. Connect the external monitor or projector, turn it on, and then turn on the PowerBook.

If the external monitor works but the PowerBook screen is dark, use the Monitors & Sound control panel (or Control Strip), watching the external monitor as you go, to set the resolution to the setting that says *Simulscan.* (On the other hand, if you don't care about seeing the same image on the PowerBook screen, choose any resolution you like.)

If the PowerBook screen is working but the external screen isn't, here's the bizarre solution: Control-click the Monitor Resolution tile on the Control Strips! A secret pop-up menu of resolutions appears. Choose the one with the word Simulscan after it, and marvel as the external monitor magically springs to life. (You may have to repeat this procedure if the PowerBook goes to sleep or gets turned off.)

Using the fax/modem

Chapter 24 covers the *general* aspects of using modems and fax/modems. PowerBook fax and modem techniques are only slightly different. For one thing, this add-on appliance is usually built (or inserted) *into* the PowerBook.

The only problem you may encounter traveling with your telecom-ready PowerBook is the phone jacks. As you may know, the most recent style of American wall phone jacks — those installed in the last 15 years — are called *RJ-11 jacks.* The end of a typical phone cable has a male RJ-11 plug. It's usually a clear, plastic, rectangular plug with a clip that clicks when inserted into the proper outlet.

Unfortunately, far too many of the world's (and even some of America's) hotels haven't quite caught up to the technology. Their phone lines are fastened to the wall with one of the older, four-screw faceplate systems, making it tough for you to hook up your modem.

ANSWER MAN

Assistant Toolbox and its many wonders

> This document can not be printed at the current time on the printer "LaserWriter" because the printer is not available on the AppleTalk network.
>
> [Don't Print]   [**Print Later**]

Q: What does the Assistant Toolbox extension do?

A: Where do we begin?

The Assistant Toolbox extension adds a delightful cornucopia of special features to your PowerBook, including:

- **Persistent RAM disk**—If you've created a RAM disk, as described earlier in this chapter, Assistant Toolbox can automatically copy its contents onto your hard drive when you shut down the machine—and copy it back onto the RAM disk when you start up again. (Otherwise, you'd have to set up the RAM disk manually with every startup.)

- **Sleep FKey**—You can put the PowerBook to sleep by pressing ⌘-Shift-0 (that's a zero).

- **Later Laser**—Later Laser gives you the option of storing your printouts when you're not connected to your network;

when you reconnect, the documents print when the printer is available. Later Laser is only active when a laser printer is selected in the Chooser.

- **SCSI Sleep**—If you were on a network, and had brought other Macs' hard drives to your screen and then put the PowerBook to sleep, this feature brings those networked drives back onto the screen when the PowerBook wakes up.

- **Anti-Submarining Cursor**—The Anti-Submarining Cursor feature is a software fix for the "submarining" cursor effect on PowerBooks with grayscale passive-matrix screens. ("Submarining" is when the cursor disappears as it is moved quickly.)

- **Always AppleTalk**—This feature lets you turn on AppleTalk (in the Chooser or from your Control Strip) without having to restart the computer.

All of these features work automatically if Assistant Toolbox is installed.

Don't have Assistant Toolbox? Your PowerBook is probably too new. This extension was rolled into System 7.6.1 and later. You've got all the features without even needing the extension now.

In this situation, many articles advise you to travel with a "phone jack survival kit," a messy-looking assortment of alligator clips and screwdrivers, along with a manual instructing you to remove the wall plate, attach the clips to the live terminals, and so on. Fortunately, we have three far simpler solutions:

1. Call ahead. Yes, we actually intend to suggest that you select a lodging facility based on its *phone jacks.* If you're going to be doing business via modem or fax, you may as well be businesslike.

2. Buy an *acoustic coupler*, a device that fastens to any telephone handset anywhere with Velcro. Instead of connecting your modem directly to the phone line, an acoustic coupler uses the ear- and mouthpiece of the telephone to broadcast, and listen to, the modem signals. While that may seem like a silly way to go, today's acoustic couplers are really something — they work like a charm, without the speed penalty of their clunky ancestors.

Konexx and Teledapt sell the identical coupler for about $150. It has the advantage of working on any telephone in the world, even pay phones, even in other countries. One of your cheerful authors merrily used his coupler at 14.4 Kbps on telephones in Indonesia and Thailand with great success.

3. This final solution is pricey, but it will earn you the admiration of your coworkers: Get yourself a *cellular* modem. With this kind of modem, you won't care if the hotel room's jacks are clip-style, four-screw–style, or coated in cement. (Of course, this solution only works in America. So far.)

A word or two about printing

Naturally, the PowerBook prints just as well as any other Mac, and to just as wide a variety of printers. The question here, though, is portability. In the following secrets, we'll outline a few strategies.

DIALOGUE

Through the X-ray machine

JS: *What* did you just type?

DP: I'll reread it, but I believe it was "the X-ray machine *cannot* hurt your PowerBook."

JS: Are you nuts? What about all those — those *rays* bombarding your computer? Are you forgetting that there are people's *files* on that hard drive in there?

DP: No, of course not. I'm sorry, Joe, but the whole point of this chapter is to *dispel* myths about PowerBooks, not perpetuate unsubstantiated hearsay. . .

JS: Harmful X rays are no myth.

DP: X rays have *no effect whatsoever* on a PowerBook. Or any other computer, for that matter.

JS: Except that if they happen to penetrate the hard drive, your data can be scrambled into *meaningless hieroglyphics*.

DP: Joe, you're confusing X rays with magnetism. It's a common mistake. If you had opted to take even one physics class when we were at Yale instead of focusing almost exclusively on courses like "Skepticism among Soviet Jewry in the Middle Ages," you would realize that X rays have nothing to do with magnetism. . .

JS: *What's wrong with studying Skepticism?*

DP: And I would appreciate it if you would stop putting everything in italics.

JS: Listen, Mr. Physics, I'm not talking about the X rays. I'm talking about the *conveyor belt* itself. What do you think powers that? Hamsters on treadmills?

DP: Well, at least that's a little more valid than your previous wild claims. I suppose if you're really worried, you can take the trouble to place the Mac as close as possible to the entrance of the X-ray machine, so that it'll spend as little time as possible on the conveyor belt —

PowerBook Printing Secrets ————————————————

The ol' fax-it-to-yourself Secret

Worth Learning

We're rather taken with this trick, actually. If your PowerBook has a built-in fax modem and you're staying at a hotel, you can fax a document to the hotel's own fax machine. It's a little strange — faxing from your room down to the front desk, for heaven's sake — but it's a good, cheap, quick way to get something on paper. (This technique also works in offices, of course.) We use this trick *constantly*. As a bonus, the hotel foots your paper and ink bill.

Compared with the expense, weight, and hassle of most other printing options, we find the fax-it-to-yourself thing a clever and effective, spur-of-the-moment printing option.

Portable printers

These devices are out there, for sure, but they're not exactly wonderful. Citizen, GCC, and Mannesman-Tally make portable PowerBook printers, but the speed, ribbon life, and battery life leave a lot to be desired.

You may also be able to find numerous discontinued portable Apple printers, such as the Apple Portable StyleWriter, a five-pound, slimline adaptation of the StyleWriter 1200, and the Color Portable StyleWriter 2200, which provides the same color printing capabilities of the Color StyleWriter 2400 in a super-compact design.

JS: He admits it!

DP: . . . but I *still* say that I've run PowerBooks of all kinds through those machines. And so have pilots aplenty — people who travel more than I do — and I've never, *never* heard of any problems.

JS: My philosophy is simple: why take risks? If you own a PowerBook, obviously your life is going pretty well. So play it safe. Pass your PowerBook *around* the X-ray machine and then get it visually inspected.

DP: Obviously you're one of these people who shows up at the airport an hour ahead of time.

JS: You're reckless.

DP: And you're paranoid. Listen, I take my PowerBook everywhere. I have run it through *countless* airport security devices. *Nothing* has ever gone wrong. All of my files remain fjhd[asdlf d¢— fdf;2231kX°°°° _87§.

JS: Ah-hah! See? *See that*?! And where do you suppose all those garbled characters just came from, Mr. Basic-Laws-of-Physics?

DP: Joe. . .

JS: Mr. Don't-you-know-the-difference-between-X-rays-and-magnetism!?

DP: Hello. . .

JS: Mr. Garbage-Characters-Spewing-Uncontrollably-From-His-Now-Radioactive-PowerBook. . . ?!

DP: *I dropped a box of Fig Newtons on the keyboard.*

JS: Oh.

Printer-conversion kits

For about $100, you can buy a disk/cable kit designed to make your PowerBook work with any of the zillion *IBM*-compatible printers on the market, including color inkjets, laser printers, and even antiquated dot-matrix models. (The best of these disk/cable packages is PowerPrint, from GDT/ Infowave, 604-291-9121.) In a way, this option makes a lot of sense. It's cheap, it's lightweight and very portable, and chances are good that you'll find *some* IBM printer no matter where you go!

Traveling with the PowerBook

After you've gotten your PowerBook out of the computer store, you're going to start going places with it (we hope). There's more to it, however, than simply remembering to keep it in your carry-on luggage instead of checking it.

In the Airport

The classic locale for PowerBook-spotting is the airport. We've had considerable experience toting PowerBooks through these teeming public spaces.

Mac Basics

Let's make this perfectly clear: The X-ray machine *cannot* hurt a laptop. Don't waste a single minute's sleep worrying about it.

If you travel with your PowerBook while it's asleep, then the much-derided security check — whereby somebody in a uniform who understands nothing about computers except their capacity to screw up a paycheck requires that you turn on your computer long enough to view *text* on the screen (yes, that's the criterion) — will mean nothing to you. You'll breeze through, tap a key to wake the PowerBook up (where the menus suffice as text), put it back to sleep, and be on your way.

Security on the road

Security is a hot topic when it comes to PowerBooks. Even undereducated thugs, who probably don't know the meaning of the word *double-click,* recognize a PowerBook (and even a PowerBook *carrying case)* when they see one.

You can find all kinds of clunky devices designed to lock your laptop down to something heavy. There are also all kinds of *software* protection programs that protect your screen, or certain files, or your entire hard drive, from anyone who doesn't know the correct password. For information on both of these product types, we'll refer you to the ads in *Macworld.*

TRUE FACT

PowerBook Pillowcases

PowerBook carrying cases—*especially* the beautiful ones that have little Apple logos on them—are for saps. They single you out instantaneously for theft. As reader Peter Silver notes, highly developed PowerBook theft operations are a feature of most university cities now.

"Instead," he writes, "people should use backpacks and book bags as ordinary-looking as they can find, with the PowerBook wrapped in something for padding from the other stuff in the bag. And what is the perfect such padding? An everyday *flannel* pillowcase, folded in half, then in half again, with the computer tucked into one of the little pockets these folds make—the one that has about the same number of layers of flannel on either side of it. I'm not describing this well, but the Mac fits in there like it was born to. And I guess you could kind of sew the pillow case a little to make it more pouch-like."

Our security secret is much simpler, and much more effective. Our advice: Keep the PowerBook attached to you in public places. Don't set it down.

We know exactly two people whose PowerBooks have been stolen. Neither was stolen from a hotel room. Neither had secret documents swiped from the hard drive. Both were in public places (at a rent-a-car counter and an airport waiting lounge), and both put down the PowerBook in its case. In both cases, somebody grabbed the bag and disappeared into the crowd.

We don't mean to say that you have to *carry* it at all times; just keep in contact. Loop the shoulder strap around your foot if you're going to set the thing on the ground. Or wrap it around your wrist if it's in the waiting-lounge chair next to you.

Inflight silliness

Once aboard the airplane, you'll be asked to turn off your PowerBook for the first and last 15 minutes of each flight. If you blinked during the three-day period in 1991 when the newspapers explained why, you might have missed it.

Apparently, there was a rash of mass hysteria about laptop computers confusing the cockpit navigational equipment. When *PC World* magazine investigated, however, they found out how shaky the evidence was. Out of 19,000 reports of navigational equipment acting up that had been reported to the FAA, *three* featured pilots who had learned, after the event, that a laptop user had been aboard. That's as solid a link as has ever been established.

We don't know about you, but that's a half-hour per flight that we could really use.

Duo Notes — and Newton Stunts

The PowerBook Duo was the smallest, sexiest Macintosh ever made. It has the pleasing heft, size, and shape of a nice hardbound book, yet it packs some serious horsepower.

CD

We have much more to say about the Duos; see the end of Chapter 12, for example, for model-by-model descriptions. For still more, see the Duo discussion in Chapter 15 of the electronic version of *Macworld Mac Secrets, 4th Edition* (on the CD-ROM that came with this book).

And guess what's also there? A list of Easter eggs for the Apple Newton. (We thought about writing "Newton Secrets," we really did. But we couldn't come up with 1,300 pages' worth.)

Part III

Application Secrets

Chapter 15

Mac Application Basics

In This Chapter

▶ How multitasking works

▶ Handling memory and multiple programs

▶ Publish and Subscribe

▶ Type and creator codes

▶ Taking your work to PCs and back

The first 14 chapters of this book could satisfy somebody who just bought a new Macintosh and took it out of the box — those chapters cover the hardware and the *built-in* software. But you didn't buy a computer to admire its operating system; you bought it to run *programs.*

This chapter lays bare the secret world of Macintosh applications: how they work, how to manage them, and what they have in common.

Types, Creators, and Double-Clicking

In previous incarnations of the personal computer — DOS machines, for example — you couldn't just double-click to open a document. In DOS, you have to type the name of the program you want to open, a space, and then the exact name of the document you want to open with it. If you don't remember the name of the document precisely, you're out of luck.

The Mac makes all of this much simpler. You don't have to remember the names of your programs; they're listed for you at all times. Better still, you don't have to remember which program *created* a certain document. You just double-click the document icon, and the program that created it — whatever or wherever it may be — opens automatically.

The mechanism that gives the Mac this intelligence is worth examining because it also accounts for a number of other Mac behaviors. That mechanism is *type and creator codes.*

Creator codes

Every program ever written has its own customized four-letter code: the *creator code*, which is generally hidden from you, the user. For FileMaker Pro, the creator code is FMPR; for Microsoft Word, it's WDBN, and so on. (When it comes to type and creator codes, capitalization counts, and so do spaces.)

Because every document you create is also stamped with this creator code, it always knows who its parent is. When you double-click a document icon whose behind-the-scenes creator code is FMPR, FileMaker Pro opens automatically.

Type codes

Every icon on your disk also has an invisible *type code*. This piece of information specifies which *kind* of file it is: text, graphic, and so on. For example, depending on the options you choose in Excel's Save As dialog box, this single program can create text files (type code: TEXT), normal Excel files (XLS8), Lotus 1-2-3-exchangeable files (SYLK), Microsoft Works format (LWKS), and so on.

Every one of these documents has the same *creator* code, however — XCEL. Therefore, regardless of what the icon looks like or what file type it is, if it's double-clicked, then it opens in Excel.

Type codes are most useful, obviously, in helping the Macintosh distinguish among different kinds of documents. But did you ever wonder if there's such a thing as a type code for your *programs*?

Programs do have type codes. But the code is almost always the same for every program — the code that tells the Mac that this is an *application*. It's APPL. As in Apple. As in Application. As in Always.

(OS 8) (OK, well, as in *Almost* Always. Mac OS 8 broke the 14-year consistency streak by introducing two new creator codes for applications. There's APPC, which means "an application that, when dropped on the System Folder icon, gets routed automatically into the Control Panels folder, kind of like Monitors & Sound, Energy Saver, or Date & Time [which aren't control panels at all]." And there's APPD, which is assigned to applications that get put automatically into the Apple Menu Items folder when dropped on the System Folder. But we digress.)

How type and creator codes affect you

Type and error codes are the *sole* explanation for the famous "application could not be found" error message.

Mac Basics This message appears all too frequently when you double-click an icon. It means that, in consulting the file's creator code, the Mac didn't find a match among the applications on your hard drive. If you double-click a document icon whose creator is SQGP, and there's no *application* on your disk with such a code, then you get the error message.

Suppose that your SQGP file was sent to you via email by a friend who uses America Online. The message says, "Here's a JPEG file of me with my dog Bullwinkle." Now you're on to something. If you check the file's *type* code using FileTyper (see the next section), you see that, indeed, the *type* for this document was JPEG. (JPEG is the four-letter type code for the standard JPEG graphics file format, which is described in Chapter 20.)

Plenty of programs can open JPEG files: Photoshop, Word, Netscape Navigator, PageMaker — you name it. But as long as the file's *creator* code refers to a program you don't own, then you'll never be able to open it by double-clicking (unless you're using Mac OS Easy Open; see Chapters 4 and 16).

But if you were to change the creator code to match an application you *do* own, then a simple double-click would open that JPEG file! In fact, the file would even inherit the appropriate icon identifying it with that application; the Mac uses a file's creator and type codes to assign icons for files in Finder windows.

Changing type and creator codes

In the standard system software, Apple doesn't provide any way for you to change a file's type or creator code. (There's a secret way to *see* codes using Find File, as you'll see in the first secret below, but no way to *change* them.)

You, however, are fortunate. Included on the CD-ROM with this book is FileTyper (see Chapter 33), one of whose talents is the capability to change type and creator codes with ease. Here's how to do it.

CD

Drag the file you want to change onto FileTyper's icon in the Finder. The dialog box in Figure 15-1 appears. (If it doesn't, rebuild your desktop, as described in Chapter 1.)
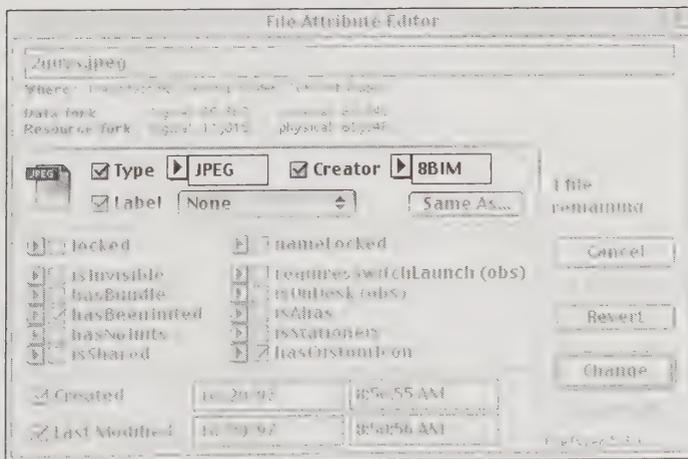
Figure 15-1: The FileTyper window, featuring the Type and Creator Code text boxes.

All you have to do is type a new type or creator into the text boxes. Be careful: The code must be exactly four characters long. And capitalization counts; if you change a file's creator to Fmpr instead of FMPR, it will *not* become a FileMaker Pro file.

When you're finished changing the code, click Change. It's over.

Type and Creator Code Secrets

Determining a file's codes instantly

The Finder provides no way to peek at a file's type or creator codes. But in System 7.5 and later, you can use the Find File program in a sneaky, undocumented way to learn just such info. From the pop-up menu, choose *file type* or *creator* as appropriate. (Or use the More Choices button to reveal a second pop-up menu, and choose *both* codes.)

Now drag the icon of the mystery file *on top of the blank,* as shown in Figure 15-2. The Find File program instantly reveals the hidden codes in the blanks.
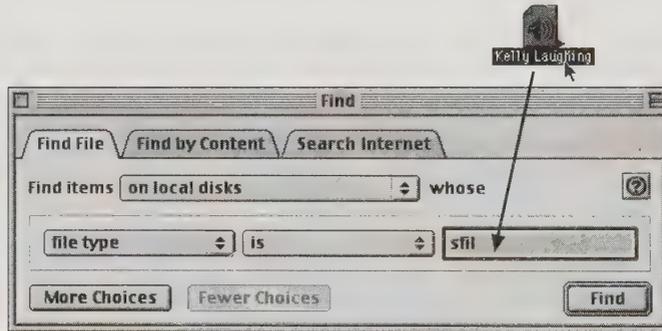
Figure 15-2: Set up Find File's pop-up menus to say *file type* or *creator,* as shown at top. Drag an icon onto the blank, and lo! — you get to see its secret codes.

Changing codes to frustrate snoopers #1

Since type and creator codes tell the Macintosh what kind of file a particular icon is, it follows that changing a file's codes prevents it from opening in the usual way. Changing a type or creator code, therefore, is one of the fastest and simplest ways to prevent an important document from being viewed by unauthorized eyes.

Let's assume you want to lock a Microsoft Word 98 document. Using FileTyper, as pictured in Figure 15-1, you'll discover that a Word document's Type code is W8BN and its Creator code is MSWD. You can change each of the codes to any four-character string you want, but the easiest is simply to change the uppercase characters to lower-case and vice versa; that's enough to get the

Mac adequately confused. After you've changed "MSWD" to "mswd" and "W8BN" to "w8bn," save and close the file.

When you try double-clicking on the altered file, it won't open. Instead, you'll get an error message. Word won't even recognize the file as one of its own. Of course, to "unlock" the file, all you have to do is restore the original type and creator codes.

Changing codes to frustrate snoopers # 2

Strange But True

Here's a more devious variation on the preceding trick: Instead of changing the type and creator codes *randomly*, replace them with those codes from another file. For example, if you replace a file's type code with the letters INIT, your file — be it a Word document, FileMaker database, Excel spreadsheet, or whatever — will appear in the Finder as a *system extension*. It will inherit the usual jigsaw puzzle-shaped icon and, if you double-click on it, you'll see the familiar dialog box telling you to place the file in the Extensions folder and restart.

To complete the disguise, rename the file something like *AppLibTPC Enabler* and put it in your Extensions folder. Nobody will ever suspect that your confidential documents are quietly hidden within the System Folder, safely pretending to be part of the Mac OS.

Unlocking a "read-only" Read Me file

SimpleText is the program used to generate 99 percent of the world's "Read Me First" files. Sometimes you can edit these; sometimes you can't.

Worth Learning
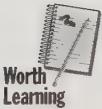
The difference is in the type codes for the two kinds of documents that SimpleText can create. Documents with type TEXT can be edited; those with type ttro (which stands for "TeachText, read-only") are locked. All you have to do is change the creator code from ttro to TEXT to unlock it — or vice versa to lock a Read Me file you've created yourself.

Telltale signs of creator and type code problems

As we mentioned earlier, a file's icon is determined by its creator and type codes. When your Mac encounters a file and sees that its creator code is MSWD and its type is W8BN, it immediately throws an icon of a Microsoft Word document up onscreen to represent that file; the codes tell it which icon to use.

Which brings us to this secret: If you try to open a file, and you get a message saying the application that created it can't be found — and you know perfectly well that you do, in fact, have that application — take a look at the file's icon. If it has turned into a "generic" document, it could be that the icon has simply forgotten its type and creator codes (see Figure 15-3). Without those codes, it loses its identity and forgets which application it belongs to.

Restoring the proper codes with FileTyper or ResEdit usually solves the problem. Just type the right codes back in, using the method described earlier in this chapter, and the icon will take on its application-specific appearance and open right up.

	Reports			
10 items		65.7 MB in disk		11.1 MB available
	Name	Size	Kind	
	CC MAIL lists	14K	QuarkXPress® do...	
	Complete Editoral staff	11K	Microsoft Word do...	
	Editorial Change Form	5K	Microsoft Word do...	
	Editorial Equipment List	398K	QuarkXPress® do...	
	Font list by Mag	8K	QuarkXPress® do...	
	Font Surfcases	36K	Microsoft Word do...	
	ideas for Act 2	9K	document	
	Printer Fonts List	8K	Microsoft Word do...	
	RAM/Monitors	14K	Microsoft Word do...	
	shipping costs (WORD)	21K	Microsoft Word do...	

Figure 15-3: When a file gets its type and creator codes zapped, its icon becomes generic and its kind in Finder list views defaults to "document."

In the Finder's list views, there is yet another indicator that a file has lost its creator and type codes. Instead of being listed as a Microsoft Word document or a FileMaker Pro document, the file will be listed simply as a "document." Once again, the coding that tells the Mac which application created the program has been obliterated (see Figure 15-3).

Extracting fonts and sounds — the easy way

CD

Here's an incredibly easy way to crack open any application and peruse its internal collection of fonts and sounds. Make a copy of the program you want to peek into, then drag its icon onto FileTyper's icon (provided with this book). Change the type code to zsys and the creator code to MACS (capitalization counts), then click Change.

When you close FileTyper, the program you just altered will have been transformed into a *suitcase* — the same kind used to hold fonts. Double-click the suitcase to open it and you'll see all the program's fonts and sounds in the window. All you have to do is drag the icons to move or copy them! (This is a great way to harvest new system alert sounds, especially if you try it on games and children's programs.)

Which Copy Will Launch?

Suppose, as is often the case, that you have more than one copy of the same program on your hard drive. You might have Word 6 and Word 98, or ClarisWorks 4.0 and 5.0, or several copies of SimpleText. Now you double-click a document icon. Which version of the program will launch?

Which copy on your system

From the preceding discussion of type and creator codes, you know that the Mac will check the document's creator code and launch the matching program. But if you have several copies of the program, *which* copy will open?

The Finder checks the following sources, in this order:

- It checks to see if a program with the matching creator code is *already* running. If so, that program pops to the front.

- If the program isn't already running, the Mac searches for a copy of the program in the same folder, and then on the same disk, as the *document.*

  This is probably the most useful quirk to know when it comes to arranging your applications. For example, PowerBook users who use our ingenious RAM-disk trick (see Chapter 14) can rest easy knowing that double-clicking a RAM disk-based document will launch the RAM disk-based application — not the hard drive–based copy, which would force the hard drive to start spinning (and use battery power).

- If it's had no luck yet, the Mac next searches the startup disk for a copy of the program.

- Finally, the Mac searches your other drives on its quest for a matching program to launch.

Which version of the program

Now you know which copy of the *identical* program will open. But what if you have different *versions* of a program? After all, the creator code of a program doesn't usually change when the program is upgraded; ClarisWorks versions 3.0, 4.0, and 5.0 all have the creator code BOBO.

The answer is enlightening — and useful. If you have multiple versions of the same program, the Mac launches the one you've *most recently installed.* (Technically speaking, it opens the program whose Desktop-file entry was most recently updated; see Chapter 1.)

That's true even if the most recently *installed* copy isn't the most *recent* version. For example, if you want ClarisWorks 4.0 to launch whenever you double-click a ClarisWorks document's icon, install ClarisWorks 4.0 *after* ClarisWorks 5.0.

Here's a quick experiment to show you how weird this all gets. Locate a copy of SimpleText. Using the Finder's Duplicate command, make a copy of SimpleText (so that you now have a *more recently created* copy). Put the new copy into the Trash, but don't empty the Trash.

Strange But True

Now, if you double-click a SimpleText document, you'll get an error message to the effect that SimpleText can't be launched because it's in the Trash. Yet a perfectly good copy of SimpleText — the *original* copy — is still sitting right there on the hard drive! But because the most recent copy is in the Trash, the Mac becomes oblivious to any other copies.

How the Mac Multitasks

For years, running more than one program at a time on the Mac was a strange and alien concept. It even seemed to betray the Mac's professed simplicity. You did one thing at a time. Either you shuffled floppies in and out (in the Finder), or you typed and printed (in MacWrite). Multitasking was something fancy UNIX programmers did.

The first time anyone saw more than one program running on a Mac was when Switcher came along. This little software program put a little double-headed arrow on the menu bar. Click the arrow and the next program's window rotated into view, like a new slide in a projector. (You didn't see the programs' windows simultaneously.)

The goal of early programs like Switcher was simple: to run more than one program simultaneously. With more than one application in RAM, you would be spared the frustrating 60-second wait as you quit MacPaint (from which you copied a logo) and launched MacWrite (in which you wanted to paste it). If both programs were in memory at once, jumping between them would be instantaneous. Switcher was the precursor to MultiFinder and, eventually, the System 7-style multitasking we take for granted today. In retrospect, we're amazed that Switcher went essentially unheralded and unannounced; it never made the cover of a Mac magazine.

Allowing more than one program to run at a time also opened the door to *background tasks*. These are jobs that take the *computer* a long time to do (such as printing or downloading files by modem), but that don't involve any input from you. The dream was to let you, the user, continue to do something useful with the Mac — word processing, say — while part of the computer's attention was focused on this background task. In other words, people wished the Mac could do *multitasking*.

When a computer is multitasking, it doesn't really do more than one thing at a time. Millisecond by millisecond, it's actually doing only *one* thing at a time — but changing its job description extremely quickly. It might spend a few milliseconds handling a printout you're doing, then a few downloading a Web page, then back to the printout, and so on.

All of these background tasks happen when *you're* not doing anything. It takes place, for example, during the fractions of a second between letters you're typing (although that doesn't mean that you never *notice* background activity, especially when you're trying to type).

Modern Multitasking

These days, multitasking is no longer optional. You can *always* launch more than one program and keep them — and the Finder — in memory at the same time.

OS 8.5   To help you understand what's going on, the Mac offers you a list of running applications: the Application menu (or the *process menu*, if you're a programmer). The Application menu is marked at the right end of the menu bar by a

tiny version of the currently running program's icon; starting with Mac OS 8.5, this menu also shows the *name* of the currently running program. To switch from one running program to another, you choose its name from this menu. (Or, if you've turned this menu into a Mac OS 8.5 application palette, click a program's icon on the palette).

But there are several other ways to jump from one running program to another:

- Click anywhere in a visible application's window.

- In the Finder, double-click the dimmed icon of a program that's running.

- Double-click a document icon that was generated by one of the open programs.

- In Mac OS 8.5, press ⌘-Tab. You jump to the next running program, in alphabetical order. (Shift-⌘-Tab takes you *backward* alphabetically through your open programs.) You can even redefine these keystrokes, if ⌘-Tab doesn't strike your fancy; open the Mac OS help program (choose Help ⇨ Mac OS Help) and search for "switching programs." The resulting screens offer AppleScripts that can reprogram the program-switching key assignment. (For much more detail on the Mac OS 8.5 Application menu, see Chapter 2.)

- If you don't have Mac OS 8.5, but would still like the convenience of pressing ⌘-Tab to jump among programs, install Program Switcher, included with this book.

Hazards of Multitasking

Multitasking isn't just a more complicated task for the computer; it's a more complicated task for you, too.

Memory management

Your immediate concern when running several programs is memory. Your Mac has a finite amount of it. You must worry not just about how much RAM your Mac has, but also about how much each program needs, *and* how much you decide to give it. You must also worry about memory *fragmentation*.

To change how much RAM each of your programs uses, use the Get Info command on its icon, choose Memory from the pop-up menu (in Mac OS 8.5), and type a new number into the box at the lower right of the Get Info window. (Or, with AppSizer, provided on the CD-ROM with this book, you can change the program's memory appetite *as* it's launching; see the appendix.) See Chapter 9 for guidelines in setting this number correctly.

Chapter 9 also mentions two Macintosh tools that are absolutely ideal for multitasking: virtual memory (built into your Memory control panel) and RAM Doubler (from Connectix). Each lets you run more programs at once without sacrificing significant speed.

ANSWER MAN

Multitasking vs. Multithreading

Q: What's the Thread Manager? Sewing software?

A: The Thread Manager is an extension—built into System 7.5.3 and later—that gives your Mac multithreading.

Apple explains multithreading as follows:

"Multithreading allows an application process to be broken into simple subprocesses that proceed concurrently in the same overall application context. A thread consists of a register set, a program counter, and a stack. Threads have a fast context switch time due to their minimal context state requirement. Since threads are hosted by an application, threads within a given application share the address space, file access paths, and other system resources associated with that application...

"The Thread Manager will provide both cooperative and preemptive threads. Cooperative threads explicitly indicate when they are giving up

the CPU. Preemptive threads can be interrupted and gain control at any time..."

Sure. Whatever.

What all that means in real life is that, when the Mac is fully multithreading, more kinds of computational tasks will be "background" tasks—meaning that you can continue working. The usual examples are formatting a floppy disk, doing a database search, or applying a Photoshop filter. Today, you sit and twiddle your thumbs while those processes go on; multithreading would permit you to continue working while those activities go on in the background.

Mac OS 8's copying and trash-emptying features are among the first payoffs of Apple's multithreading technologies—while a file is copying, or while the Trash is emptying, you can launch a program, go online, or do any other work, with almost no perceptible speed decrease.

Not knowing which program is open

Another complication of multitasking on the Mac is losing track of which program you're actually *in*. Think about it: If there's any screen space not filled by a program's window, the Finder desktop shines through, right? If *no* program window is open, then your screen looks *exactly* like you're in the Finder!

This can cause frustrating side effects for the novice. The novice may, for example, want to shut down for the day—but the Shut Down command is nowhere to be found! In fact, it only *looks* like you're in the Finder; actually, you're in some program that has no open windows.

(OS 8.5) That's why Apple, after years of listening to this complaint, created a sweet, simple solution in Mac OS 8.5: it added the *name* of the active program to the upper-right corner of the screen, as explained in Chapter 2.

But even in systems before Mac OS 8.5, savvy Mac users know three visual cues to determine which program is in front:

- Look at the Application menu (see Figure 15-4). Though small, it shows the icon of the program that's currently in front in the upper-right corner.

- The frontmost program has a check mark beside its name in the Application menu (see Figure 15-4).

- The first command in the   menu always provides the name of the active program ("About Quark XPress," for example).
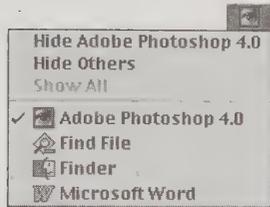
Figure 15-4: Visual clues as to which program is really in front: the icon atop the Application menu and the check mark next to the program name.

When you're running multiple programs in System 7 through 7.1, the familiar Finder desktop is always shining through from behind any the windows of other programs. In fact, even if you're smart enough to choose Hide Finder from the Application menu, the Finder desktop and icons *still* don't disappear! Worse, one accidental mouse click *outside* of an application's window instantly deposits you back in the Finder, whether you want to be there or not. Ask any novice how many times he or she's seen an entire word processor window full of text completely *disappear* (behind some Finder windows), and you'll understand the extent of the problem.

Given all of this confusion, it's no wonder that System 7.5 introduced the option of auto-hiding the Finder *completely* whenever you launch another program. (This feature's on/off switch is in the General Controls control panel.) And we mean *really* hiding it, icons and all. No wayward click will send you back into the Finder. There's never any doubt as to whether you're in the Finder or not, and there's no Hide Finder command to only half-work.

Of course, there are disadvantages to the fully self-hiding feature, too: To go *back* to the Finder without quitting, you *must* choose its name from the Application menu. Furthermore, if the Finder is hidden, it's impossible to create clipping files on the desktop using Macintosh Drag-and-Drop — or to insert the contents of a clipping file into an open document by dragging it from the desktop — as described in Chapter 1.

Multitasking Secrets

Hide one program en route to another

Of the various ways you can switch from one program to another, three of them let you *hide* program A as you switch from it to program B. If you press Option while either (1) choosing a program's name from the Application menu, (2) clicking a program's icon in Mac OS 8.5's applications palette, or (3) clicking in

a background window to bring it forward, the program you're working in hides itself. The Option key is an important tool in keeping a bunch of overlapping, confusing windows under control.

The most prominent example of this technique's usefulness is switching to the Finder. In this case, hiding other program windows is almost essential, because they may be concealing the icon you need access to (the Trash and your disk icons, for example). Therefore, if you're in (for example) ClarisWorks, Option-clicking whichever patch of the Desktop you can see is a common power-user habit.

No, wait — we take it back. The *real* power user switches to the Finder and *simultaneously* hides the other running programs, all in a single keystroke (such as Control-F). How? Using OneClick, the macro program included with this book. See Chapter 23 for details on creating OneClick macros.

CD

Switch with a keystroke
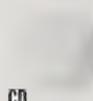
One of the most efficient ways to jump from one program to another is to use a macro that you've created with, for example, OneClick (which is on the CD-ROM with this book). By all means, assign your favorite programs to the function keys across the top of the keyboard. Most people are already aware that these programs let you launch any program on your hard drive with a single keystroke.

CD

Fewer realize, however, that the *same* macro can be used to bring that program to the front even *after* it's running. Allowing your macro to launch programs lets you worry less about what's running; you learn to associate Control-W, say, with Microsoft Word, without having to remember whether or not it's already running.

One-click quitting with OneClick

If you're using OneClick (included with this book), you're by now accustomed to using its Task Bar to manage your running programs. It's much like Mac OS 8.5's tear-off Application menu, in that it shows you all currently running programs, and lets you switch among them by clicking — but OneClick's Task Bar offers many more features.

Speed Tip

Such as this one, to which we've become *addicted:* you can *quit* any running program just by Shift-clicking its name on the OneClick Task Bar. You're spared the hassle of switching to the program, using its File menu, switching to the next, and so on.

Borrow from Windows 95

In many respects, Windows is a clunkier, less elegant OS than the Mac OS. We must admit, however, that its *task bar* (the strip along the bottom of the screen) is a nice idea. It fulfills the same purpose as the Mac's Application menu — displaying all the currently open programs — with two advantages. First, it shows open *windows,* not just programs, and second, it's not hidden. The beginner isn't expected to click in a secret place to see the list of running programs.

ANSWER MAN

Diamonds in the bar

Q: What are those diamonds and flashing icons all about? Sometimes they're at the top of my menu. Sometimes they're on my Application menu. What's happening?

A: We've been discussing the ins and outs of multitasking for several pages now. Generally, we've conveyed the impression that only the frontmost program — the active one — gets much attention from you. Programs in the background are permitted to use only the grains of time in which you and the foreground program aren't doing anything. That leaves them available to do tedious, computerish tasks such as printing or receiving a fax.

When we were kids, whenever our parents had a fancy dinner party, we were supposed to have fun upstairs all evening and not disturb the grown-ups in the living room. But that always presented a quandary: What should we do if something really important happened (like a sister getting her tongue caught in the faucet opening or something)?

Background programs face the same challenge: Having been told firmly not to intrude on the main event, they are content to huddle in the background, waiting for the Real Work to get done. Yet sometimes there's a crisis. The background program doesn't want to interrupt you — it has too much respect for you to do that. So it timidly starts blinking.

This blinking usually happens on the Application menu icon. Your foreground program's icon starts alternating with that of the background

application that's in trouble. If you then put your cursor on the Application menu icon, the distressed background program's name appears with a diamond beside it (in case you didn't recognize the blinking icon).

```
                          [icon]
  ┌─────────────────────────────┐
  │ Hide ClarisWorks            │
  │ Hide Others                 │
  │ Show All                    │
  ├─────────────────────────────┤
  │ ✓ [icon] ClarisWorks        │
  │   [icon] Finder             │
  │ ◆ [icon] PrintMonitor       │
  │   [icon] Word 5.1           │
  └─────────────────────────────┘
```
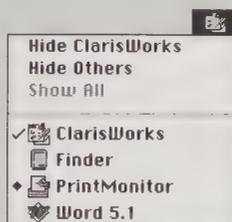
When you finally have a moment to respond to the background program's tactful signal, you choose its name from the Application menu, and you're finally told what the trouble is.

By far the most common programs that present these Notifications, as they're called, are PrintMonitor (see Chapter 30), the Finder, e-mail programs, and telecom programs (including online services such as America Online). The Finder is generally trying to tell you that it has run out of memory for keeping busy windows open. PrintMonitor usually wants to say that your printer is (a) off, (b) out of paper, or (c) ready for the next sheet of hand-fed paper (if you've used the Manual Feed option). E-mail programs are usually trying to say that a message has come in, and online services warn you that you haven't touched your keyboard for several minutes, but you're still running up a bill.

If you find the notion of a task bar attractive, you don't have to switch to Windows to get it. Just install Go Mac, a shareware program included with this book. As described in the appendix, it adds a bottom-of-screen task bar to the Macintosh — with even more features than Windows 95's version.

You can also configure Mac OS 8.5's own applications palette to resemble Windows 95's taskbar (although it lists only running programs, not files and windows); see Chapter 2.

The Finder-in-a-window trick

As mentioned in a preceding secret, one way to get around the Trash-is-covered-up problem is to Option-click the desktop when you switch from a program to the Finder.

That solution isn't ideal, however, if you're running *several* programs. In that event, you must switch to the Finder and then choose Hide Others from the Application menu.

Here's a trick that reduces that one step down to none. Create a folder called "Desktop Window." Make aliases of your disks, both attached and networked. Also make an alias of your Trash can. Put them all into this window (see Figure 15-5).
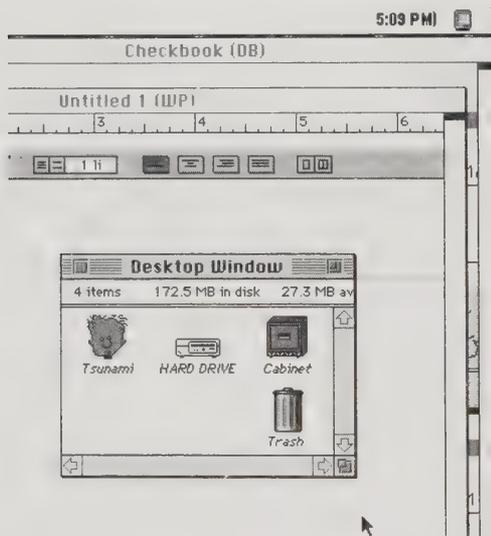
Figure 15-5: The Finder-in-a-window trick provides access to the icons that are usually covered up by the windows of other programs — the Trash and your disk icons. Now you don't have to bother hiding all your other applications when all you want to do is jump to the Finder and open a disk.

Now, whenever you switch to the Finder, you see the desktop landscape that would otherwise be covered up by the windows of other programs. Double-click a disk icon to open it. Drag anything onto the Trash alias to delete it.

Opening Desktop items without closing windows

Speed Tip

Here's a neat way to select and open Desktop icons, even if they're covered up by open windows: Press ⌘-Shift-up arrow. This instantly jumps you to the Desktop level, regardless of how many windows are open.

Then type the first letter or letters of the name of the disk icon or file you want to select. If you want to open the Trash, for example, press T. If the Trash happens to be behind an open window, you won't be able to see that you've really selected it — but you have. Just press either ⌘-O or ⌘-down arrow, and the Trash window will open. You've selected and opened an item on the Desktop without seeing it, without closing a single window, and without lifting your fingers from the keyboard.

Publish and Subscribe

Remember Copy and Paste? You select information from one document or program. Then you paste it into a different (or the same) document or program.

The Publish and Subscribe commands found in many of today's programs is almost exactly the same, but there's one critical difference: The "pasted" material is *linked* to the original. When the original chart, text, or graphic gets edited, the copies are automatically changed to match. This change can even take place if the copies exist as files on *other Macs,* provided they're connected by a network.

Why hasn't it caught on?

Despite the attractiveness of the idea, most people don't use Publish and Subscribe. We think three factors are responsible:

- If you're not either on a network, collaborating on documents with others, or embedding one kind of data (such as PostScript graphics) inside another (such as a word processor), you simply don't need Publish and Subscribe.

- Not all programs offer Publish and Subscribe features. In fact, only programs that deal with the layout and manipulation of text, graphics, and charts have Publish and Subscribe features.

- Most of all, we feel that Publish and Subscribe hasn't quite become universal because it's just too darned hard.

This last item we hope to do something about. We encourage you to walk through it just this once, if only so you'll know what Apple had in mind.

The basics of Publish and Subscribe

Copy and Paste takes place in two spots. You copy a selection (location A) and put it down somewhere else (location B).

Publish and Subscribe, however, involves *three* locations. You copy a selection (location A). When you use the Publish command, the Mac saves that selected paragraph or picture in a new file (location B) on the hard

drive. You must name it and place it into a folder, just as you would any ordinary document. Sticking with this magazine analogy, the saved text or graphics file is called an *edition*.

At this point, you've achieved nothing useful. You've copied some material and saved it into its own file on the disk.

Now, however, you go to another document (location C). It may have been created by the same program that created the edition, or it can be a totally different program. Into this document, you import the edition file on the hard drive, using the Subscribe To command. The contents of the edition file appear in the new document, just as though they had been pasted there (see Figure 15-6).

PUBLISHER   EDITION   SUBSCRIBERS

WANTED:
Dead or Alive

$20,000 REWARD
last seen reading
computer books

A graphic in Canvas or   A file on your hard drive   A MacWrite Pro document, a
FreeHand   Quark Xpress document, a
                                                           Word document, and so on
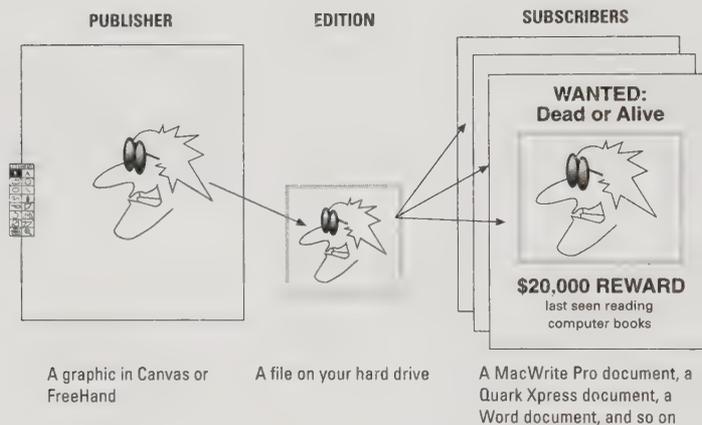
Figure 15-6: The *publisher* is the material in the original document. (There can be several publishers in one document.) Using the Create Publisher command, you save the graphic into a disk file of its own, called an *edition*. Finally, you can import the graphic into any number of documents, whereupon each imported edition file is called a *subscriber*. The beauty of this system: If you ever reopen the publisher document and change the graphic, it automatically changes in all the subscriber documents, too.

This may seem to be several steps more complicated than Copy and Paste. But if you now open the original document, *change* what you published, and use the Save command, then the edition file is instantly updated to reflect the change you made, as you'll find out when you open the subscriber documents.

Publish and Subscribe step-by-step

Get a program that has Publish and Subscribe features. Almost any word processor, spreadsheet, page-layout program, or graphics program does. (The current versions of Word, Excel, FreeHand, PageMaker, Canvas, ClarisWorks, WordPerfect, and Photoshop are some examples.) If you have two different programs, terrific; you can publish from one to another. But if you have only one, that's useful, too.

Create a graphic, chart, or block of text (from one typed character to many pages long) and select it. From the Edit menu, find the program's Create Publisher command (see Figure 15-7).
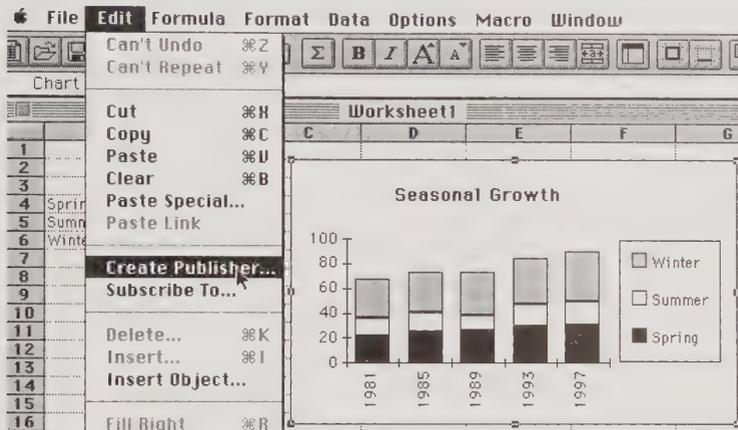
Figure 15-7: First, select or highlight the material you want to be linked. Find the Create Publisher command and choose it.

You're asked to give this edition a title and to save it on your hard drive. Do that (see Figure 15-8). Repeat this process with as many other selections of *source* material as you want. In most programs, a gray, nonprinting border appears around the published material.

Before you quit the first program, *you must save the document* that contains the published material! If you don't, your magical linking of material evaporates. You are left with the lonely edition file on your hard drive, not tied in to anything at all.
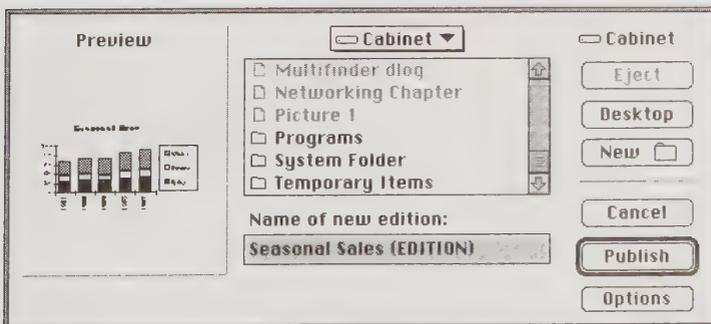
Figure 15-8: Name and publish the edition file. Depending on the program you use, the Publish button may say Save.

Now go to the program, document, or *part* of a document where you ultimately want to integrate what you just published. Find the Subscribe To command. Choose it; a box appears in which you can locate the edition you created earlier (see Figure 15-9). The Mac automatically highlights the last edition you created, regardless of the program that created it.
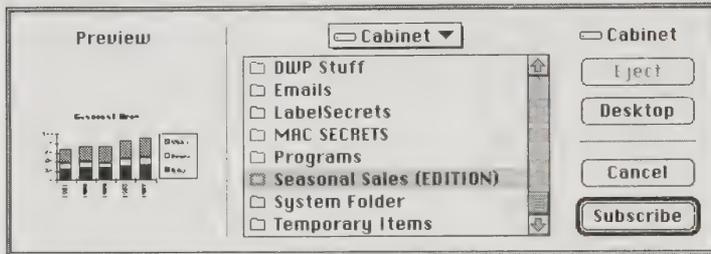
Figure 15-9: Now you're fetching the edition file from within the target document. Note the Preview; this handy feature helps you figure out if you're opening the correct edition file. (If you published text, you see the first few lines in the Preview.)

Double-click the name of the edition you want. It appears in your document, usually enclosed by a nonprinting gray border (see Figure 15-10).
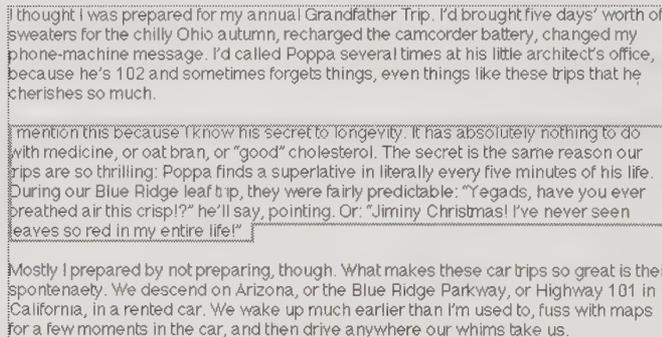
Figure 15-10: A gray outline appears around any published or subscribed material. It does in most programs, anyway; in Word and Excel it doesn't, although Word shows brackets when you have the Show ¶ command turned on.

Editing the subscriber

After you subscribe to an edition file, you can't do much with the imported material. If it's a graphic, you can move or resize it. If it's text, you might be able to make overall formatting changes.

But to make any serious editing changes — or any changes to individual words in subscribed text or individual elements of a graphic — you must reopen the original publisher document. Make some changes to it and then

save the publisher document. The edition file on disk — and, therefore, the subscriber document — is automatically updated.

Controlling when editions are updated

We mentioned that an edition file is updated when you save the publisher document. Actually, there's more to it than that. You can also elect to have the editions updated on command. You can even permanently destroy the link between the original and the copies.

Most programs have a Publisher Options command and a corresponding dialog box. (It's available only when something that you published is *selected* in the publisher document.)

In the dialog box, you see a Send Editions control. Generally, it's set to "On Save," meaning that you have to save the publisher document to update the edition files. But using the controls in this dialog box, you can have more flexible control over when the edition is changed.

- To halt all edition-updating until you are ready, choose Manually.
- To stop all edition-updating *forever* (break the link), click Cancel Publisher.
- To send an edition update right now, before you save the publisher document, click Send Edition Now.

Subscriber options

Most programs generally include a *Subscriber* Options command and dialog box, too. In this dialog box, you see familiar controls for changing the frequency of the updating. If you leave the Automatically button selected, then the selected subscriber changes whenever the original (publisher) document is saved (or you click its Save Edition Now button). You can create the same three variations on that theme as you can with publishers.

Multitasking Pro: OpenDoc

Imagine buying software by the *feature,* not by the program. You'd buy a spelling checker from Claris, a graphics editor from Deneba, and type-manipulation controls from Adobe, and pow — you've got a customized program. You wouldn't pay for features you didn't want, and you wouldn't be stuck with using one word processor even though the spelling checker is better in another.

That was the promise of OpenDoc, a now-abandoned software architecture developed by Apple. You were supposed to buy a *container* program (ClarisWorks 5 was originally supposed to be one) — a master shell — and then you'd buy only the feature components you wanted. As you clicked the appropriate data type in your document, the menus and tool palettes of the master program would change to reflect the features of the components

you've purchased. Click a graphic, and the menus would show those Deneba commands for graphics; highlight some text, and those Adobe type commands would appear.

CD

Why was OpenDoc canceled? Partly because many of Apple's software partners had backed away; partly because the technology was slow, RAM-hungry, and hard to understand; and partly because of Apple's mid-'90s money crunch. If you're interested in reading more, see Chapter 15 of *Macworld Mac Secrets, 4th Edition* (included on the CD that came with this book). (Chapter 27 of that same electronic book contains a description of Apple's Cyberdog Web browser, which was by far the most successful example of Opendoc's promise.)

Save, Save As, Revert

You won't get far in your Mac life without encountering — and understanding — the Save As and Open File dialog boxes. These complex screens are where you specify how you want to transfer data between the hard drive (where it's stored) and RAM (where you work on it). Because these dialog boxes are central to just about every Mac application in existence, we figured that this would be the place to dissect them.

Save and Revert

As we mentioned in Chapter 9, when you double-click a document or a program icon, your Mac feeds the information from the hard drive into *memory*. By the time a document appears on the screen, you have *two* copies of it — one copy on the disk and another in memory (RAM).

Mac Basics

As you edit that document, it becomes more and more different from the original copy still on the hard drive. At this point, you have two choices: Make the hard drive copy match the newer version that's in RAM — or vice versa.

The first scenario is the purpose of the Save command. When you choose Save from a program's File menu, the Mac stores your memory-based document on the disk. Now both copies of the document match.

The Revert command, in the File menu of most programs, does just the opposite. Instead of bringing the disk copy up to date so that it matches the document in memory, it restores the *memory* copy to match the older *disk* copy. In other words, the document reverts to the condition it was in the last time it was saved.

This, of course, is precisely what you want to do if you make a mess of a file — when a search-and-replace operation has gone awry, for example. The Revert command is the ultimate Undo. (Some programs, such as Microsoft Word, don't offer a Revert command. You can accomplish the same effect manually: Close the file without saving changes, then re-open it.)

If your program has neither a Revert *nor* a Save command (such as FileMaker), there is *no* way to restore the file after you've worked on it for a while. If you use FileMaker, your only protection is to make a duplicate disk copy before

each use of the database (using the Save a Copy As command, for example). If something goes wrong, you can use the copy.

Save As

The third interaction between the RAM-based and disk-based copies of a document is the Save As command.

In a way, Save As is a cross between Save and Revert; it lets you eat your cake and have it too. You save the changes you've made — they become part of the *new* document — and you also close the older one without saving changes. Then you have two different versions on disk, an old and a new one.

When working under unstable conditions — that is, when either your boss or the software is a little flaky — you may want to create an electronic paper trail of your progress on a certain document. Use the Save As command frequently to create documents called Memo 1, Memo 2, Memo 3, and so on. If an indecisive boss (or a buggy, file-corrupting program) decides that the current version is no good, you can go back to any of the saved versions.

A visual tour of the Save box

The simple Save File dialog box — the list box that appears when you choose Save As (or Save for the first time) — is loaded with hidden features. Here's our summary of the *standard* Save File box (see Figure 15-11). (But see "Save and Open File 2000: Navigation Services," later in this chapter.)

ANSWER MAN

Save a Copy As

Q: You mentioned that FileMaker has no Save command. But it has something called Save a Copy As. Isn't that the same as Save As? (I discovered the same command in Photoshop, by the way.)

A: Not quite.

The more common Save As command duplicates your file, but leaves the new copy open on your screen. The copy you *were* working on is automatically closed — and not saved.

The Save a Copy As command — found in FileMaker, Photoshop, HyperCard, and an increasing number of other programs — is slightly different. It creates a duplicate of your file, but leaves the *original copy* open on your screen. You don't even see the new copy unless you now open it.

In other words, Save a Copy As is something like an Export command. If you use it periodically, you can create a "paper trail" of versions of your file in different stages of development. (If such an idea appeals to you, by the way, that's the basis of Aladdin Systems' FlashBack program. It keeps a running internal list of changes you make to a certain file. If disaster strikes, you can backtrack through the changes you've made.)
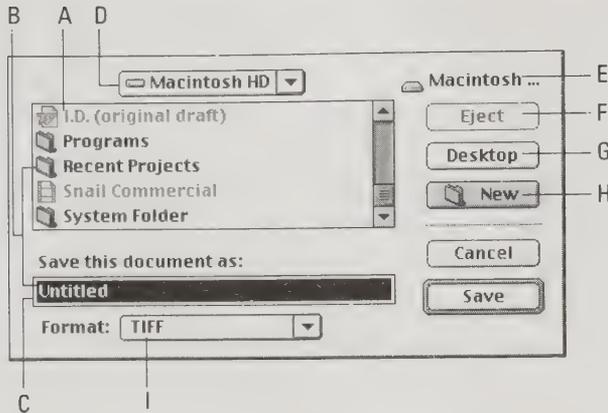
Figure 15-11: The Save As box deconstructed.

We're going to assume that you already know what Save and Cancel do.

A. This list shows the contents of the disk or folder identified by item D. You use this list to navigate and to choose which folder you want to store this file in.

Ever wonder why all the documents in the list are gray? Because gray is the universal Mac signal "not available." When you're saving a new file, the only icons that are available are *containers* — disks and folders, in other words. You can't very well store a document inside another document.

B. Item B represents a concept, not an interface element: There are *two different* places where you can do typing. You can type a title (C) or you can type to choose a folder (A). We'll discuss this feature in more detail in a moment; note here simply that pressing the Tab key jumps you from area A to area C.

C. In this text box, you type the name of the file you're creating: up to 31 letters, no colons.

D. This pop-up menu shows the name of the disk or folder whose contents you're browsing through. If you want to burrow deeper into folders-within-folders, you double-click a folder name in the list (A). To back *out* from the contents of a folder, however, you must use this pop-up menu. It lists, in upside-down order, the nested folders you traveled to reach the location you're viewing now. That is, the disk is always second-to-last in the pop-up menu, and the Desktop is always at the bottom.

E. This indicator identifies the disk whose contents you're browsing.

F. This button is only available when you're viewing an ejectable disk or its contents. Use this button when you want to save your document onto some disk that isn't currently in the drive. (Unfortunately for floppy-disk and Zip disk users who don't have Mac OS 8 or later, this command is the

equivalent of the Special menu's Eject Disk command: yes, it ejects the disk, but it leaves the disk icon's ghost on the Desktop. Within moments of your next visit to the Desktop, your Mac begins asking you to re-insert that disk.)

G. The Desktop button takes you directly to your bird's-eye view of the disks accessible by your Mac. It shows each as an icon, including your hard drive, any floppies or cartridges, and any networked drives that you've mounted.

In Desktop view, you also see any folders or files whose icons you've dragged out of a window onto the Desktop. Interestingly, you also see a dimmed icon of the Trash. (We've always wondered why it's always dimmed. We've written documents now and then that we wouldn't have minded saving directly into the Trash.)

H. The New Folder lets you create (and name) a new folder, in case you're trying to save a document for which no existing folder is quite right. (Not all programs offer this button, but the vast majority do.)

I. More and more programs offer specialized controls down here at the bottom of the dialog box. Usually there's a pop-up menu, as shown in this illustration, that lets you specify what *kind* of document you want to save: a text file, a Word file, and so on. That's good, because saving your work as another file *type* (exporting it to another file format) is one of Save As's most important uses.

Save/Open Dialog Box Secrets

Two different places you can type

When you're staring at the Save As dialog box (see Figure 15-11) or the very similar Open File dialog box, Apple has designated two different areas where your typing has some effect.

Mac Basics

First, look at area A in the previous figure. When this area is ready for typing, it has a thick black border, as shown in Figure 15-12.
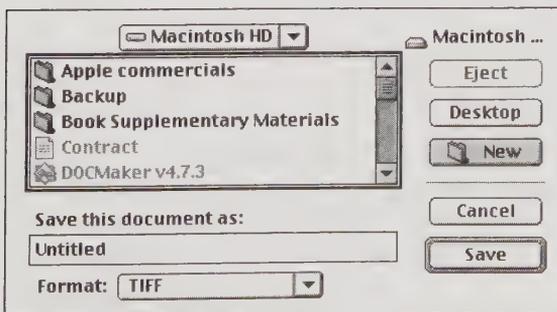
Figure 15-12: The thick outline tells you that your typing will start selecting file, folder, and disk names.

We'll cover exactly what you're supposed to type when the list-outline is with you in the next secret.

You can also type in the blank box where you're supposed to name the file that you're saving. As we mentioned earlier, you can jump from one typing area (the file name) to the other (the list of files) in either of two ways — click with the mouse or press Tab.

What you can type in the list area

When the thick outline tells you that you are in list-typing mode, as shown in Figure 15-12, you can select items in the list without having to use the mouse. Here's the ultimate list of keystrokes that move you around. Note, in all these cases, that typing only highlights selectable items. In the Save File box, you can't ever highlight one of the dimmed *file* names — only *folder or disk* names.

Space   Press the space bar to highlight the first item in the list.

P   This letter key, or any letter key, highlights the item in the list whose name begins with this letter — or the next closest one *after* it. If you have several beginning with the same letter, you can type several letters quickly — PA, for example — to close in on the one you want.

Z   Type Z to highlight the file whose name starts with the letter closest to Z (not necessarily the *last* file).

`   The unshifted tilde key, in the upper-left corner of your keyboard, highlights the *last* file in the list.

↑   The arrow keys move the highlighting up and down the list, one item at a time.

Home   Scrolls to the top of the list.

End   Scrolls to the bottom of the list.

PageUp   Scrolls up by one screenful of items.

PageDn   Scrolls down by one screenful.

How fast you have to type

When you're typing letters to highlight a file's name, you're generally told to "type a few letters quickly" to pinpoint a specific file. But how fast is quickly? How long do you have to wait between one typing spurt and starting over?

Strange But True It turns out that *you* decide what pause constitutes an "I'm going to start over typing" period. The Mac goes by, believe it or not, your Keyboard control panel. Set the Key Repeat Rate setting to a shorter time, and you won't have to wait as long before starting over when type-selecting a file in the list box.

Other hidden keyboard shortcuts

You should never have to use the mouse at all when you're opening or saving a file. Here are the alternatives.

⌘-D	Makes the list jump to the Desktop level — the same as clicking the Desktop button — and highlights the name of your startup hard drive. ⌘-Shift-↑ accomplishes the same thing.
⌘-↑	Moves "upward" one level closer to the Desktop. This is how you move outward from an inner folder to the one that contains it.
⌘-↓	Opens the highlighted folder or disk; the same as pressing Return or Enter.
⌘-→	Changes the list to show you the contents of the next disk. You go in the order that the disks appear on your Desktop, from top to bottom. Press ⌘-← to cycle through the disks in the other direction.

This keyboard shortcut is well worth learning. Without it, the only way to switch disks is to jump to the Desktop level and then double-click the next disk you want to view. That's a lot of trouble.

⌘-N	This is the same as clicking the New Folder button.
⌘-O	This is the equivalent for clicking the Open button, when appropriate.
⌘-S	The same as clicking the Save button.
⌘-.	(That's ⌘-period.) It's the same as clicking the Cancel button.
Return (Or Enter.)	This key's effect changes, which causes some confusion for beginners. And for us.

You see, pressing Enter or Return is *usually* the same as clicking Save. Your file gets saved, and the dialog box goes away. (Or, if we're talking about the Open File box, then Enter or Return opens the highlighted file, folder, or disk.)

But *if* you're in type-to-select-a-file mode (the thick outline is around the list of files) *and* a folder or disk's name is highlighted, then Enter or Return opens the highlighted folder.

That often throws us. We press Enter, thinking we're saving the file. But some folder was highlighted at the time, unbeknownst to us — and so then the file *didn't* get saved, but we're now inside some arbitrary folder. Puzzled and confused, we press Enter *again*. This time we succeed in saving the document, but into the wrong folder! No wonder beginners often complain that they create documents and can never find them again.

Hidden things to click

Actually, there's really only one hidden thing to click. It's the disk name, as identified by letter E in Figure 15-11.

But it's handy: It's the same as pressing ⌘-up arrow. Clicking here moves you out of the folder whose contents you're viewing, and one folder level closer to the Desktop.

Double-click an alias, and Option-click

When you're viewing the Open File dialog box shown in Figure 15-12, alias names show up in italics. If you double-click one, the original file (from which the alias was made) opens.

Strange But True   If you *Option*–double-click it, though, you don't open it. Instead, you're instantly shown the contents of the *folder* that contains the original item.

Changing your mind in mid-double-click

We've gotten loads of mileage out of one particular quirk of the Open File dialog box (and similar spots in the Mac OS): as you double-click to open a file in its Open File dialog box, the Mac opens whichever file your cursor is on when you *release* the mouse.

Suppose you've got a folder full of Photoshop files, and you're hoping to open a file called Baboon. But by mistake, you point to the Aardvark photo and start to double-click. Your finger on the mouse button goes down, up, down — and then you realize your mistake. Without lifting your finger, slide down onto the Baboon file's name and *then* release. The Macintosh thoughtfully transfers your double-click onto the Baboon file's name.

Farewell, Boomerang — Hello, Action Files

You won't find much disagreement about one point: the traditional Save and Open dialog boxes leave a lot to be desired. The list is too small, you can't resize it, it's ugly, it's confusing, and so on. That's why programmers have attacked the problem with a vengeance, creating add-on programs to remedy the drawbacks.

Remember SuperBoomerang? This discontinued program kept track of files, folders, and disks you'd recently opened; let you create lists of files, folders, and disks you wanted quick access to; let you search your hard drives; and more.

Fortunately, PowerOn Software filled in the void with Action Files, a control panel that does what Boomerang did and more. As shown in Figure 15-13, it lets you create new folders; move things to the Trash; Get Info on files and folders; label, rename, duplicate, or make aliases of your files — all right within the dialog box.

A few Action Files-type features made it into the Mac OS 8.5's updated Open/Save dialog boxes, as described in the next section. Unfortunately, you need both Mac OS 8.5 *and* all new programs to see these enhanced dialog boxes. Action Files, on the other hand, is available now — in all your programs, and with any recent System Folder version.
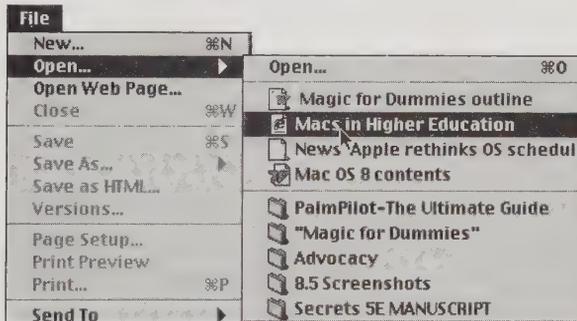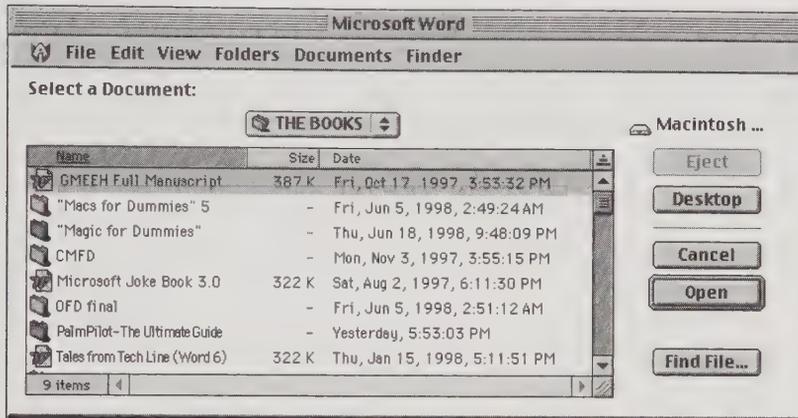
Figure 15-13: Action Files makes the standard Open and Save boxes far more efficient and flexible (top). Come to think of it, it also lets you bypass the Open box completely by adding a list of recently opened items to the Open command of your programs (bottom).

(The CD that accompanies this book, by the way, includes a special version of Action Files. After 30 days, some of the features begin dropping away, as incentive for you to use the discount coupon in the back of the book to order the full version.)

Save and Open File 2000: Navigation Services

We're happy to report that the 14-year-old complexities of the Save/Open File dialog boxes may soon recede into nostalgia. Apple's engineers, well aware of the Save and Open boxes' drawbacks, have designed a much clearer, reworked design. In fact, the new Open and Save dialog boxes resemble nothing so much as a Finder list-view window, as Figure 15-14 makes clear.

But first, a disappointing caution: Although this software is built into Mac OS 8.5, you won't see it until each software company updates its own programs to take advantage of it. The programs written before Mac OS 8.5 will continue to show the old, creaky dialog boxes described in the previous sections.

MACINTOCH SECRET

Select the Desktop you want

When you're saving a new document, it's often useful to save it onto the Desktop. That way, when you're finished working in your program, the new icon will be sitting out, in plain sight, ready for you to file away.

To do so, when the Save File As: box appears, just click the Desktop button (or press ⌘-D). Then click Save, and your file will be saved on the Desktop.

Little-known fact, however: Technically, even though the *icon* appears on the Desktop, your file is actually being stored on your main (startup) hard drive.

If you have more than one drive, however, it might occasionally be useful to store that file on the Desktop, but on one of your *other* drives (or partitions). Here's how you do it:

When the Save dialog box appears, click the Desktop button, so that the icons of all your drives appear. Click once on the drive you want, then click in the box where you type the file's name. If you consult the upper-right corner of the dialog box, you'll see that, indeed, you've now switched to another drive — and yet the Desktop is still your new file's destination.

All right then: on with the tour. Figure 15-14 shows the Open File dialog box; the Save File dialog box is essentially the same, except that you don't see documents and you don't get to see flippy triangles — you must open folders exactly the way you always have, by double-clicking.

Or, come to think of it, by *dragging a disk or folder icon* from your Desktop directly into the new Open or Save dialog box (into the area indicated by B in Figure 15-14). The list view changes instantly to reflect the contents of the disk or folder you dragged.
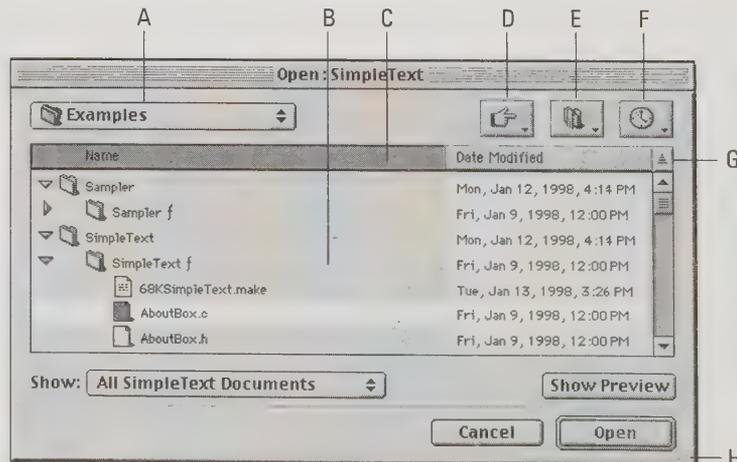
Figure 15-14: Mac OS 8.5 introduced the improved Open File dialog box — coming soon to some programs near you.

A. This pop-up menu is the same one you've always seen when opening a file. It lets you move up and down the hierarchy of folders in the usual way — but from now on, you can generally ignore this control.

B. Ah, now here's the good stuff. For the first time, navigating folders when opening a file makes your progress crystal clear — at all times, you see exactly where you are in the grand scheme of folders-within-folders, thanks to the Finder-like "flippy triangles" to the left of the folders' names.

Cooler yet: in some programs, you can actually make *multiple* selections in this dialog box, thus opening several files at once. To do so, Shift-click them. (You can Shift-click only files; if you Shift-click a folder, you lose any previous selecting you had done.)

C. The column headings, Name and Date, work just as they do in Finder window list views: click the heading to change how the list is sorted.

D. This odd-looking button/pop-up menu is the Shortcuts menu, which should have been called the Disks menu. It shows a list of all disks connected to, or inserted in, the Mac at the moment (plus the Desktop), so that you can jump directly to any one of them. There's also an Eject command available whenever you choose a removable disk's name.

Alas, the handy ⌘-arrow shortcuts that let you jump from disk to disk (in the previous Open and Save dialog boxes) are gone. But keyboard freaks needn't worry — you're not forced to use the Shortcuts pop-up menu to change disks. Instead, press ⌘-D (to jump to the Desktop level); type the first couple of letters of the desired disk's name; and then press Enter to see what's in it (or ⌘-→ to open its flippy triangle).

Speed Tip

E. Item E is the Favorites pop-up menu. As described in Chapter 2, the Favorites command (in the Mac OS 8.5 Finder's File menu) lets you add any icon to your list of Favorites, which appear in your ﹅ menu. They also appear here, handily enough, as shown in Figure 15-15.

If you're opening a file, the Favorites pop-up menu lists disks, folders, and individual files. If you're *saving* a file, however, this pop-up menu lists only disks and folders.

Add to Favorites
Remove from Favorites...

NavServices.html
Quick Start
What's New?

Docs
NavServices
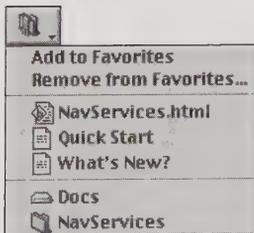
Figure 15-15: The Favorites pop-up menu/button lets you add a selected file, disk, or folder to the Favorites list. The menu is divided into three sections: the Add/Remove commands, a list of documents (in the Open dialog box, not the Save box), and a list of folders and disks.

F. The third new pop-up button is Recent Items. It lists the last bunch of files, folders, and disks you've opened. How many? That's up to you. Use the Apple Menu Options control panel to set this number, as described in Chapter 4.

G. Click this tiny, pyramid-shaped triangle button to reverse the sorting order — Z to A (or oldest first) instead of A to Z (or newest first), exactly as in Finder-window list views (see Chapter 1).

H. For the first time in Macintosh history, you can resize the Open or Save dialog box. Just drag this "grip strip" diagonally.

The new Navigation Services dialog box is a vast improvement over the old Open and Save dialog boxes. Still, we pity the novice. During the year or so it'll take for every software company to update their programs, the novice will have to learn *both* systems, old and new, depending on the age of the programs in question.

New Open/Save Dialog Box Secrets

Direct to the Favorites menu

The Favorites pop-up button, a new arrival to the Open and Save ("Navigation Services") dialog boxes, is somewhat useful in its ability to give you quick access to important folders and files. It's even more useful, though, since you can *add* items to it right from within the dialog box.

The official way is to click the item you want to add (Shift-click to select several) and then choose Add to Favorites from the Favorites pop-up menu.

Our way is better: *drag* the item you want *onto* the Favorites button, as shown in Figure 15-16. It's instantly added to the list of favorites — both here and in your menu.
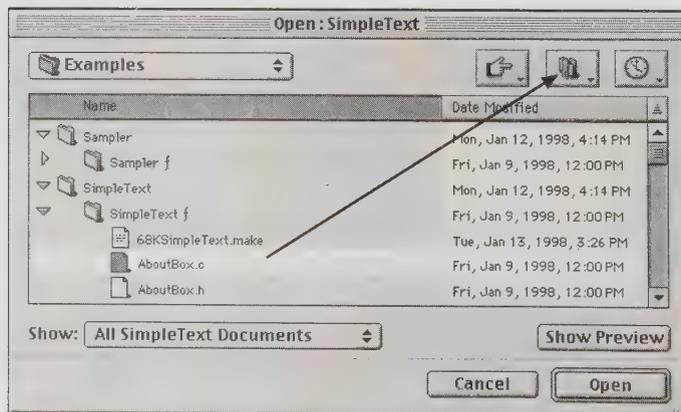
Figure 15-16: Drag-and-drop is available even within the Open and Save dialog boxes.

Keystrokes of the rich and time-sensitive

Almost all of the keystroke shortcuts available in the *old* Open and Save dialog boxes are also available in the *new* editions. See "Save/Open Dialog Box Secrets" earlier in this section for a complete list: ⌘-O to open, Option-double-click to open the original file instead of an alias; ⌘-Tab to jump between the folder listing and the file you're naming, and so on.

Speed Tip

However, the new Save and Open dialog boxes offer a wealth of additional (and some reassigned) keystrokes for the busy Mac fan. Here's the ultimate guide:

- **⌘-A**: Select all (not available in all circumstances).
- **⌘-D** or **Shift-⌘-↑**: Changes current location to Desktop.
- **Shift-↑** and **Shift-↓**: Selects additional, multiple files (if this feature is turned on in your program).
- **⌘-↑**: Moves up one folder level.
- **⌘-↓**: Opens the selected folder or disk.
- **⌘-→**: Opens the flippy triangle of a highlighted disk or folder.
- **⌘-←**: Closes the selected flippy triangle.
- **Option-←** or **Option-→**: Takes you back to the last (or forward to the next) folder or disk you were viewing, like the Back and Forward buttons in a Web browser.

Multiple prefs for multiple purposes

The new Open and Save dialog boxes do a lot of memorizing without your even noticing. For example, each dialog box remembers, for *each program,* which folder you were last using when you were in that dialog box.

Since the Open dialog box remembers *one* location (and even which file you last opened) and the Save dialog box remembers another, the hassles of opening, processing, and saving multiple files (in a graphics program, say) becomes far easier. Each time you use the Open command, you're shown the folder full of unprocessed files — but when you use Save As, you're automatically shown the folder of finished files — no additional navigation is necessary.

Stationery

When System 7 was introduced, one of the most interesting new features was Stationery Pads. Whenever you save a document, you're supposed to find, in the Save File box, a Stationery button, as shown in Figure 15-17.

What's supposed to happen is this: You prepare a document that contains elements you re-use often. It may be your letterhead, a salutation, or a contract template, where all you have to fill in is the names and numbers.

Then, when you save the document using the Save As command, you're supposed to be offered a Stationery option.
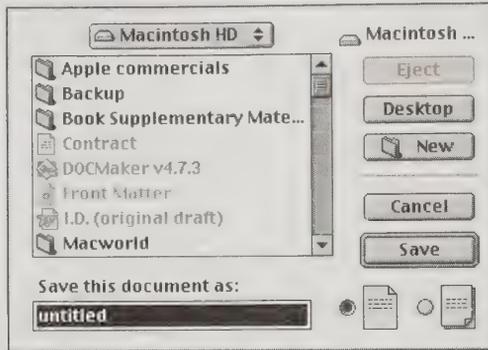
Figure 15-17: One of the few programs with a Stationery icon and button (lower right).

A document saved as Stationery doesn't actually open when double-clicked. Instead, a perfect *copy* of it opens, named Untitled. The original — the master — is left safely on your disk. You can modify the Untitled copy to your heart's content and eventually save it with its own name. You saved yourself the effort of re-creating whatever elements are already in it (your logo, for example).

Figure 15-17 shows the Save File box belonging to *SimpleText,* one of the few programs provided with every Mac to be equipped with a Save command. The Stationery option in SimpleText was supposed to be the model for all System 7-savvy programs. However, other than ClarisWorks, we can't think of a single program that adopted SimpleText's model (showing those two special document icons in the lower-right of the box). Instead, most programs offer Stationery in a pop-up menu of file formats.

If your program doesn't have a Stationery option (or icon) in the Save File box — or if you'd like to create Stationery while in the Finder — you can create stationery out of *any* document. Go to the Finder and highlight the icon. Choose File ➪ Get Info and select Stationery Pad.

From now on, whenever you double-click this document's icon, the Mac will instantly create a copy of it. Before the appropriate program even opens, the Mac will either ask you to name the document's new copy (before Mac OS 8) or automatically create a new, untitled copy of it (Mac OS 8 or later).

Ten Macintosh Application Basic Techniques

We were astounded when one of the most experienced, savvy Mac users we know — a free book winner of the last *Mac Secrets* edition, in fact! — confessed that he had only recently learned about pressing the Tab key in dialog boxes. He'd gone four years without ever discovering that the Tab key moves the cursor from blank to blank!

MACINTOSH SECRET

Save it where?

What happens when you launch a program? Some, like Photoshop, open up to an empty screen, with no windows open at all. You're expected to be savvy enough to choose Open (to open an existing graphic) or New (to open a new one) from the File menu.

Other programs automatically open an empty, untitled document. Microsoft programs, most word processors, and many other applications work this way.

Some programs, however, automatically open the *last document you opened.* This system works great for programs like Quicken, Berkeley's Expresso, and calendar programs, where you spend your entire life working on the *same* file — your bank-account file (Quicken) or your calendar (Up-to-Date or Expresso), for example.

Free book winner Eric Gossler faced a problem: he travels between office and home, and always wants these programs to open the same document regardless of the location.

The solution: Save the document onto a removable disk — a floppy or Zip disk, for example. Take that disk to the second Macintosh, and open the file *once.* From now on, the program (at each location) will always expect to find your data file on that disk — and will even request the disk if you haven't yet inserted it!

Expresso requires that its entire data *folder* be in one place. Eric solved that one by copying the whole folder to a Zip disk; deleting the original from the hard drive; and placing an alias of the Zip disk copy back onto the hard drive. (He repeated this procedure at the office.) From now on, when either machine's copy of Expresso launches, it will know where to look for the calendar information.

You can take this stunt a step further by designating a removable disk as your Web browser's Downloads folder. Now, wherever you may browse, you've got your single Downloads folder ready to collect your new goodies.

Mac Basics

Worse, he chided us for publishing a 1,300-page book that failed to mention that basic tactic. Thus was born our solemn vow: The very next edition would contain a list of the *ten* basic Mac techniques we think everyone should know. And here they are:

1. Press the Tab key to jump from blank to blank in a Macintosh dialog box. In a well-designed program, Shift-Tab actually moves the cursor *backward* through the fields. (See Figure 15-18.)

2. Most Macintosh programs come with an assortment of support files: dictionaries, Preferences files, clip art, translators, and so on. You can't simply copy the *program* to a different disk and expect it to run normally — you must either reinstall it from the original disks or copy every component of it into the corresponding, identical folder locations on the new disk.

3. Instead of using menu commands, you can press keyboard equivalents (thus avoiding lifting your hands from the keyboard). The keyboard shortcut for each menu command is listed *in* the menu itself.

Speed Tip

4. You can press ⌘-A inside almost any dialog box blank to highlight all of the text in that field — and anything you begin to type *replaces* what was highlighted.
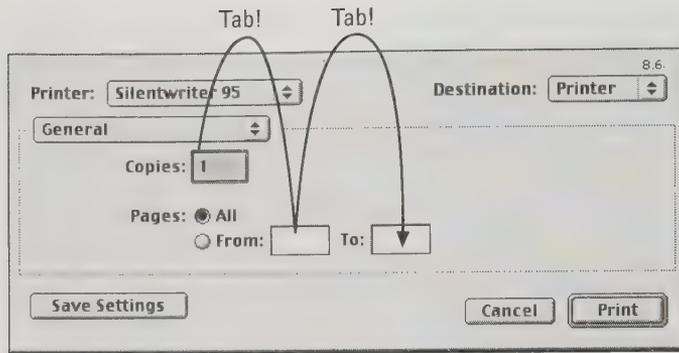
Figure 15-18: Press Tab to jump through the boxes in a dialog box. Are we forgiven now, Jerry?

5. To highlight a long block of text, click (and release the mouse button) at the beginning of the selection. Scroll until you can see the end of the long section — and then *Shift*-click there. All of the text between your initial click and your Shift-click is now highlighted.

6. When you're finished with a program, don't close the document window. Instead, *quit* the program (by pressing ⌘-Q, for example). You release the RAM that program was using. You also avoid the confusion that comes from launching the program a second time and seeing *nothing happen* (because the program is actually already running, but has no windows open).

Speed Tip

7. A clever speed tactic for pros and beginners alike: Whenever you save a document, instinctively press ⌘-D (to select the Desktop) before hitting the Save button. This places the newly created document on your Desktop, where you can file it manually into any folder you like. (It's the end of the lost-document syndrome.)

8. In the Print dialog box, you don't have to specify both the starting and ending page numbers. If you do nothing, the entire document prints. If you type *2* as the beginning page (and don't specify an ending page), you'll get from page 2 to the end. And if you type 5 as the ending page (and don't specify a starting page), you'll print from the beginning to page 5.

9. You can press ⌘-period (or Esc) instead of clicking the Cancel button in almost any dialog box. Likewise, you can press Return or Enter in almost any dialog box instead of clicking the button with the thick black outline (such as the Print button in Figure 15-18).

10. In case you missed it in Chapter 7: When a program freezes, try pressing ⌘-Option-Esc to "force quit" (jettison) just that program. Often it works, freeing you to save your work in any other running programs, or finish your download, or whatever.

The rest of the time it only further freezes your machine; in that case, press ⌘-Control-power key to restart the computer.

Mac to PC and Back

In This Chapter

▶ Using PC disks on the Mac

▶ Using PC files on the Mac

▶ Running PC programs on your Mac

▶ Using PC Peripherals on your Mac

▶ Cross-platform networks

In a world where 90 percent of the computers are running Microsoft Windows, the Mac's ability to exchange files and to coexist on networks with PCs isn't a trivial issue. (In this chapter, we'll refer to computers running DOS or Windows as PCs.) Fortunately, the Mac accommodates its less-evolved cousin extremely well these days.

Still, terminology is a problem. When someone asks, "Is the Mac PC-compatible?", we're not sure what's really being asked. There are actually five different questions, each with its own answer:

■ Can the Mac use *disks* from a Windows PC?

■ Can the Mac use *files* from a Windows PC?

■ Can the Mac run Windows programs?

■ Can the Mac be on the same network with a Windows PC?

■ Can the Mac use printers, monitors, CDs, and other Windows paraphernalia?

We'll tackle these issues one by one.

PC Disks

Mechanically speaking, the Mac has been able to accept 3.5-inch floppy disks from DOS and Windows machines for years — ever since the appearance of the SuperDrive floppy-disk drive way back in 1989.

(OS 8.5) However, as with most computer tasks, Mac doesn't live by hardware alone. You need software, too, to read PC disks — the File Exchange or PC Exchange control panel included with System 7.5 and later. (Until Mac OS 8.5, it was called PC Exchange. Hereafter, we'll call it by its new name, File Exchange.)

PC floppies

Mac Basics

With File Exchange, when you insert a PC disk, its icon shows up on your Desktop as though it were a Mac disk. The only difference is that the disk icon has a big "PC" written on it. If you remove or turn off File Exchange, the Mac no longer recognizes the PC disk — you get a message asking if you want to initialize the disk instead. (See Chapter 4 for a few File Exchange Secrets.)

(Note that just being able to see what's *on* a Windows disk doesn't mean that you can open the files on it or run the programs on it, which you can read about later in this chapter. It simply means that you can view, copy, or delete those files' icon.)

File Exchange originally recognized only floppies, but now it lets you use other removable disks in SCSI drives from PCs, such as Zip, Jaz, and magneto optical. You can also use PC CD-ROM discs on your Mac, but a different set of extensions are responsible; read on.

PC CD-ROMs

Thanks to other extensions provided by Apple, you can also insert a Windows CD-ROM disc into your Mac; its icon shows up on the screen, exactly like a Mac CD. The necessary software is the usual set of CD-ROM extensions in your Extensions folder, as described in Chapter 4; of these, Foreign File Access, ISO 9660 File Access, and High Sierra File Access are the ones specifically created for reading Windows CDs.

But once again, having these files doesn't mean you can *use* any of the information on a PC CD-ROM. To use the *files* on the CD-ROM, the same rules apply as to using PC files from any other source, as described later in this chapter. Any PC *programs* on the CD-ROM — such as games or application software — can only be run with the addition of emulation software or PC compatibility hardware, as described at the end of this chapter.

PC Disk Secrets ─────────────────────────────────

Dual-format CD-ROMs

Many software packages marked "for Windows 95/98/NT" or "for Macintosh" actually contain the software for *both* platforms on the same CD in the box. That's because it's often less expensive for a software manufacturer to press a

single CD-ROM — containing both sets of software — than to create two sets of discs. In other words, if you have a copy of AcmeWebPageCreator for Windows, try it in your Mac — you may find that it also has a complete Mac OS installer as well.

Formatting a DOS floppy

A Mac disk and a DOS disk, as far as a disk manufacturer is concerned, are physically identical. The only difference between a Mac and a DOS disk is the way each is formatted. Fortunately, with File Exchange (or PC Exchange) in your Control Panels folder, you can format a new blank disk either way. It can even convert one kind of disk to the other.

To format a brand-new, never-been-touched disk, insert it. You'll be asked how you want to format the disk: as a Mac disk or a DOS disk (see Figure 16-1). You can also choose ProDOS, which is the operating system for the old Apple II computer.

To convert one kind of disk to another, insert a Mac or DOS disk. Then choose Special ⇨ Erase Disk. You see the same set of options as those shown in Figure 16-1.
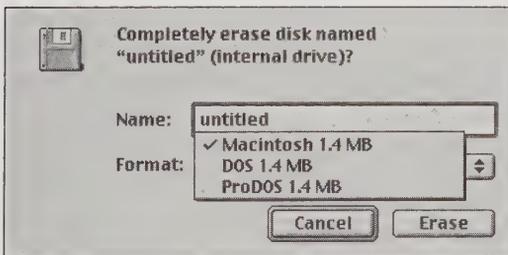
Figure 16-1: You can format or erase a disk into your choice of PC, Mac, or even Apple II format using the Finder's Erase Disk command.

Formatting a DOS Zip or Jaz cartridge

While Apple's File Exchange control panel does let you *use* Zip and Jaz disks that came from a Windows machine, it doesn't let you *create* them (by erasing an existing Mac-formatted one, for example). To do that, you must use the Iomega Tools program that came with the drive.

Converting PC Files for the Mac

Getting a PC disk or file server to show up on your Mac screen, or receiving a PC file via e-mail, is only half the battle. The next compatibility hurdle is getting your Mac to *open* PC documents.

Sometimes you'll have to convert those files. Sometimes no conversion is necessary. And sometimes you'll have to pour out the file's contents into a temporary, intermediary file in a format you *can* convert.

Category 1: No conversion necessary

The "how do I open this file?" challenge has become easier in recent years, as more and more software companies sell their programs in both PC and Mac versions. Such cross-platform programs generally create documents that open identically on either computer: Word, FileMaker, WordPerfect, ClarisWorks, Photoshop, PageMaker, Excel, and dozens of other leading programs fall into this category. Opening documents from the PC edition of your favorite program isn't always 100 percent glitch-free — you occasionally lose the formatting of special features, such as tables in word processors, and fonts can change — but most standard files translate just fine.

Mac Basics

What we're saying here is that if you and the Windows machine are using the same popular program, *no conversion is necessary* to open the files when moving them between machines. A Microsoft Word 97 (Windows) document opens perfectly in Word 98 (Macintosh), with everything intact (style sheets, graphics, even templates and macros) — without any kind of translation. Transfer such a file by e-mail or floppy disk, and the deed is done.

Category 2: Let your application do the conversion

If you and the PC person with whom you're swapping documents don't have the identical program, you may still be in luck if you're trafficking in the meat-and-potatoes data types: word-processing documents, graphics files, spreadsheets, or databases.

For example, most *Mac* word processors can automatically translate documents from many *PC* word processors. Microsoft Word, ClarisWorks, and WordPerfect can each open various kinds of documents from PC word processors. (This automatic file conversion only works if your program's set of translator files is correctly installed — usually somewhere in the System folder or in the program's own folder.) To try out this feature, launch your word processor; choose File ⇨ Open; and use the pop-up menu at the bottom of the Open File dialog box to see what file formats you can open.

If the word processor versions in question are both some form of Microsoft Word, by the way, a little extra effort may be required. Microsoft has generally been diligent about releasing file-format filters that translate one flavor of Word document into another. For example, a file called Word 6.0 for Windows&Macintosh lets Word 5.1 read Word 6 files (from either kind of computer). And the file called Word 97-98 Import lets Word 5 or 6 open files from Word 98 (for the Mac) or 97 (for Windows). (At this writing, all of these converters are available from www.Microsoft.com/office/office/viewers.asp.)

Category 3: Convert the document yourself

If you don't find that your word processor can open the Windows format, odds are good that MacLinkPlus, included on the CD-ROM with this book (but no longer included with the standard Apple system software) can assist. Its list of translatable document formats is impressive — for example, it can convert Windows WordPerfect documents into ClarisWorks format, which ClarisWorks itself can't do unassisted.

MacLinkPlus

MacLinkPlus can also translate PC documents into Mac documents *without* opening them; translate Mac documents into PC documents; and batch-process a bunch of files simultaneously.

MacLinkPlus consists of translator files in the System folder, and a set of utilities that reside in the MacLinkPlus folder. Of particular interest is the Document Converter icon in the MacLinkPlus folder. By duplicating this icon, you can create individual Document Converters, each capable of translating one or more files to any of hundreds of supported formats — simply by dragging and dropping the document icons in question. (The current commercial version of MacLinkPlus, for which a discount coupon is included at the back of this book, makes conversion even simpler. It takes advantage of Mac OS 8-and-later's contextual Control-key menus to convert files when you click on them.)

First, make a copy of Document Converter. Double-click the copy. A window opens, listing dozens of types of Mac and PC files: word processors, spreadsheets, databases, and graphics; click the type of file you'll want this converter to create. You'll notice in Figure 16-2 that most of the options end in "with MacLinkPlus translation," referring to the DataViz software. However, your translator choices also include QuickTime translators, which add a number of graphics and multimedia file types.

Document Converter Setup

Select the kind of document to be created by this converter:

- Microsoft Word Windows 2.0 docu with MacLinkPlus tra...
- Microsoft Word Windows 6.0, 7.0 with MacLinkPlus trans...
- MIDI File with QuickTime translation
- MoviePlayer movie with QuickTime translation
- MS Works 2.0 database with MacLinkPlus translation
- MS Works 2.0 document with MacLinkPlus translation

Cancel   Set

Figure 16-2 Use the MacLinkPlus Document Converter icon to translate Mac and PC files.

After you select the type of file you want to create, click Set. Document Converter's name changes to reflect the file type you selected — "to Excel Win 5.0, 7.0," for example (see Figure 16-3).

to Excel Win 5.0, 7.0 spreadshe

Figure 16-3: The document converter icon tells you what file it will create.

To convert a document, or a folder full of documents, drag and drop the file or folder onto your new document converter icon. The translator creates a new document of the type you specified, keeping the original intact.

To change the document converter, double-click it and select a different file type. By using the Finder's Duplicate command, you can create as many Document Converters as you need. You can also keep and use them anywhere you need them — in folders, on Zip cartridges, and on file servers.

Category 4: Save as a simpler, intermediary format

If all your conversion efforts have failed, you may have to export your Mac or Windows document as a lowest-common denominator format before moving to the other platform. For instance, just about every database program can export or import a *tab-delimited* file, which is a text file with a tab inserted between each *field* (between city and state, state and zip code, and so on). Just about every database can import tab-delimited files correctly. That's how you might transfer your data from Microsoft Access (on Windows) to FileMaker (on the Mac), for example.

Or suppose you don't have the necessary converter needed to translate a document from a different version of Microsoft Word. Fortunately, you can always save your Word (or WordPerfect, or ClarisWorks) document into the intermediary format known as *Rich Text Format (RTF)*. RTF is a special cross-platform file type that preserves most of the formatting — bold, italic, font, and type-size information, for example — when the file is opened on the other kind of computer. Most self-respecting word processors can open and create RTF files.

If even that idea fails, you can always ask for a PC file saved as a plain text file. This kind of file has no formatting at all — it's just pure typing. But your word processor will be able to open it, guaranteed.

How to open a PC document

Once you've got a PC file on the Mac, you must confront another minor hurdle: Even if you know you have software that can open it, *how* do you open it? (Hint: You can't double-click a PC file and expect it to open into the correct Macintosh program.)

The quickest way is to drag the PC document's icon onto your Mac program's icon. (For example, you might drag a Word for Windows document onto your Word 98 icon.) You can also launch your Mac program first and use its Open command to locate the PC file.

Alternatively, you can use one of a pair of control panels — Mac OS Easy Open or Mac OS 8.5's File Exchange — to open the PC file when you double-click it.

Mac OS Easy Open/File Exchange

Strangely enough, even if you're exchanging a file that's a no-brainer to convert — for example, you're trying to open an Excel 97 for Windows document in Excel 98 for the Mac, which should require no conversion at all — double-clicking the Windows file's icon generally doesn't open it.

But with the Mac OS Easy Open (or Mac OS 8.5's File Exchange) control panel installed, when you double-click a PC document icon, you don't get an error message saying that the Mac can't find the application that created the file. Instead, you get a list of programs and translators installed on your Mac that might be able to open or translate-and-open the document (see Figure 16-4). Click the name of the program; that program launches and tries to open the document you double-clicked. (See Chapter 4 for more on Mac OS Easy Open and File Exchange.)
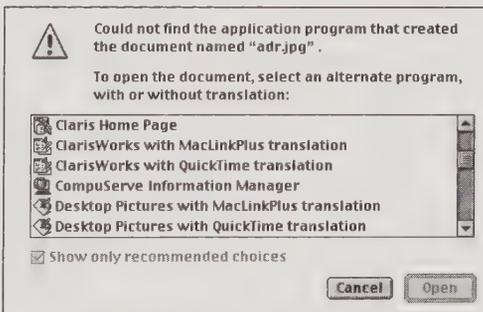
Figure 16-4: Mac OS Easy Open gives you a choice of programs and translators to use.

Opening PC Files with Extension Mapping

Mac OS 8.5's File Exchange control panel incorporates the functions of the former Mac OS Easy Open. But if you know what type of PC document you're working with *and* which one of your programs can open it, you're better off setting up a different feature of File Exchange (formerly PC Exchange): *extension mapping*. Unfortunately, understanding extension mapping requires that you learn a little bit about the ugly business of PC file names.

One difference between a Mac and a PC is the way the two machines name files. A DOS or Windows 3.1 file's name can only be eight characters long, followed by a period and a three-letter "extension" that identifies its type of file. A text file might be called `MAJRMEMO.TXT`, for example. A Microsoft Word for Windows file of the same name would be called `MAJRMEMO.DOC`.

Of course, Windows 95 revolutionized the planet by allowing longer file names on PCs — hey, just like the Mac! However, many PC users still use the old "eight-dot-three" format. And behind the scenes, every Windows 95 and Windows 98 document *still* has an "eight-dot-three" (MAJRMEMO.TXT-type) file name.

When you bring a Windows 95 document to a pre-Mac OS 8.1 Mac, you get, yet again, an eight-dot-three file name (the first six letters of the Windows 95 long name, followed by a tilde symbol and a number). In other words, My Dog Has Fleas And Some Other Things on the Windows 95 machine becomes MYDOGH~1.DOC on the Mac. (Starting with Mac OS 8.1, File Exchange is smart enough to preserve the first 31 characters of the file name, plus the file name extension. It also keeps the spaces, and uses a number sign followed by a number to indicate deleted characters. So our document would appear as in My Dog Has Fleas And Some#.DOC.)

Regardless of which way you see the file name, the important part is the three-character extension. You can teach File Exchange (PC Exchange) which Mac program to open when you double-click a PC document with a particular three-letter extension. (See Figure 16-5.)
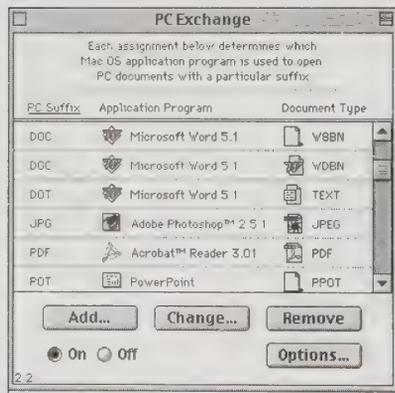
Figure 16-5: Extension mapping in File Exchange links a Mac program to a PC file name extension.

The left column shows a DOS extension. The middle column shows the application that will launch when you double-click a document with that extension. The right column shows the icon and document type that file will have when it opens.

Cross-Platform File-Conversion Secrets ————————■

Converting Fonts

MacLinkPlus usually does a good job of translating the formatting of a Windows file into something the Mac can read. One problematic area, though, is fonts. If

your Mac doesn't have the exact fonts specified in the Windows document, the Mac substitutes fonts it *does* have.

But what if you want the same font to show up on both Mac and Windows? You could stick to fonts that you know are standard on both machines, like Times and Helvetica. You can sometimes buy the same font for both Mac and Windows.

Or you can use a shareware utility like TTConverter, which lets you convert Mac TrueType fonts to Windows fonts. You can then install the fonts on the Windows machine. For Postscript fonts, you can use a font editing program, such as Fontographer, to convert between Mac and PC formats.

Adding your own extension mappings

PC Exchange comes with at least one extension mapping (.*TXT* files are mapped to open in SimpleText) already set up; Mac OS 8.5's File Exchange program offers many more canned mappings. But to create a new mapping, click the Add button in the File Exchange control panel. In the new window, click the application that you want to launch. Finally, choose an appropriate icon from the Document Type pop-up menu (see Figure 16-6).
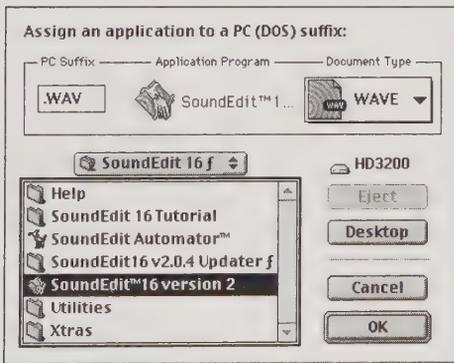
Figure 16-6: Setting up extension mapping in File Exchange.

These mapping settings are stored in the File Exchange preference file in the Preferences folder (inside the System folder). You can add an entire set of mappings created on another Mac simply by copying the File Exchange preference into your Preferences folder.

Naming documents for PC users

When sending files to PC users, it's safest to use the "eight-dot-three" file name standard. In fact, the Windows-using recipient of your file may not be able to open the document at all unless you've added the three-letter extension to its name.

As you name files bound for Windows computers, remember that you're not allowed to have *any* spaces in its name. (Double-check for a tiny space at the end of a file's name, which renders your file un-openable on a PC.) Other characters you're not allowed to use in a Windows file name: slashes (as in 10/25/99), as well as these characters:

? [ ] = + \ < > ; " ,

Stripping the little boxes

Often, converted PC files end up with bunch of alien-looking squares or symbols, as shown in Figure 16-7. You can get these when you convert word processor or text files from a DOS disk, an e-mail message, or the Internet. These boxes represent normally invisible codes that are responsible for *line feeds* used by PC text-editing programs. (Behind the scenes, a PC text editor inserts a *line-feed* character, a cousin of our Return character, at the end of every line.)

If you want to nuke these symbols, you have three choices. First, if you do a lot of nuking, run the file through Tex-Edit, included on the CD-ROM with this book; its Strip LF's (line feeds) command does exactly what you'd hope.

Second, you might try using your word processor's search-and-replace command (in Word, it's the Replace command). Search for Control-J and replace it with nothing. Or, paste one of the little squares into the Find What blank, and replace that with nothing. Either way, you get rid of the annoying squares.

Finally, Microsoft Word has a highly functional, but little-known, rectangular-selection feature. You can select a vertical strip of text, which is exactly what you'd want to do if the control-character squares fall, as they often do, at the left edge of the text (see Figure 16-7).
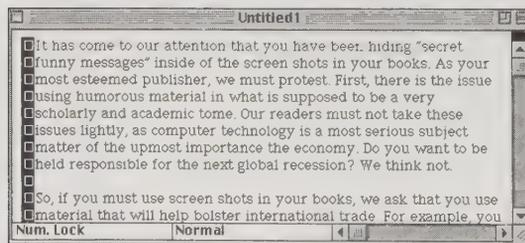
Figure 16-7: Use Word to highlight only the offending characters.

The secret: Press the Option key as you drag. Drag straight down through the thin left-margin column of squares and then press Delete.

Compressing/Decompressing PC files

Both Mac and Windows users frequently compress files when copying them to a disk or when sending them by e-mail.

Mac to PC and Back . . . via Hell

The PR mavens may crow about how compatible Macs are with PCs today. But this true story from one of our readers sheds some light on what multiplatform life is really like in the trenches.

"I am a graphic artist for a software development company. Although I own and have always used the Mac, my current employment status dictates that I work on a Windows-based PC. It has been bearable. I use a PC, primarily with PageMaker and Photoshop for Windows.

"Before I arrived at my office, an artist was commissioned to design the cover for a software manual. The artist created the elements in Photoshop, and composed the document in QuarkXPress. All files originated from a Mac and were saved to a 44MB SyQuest cartridge. The bottom line: we had files in an incompatible format, on a storage device we couldn't access.

"My company wanted to have their own copy, so we had a typesetting house segment and transfer the files to multiple floppies via PKZip (the standard compression utility for the PC world), then returned the cartridge to the artist. Basically, this made matters somewhat worse; we now had Mac files segmented on PC floppies. Hold on — it gets better.

"I figured I'd take these floppies home to see if I could do anything with them on my Mac. The control panel, PC Exchange, allowed me to access the floppies, but the Mac version of PKUnzip (the standard *de*compression utility for the PC world) is unable to handle a segmented file. I broke out an old version of Insignia's SoftPC and downloaded the PC version of PKZip from America Online. Thanks to my recent PC experience, I was able to get PKUnzip running in the DOS emulation program and successfully decompress the required files. Unfortunately, anything that comes from SoftPC is flagged as a PC Exchange document. I then had to open these files in my versions of Photoshop and Quark, respectively, then resave them in the appropriate format. So far, so good.

"I guess the typesetting house figured they would do us an unannounced favor and converted the Mac fonts to PC fonts. Great. Again the problem was that the fonts were now PC Exchange documents, and my version of Fontographer could not even read the files. My solution was to create a quick PC font in Fontographer, open it in ResEdit to get the file type and creation code, then assign that flag to the real PC font I wanted to convert. Once saved, Fontographer was able to read and convert the PC font to a Macintosh TrueType font. Onward and upward.

"Now that all the files were converted, the next issue was that I had a Quark document, and needed a PageMaker document. I acquired a utility to convert Quark to PageMaker, available on America Online from Aldus Corp. Almost done? Not quite. Apparently, the conversion utility is not equipped to handle QuarkXPress Version 3.3.1. I had to reinstall Version 3.2, extract the file again from the PC floppies (I had already resaved it as a 3.3.1 document), open and save it in Version 3.2 format, then convert the file with Aldus's utility.

"Finally, I used the Mac version of PKZip to compress and segment the files back to PC floppies. Both native PageMaker and Photoshop files are transparent, so I could now decompress and have a version of the cover design in PageMaker for Windows.

"Easy."

However, be careful when sending a file to a PC user. The most common compression format for Macs is Aladdin's StuffIt, or *.sit*—but on Windows, the most common compression format is called *.zip.* Windows users generally can't open Macintosh *.sit* files. (There is a free StuffIt Expander for Windows, available at `www.aladdinsys.com`, but most Windows users don't have it.)

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Instead, send the Windows users a *.zip* file. To create such a file, you can use a program like ZIPIT, included with this book. (That program, as well as others like StuffIt Expander, can also open .zip files you *get* from Windows users.)

Actually, there's more to the story — not only do you have to worry about file *compression*, you also have to worry about file *encoding,* described in depth in Chapter 27. (The Internet can't, technically speaking, transmit anything but plain text. Therefore, if you try to send a file attachment with an e-mail message, your e-mail program *encodes* it into a stream of pure, encoded text, which the receiving computer reconstitutes into a usable file. That's the theory, anyway.)

The bottom line: Your Mac e-mail program probably encodes files you're sending as *binhex (.hqx)* files. As you can probably predict, Windows users can't decode those files. Instead, therefore, when sending files to Windows users, use your e-mail's preferences settings to encode file attachments as *MIME (Base 64),* which is the encoding scheme used by Windows e-mail programs.

Exchanging Graphics with Windows Users

Exchanging graphics documents with Windows users requires more effort than text-based documents. Graphics documents don't always translate exactly, and sometimes need some tweaking in a graphics editing program after translating. However, choosing the right graphics file format in the first place can help you avoid such problems.

For a complete rundown of graphics file formats, see Chapter 20. In the meantime, here's a summary:

- **GIF files** are *cross-platform* — the same file shows up correctly on Mac, Windows, or even UNIX without translation. That's why they are so commonly used on Web pages on the Internet. Unfortunately, GIF files are limited to a fairly blotchy 256 colors per file.

- **JPEG files** are also cross-platform, requiring no conversion between Mac and PCs. JPEG is most often used for photos on the Web, because there's no limitation on the color range per file.

- **TIFF files** (called *.TIF* in Windows) are very similar on the Mac and on Windows — but not, unfortunately, identical. The one difference is a technical parameter called the *byte order.*

  There are two ways to convert a TIFF file between Mac and Windows flavors: First, when you save a file from Photoshop, GraphicsConverter, or a similar program, you'll be asked which byte order you want — suitable for Macintosh or suitable for Windows. MacLinkPlus, among

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other programs, can also convert TIFF files between Mac and Windows formats. (TIFF images are most often used in professional publishing.)

- **EPS** is a cross-platform standard, but here, too, there are slight differences between Mac and PC versions. MacLinkPlus can translate between the two versions. Unlike TIFF and GIF, EPS is an *object-oriented*, or *vector* graphics format (see Chapter 20). Problems, such as thickening of lines and changes in color, can arise when you convert an EPS file from one computer format to another *and,* at the same time, change the EPS format to a bitmapped format (such as TIFF).

- **PICT** is a Macintosh-only graphics format with no Windows counterpart. The closest thing to PICT on the PC side is WMF (Windows Metafile).

- **BMP** is a common Windows graphic bitmap standard with no Mac equivalent. You can translate it into a Mac format using MacLinkPlus.

- **QuickTime movies** can be played on both Mac OS and Windows. One conversion step is necessary, however: When you save a QuickTime movie into Windows format, you must "flatten" it. You can use Apple's Movie Player or other video utilities to flatten QuickTime movies, as shown in Figure 16-8.
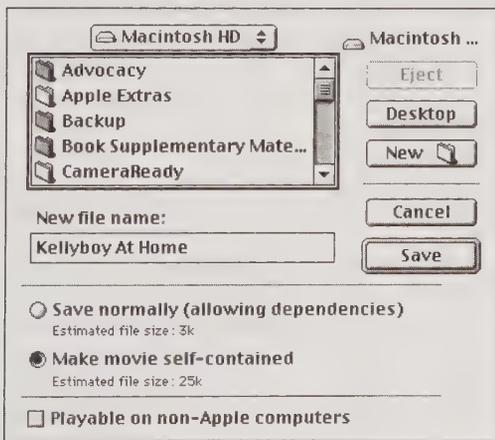
Figure 16-8: When saving a QuickTime movie out of MoviePlayer 2.5 (or a purchased version of 3.0), you're offered the chance to make the movie "playable on non-Apple computers." That means *flattening* the movie, which is what the option is called in some other QuickTime programs.

Techie note: *Flattening* combines the two parts of a Mac QuickTime movie, called the *resource fork* and the *data fork,* into a single file. When you move any Mac file to a PC, the resource fork is always discarded. (See Chapter 22 for more information on the resources of Mac files.) Ordinarily, the resource fork of a Mac data file is mostly empty (containing information about the icon), so its loss isn't a problem. But Mac-format QuickTime movies contain important code in the resource fork; that's why flattening (to move this information into the data fork) is necessary.

Cross-Platform Networking

For communications with PCs, nothing beats a network. You can share files, send e-mail, share printers, and do a host of other activities by sending electrons over thin cables.

The biggest cross-platform network on earth, of course, is the Internet. It connects Mac, Windows, UNIX, and other kinds of computers throughout the world, 24 hours a day. Not only that, but the *servers* — the computers that host Web sites, distribute e-mail, and serve files via FTP — are a mix of UNIX, Windows NT, and (in surprisingly large numbers) Macs. You can't tell which operating system is running a particular Web site — and as far as you, the Web surfer, are concerned, it doesn't matter.

The local networks in an office or school are similar in principle to the Internet, and sometime even use the same technology. Most often, Macs and PCs are connected by Ethernet wiring; Ethernet is a cross-platform cabling standard. (For more about Ethernet and the nuts and bolts of networking, see Chapter 35.)

But although the wiring is the same, the software is different. Macs sometimes get barred from the network fun by network software products that don't support the Mac. Fortunately, persistence and a little knowledge is all you need to connect to such Windows-only networking schemes.

A Protocol Primer

To get two computers communicating, either for file-sharing, e-mail, or any other task, they have to use the same set of *protocols*. You can think of protocols as rules of the road — stop on red, go with green — that computers obey when sending data over wires. It doesn't matter if the computers are Macs, Windows, or UNIX; as long as they're communicating using the same protocols, they'll understand each other. If you really want to get your Mac talking to Windows machines, you'll have to delve into the tech-speak of protocol-ese; here goes.

Protocols come in what you might call *layers*. At the bottom layer are basic transport protocols that establish communications. On top of that are protocols that provide services — file servers, e-mail service, Web service, remote access service, and so on.

Ethernet wires can carry multiple protocols at the same time — which is fortunate, because today's computers often use different protocols for different tasks. Your Mac might send AppleTalk signals to print, and TCP/IP signals to access the Internet. All that's necessary for Macs and PCs to communicate is that they speak the same protocols.

Here are the most basic transport protocols used today:

- **AppleTalk:** AppleTalk has been a standard Mac networking protocol since 1984 (see Chapter 35 for details). AppleTalk is the language spoken by network printers; it's also the protocol used for the Mac's built-in File

Sharing feature (again, see Chapter 35). PCs normally don't speak AppleTalk — unless you equip them with add-on software.

- **TCP/IP:** TCP/IP is the most widely used set of protocols in the world — it's the language of the Internet, and is becoming more and more common on local networks as well. Mac OS, Windows 95, Windows 98, and Windows NT all come with TCP/IP software.

- **IPX/SPX:** This technical-sounding item is Novell's set of protocols for its NetWare networking system. Although Novell's products and customers have been moving towards TCP/IP, the world's offices are still filled with IPX networks. Macs can participate on NetWare IPX networks using a software kit from Novell called NetWare Client for Macintosh software, which includes a control panel called MacIPX.

- **NETBEUI:** A common IBM protocol used in DOS and Windows for small networks, NETBEUI was used in such networking products as Microsoft LAN Manager, Windows for Workgroups, IBM PCLAN and LAN Server. If this is what your office uses, you're out of luck — no software lets Macs communicate via NETBEUI.

Putting PCs on a Mac Network

When adding a few PCs to a mostly-Mac network, it makes the most sense to adopt the PCs to your network rather than the other way around. This usually means adding the AppleTalk protocol to the PCs.
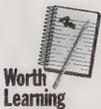
Worth Learning

You can do this with one of two products for Windows: PC MacLAN (from Miramar) or COPSTalk (from Cops). Both let Windows access Macs that have File Sharing turned on (see Chapter 35), plus dedicated Mac AppleShare servers. PC MacLAN, in fact, even lets Macs access the Windows machines. PCs running either PC MacLAN or COPSTalk can print to Mac Postscript printers on the AppleTalk network, and Macs can print to any Postscript printers connected to the Windows PCs.

Using an AppleTalk product for a cross-platform network also makes sense if you're connecting a few Macs and a few PCs together, and your background is mostly Macintosh. Because AppleTalk is a plug-and-play, self-configuring protocol, it's easier to set up and run PC MacLAN or COPSTalk than to tangle with the products discussed in the next section.

Macs on PC networks

AppleTalk doesn't make much sense when you want to add Macs to an established PC network. Nor does adding software to a Windows NT server, when it's just a few Macs in a mostly Windows environment. Instead, you should adapt the Macs by installing special software on *them*.

DAVE (from Thursby) is software that adds a Mac to a Microsoft network using the TCP/IP protocol. Macs thus equipped can log onto standard Windows NT "domains." To the Mac user, PCs with Microsoft file sharing

turned on become visible in the Chooser; you select and log on to them just as you would on a standard Mac AppleTalk network (see Chapter 35).

DAVE also lets the Macs share their hard drives with the PCs on the network. The PC users can log onto DAVE-equipped Macs just as they would ordinarily log onto other Windows machines.

Configuring DAVE on the Mac is usually more complex than Mac networking; some knowledge of PC networking is very helpful. So is Thursby's manual, which walks you through the set-up procedure.

If the existing PC network runs the Novell NetWare networking system, you can add your Mac to the network by installing NetWare Client for Macintosh (or its more recent incarnation, IntranetWare Client for Mac OS). The Macs can use either the Novell IPX protocol or TCP/IP; the client doesn't interfere with normal AppleTalk functions. For example, you can log into the network server through IPX, browse the Internet using TCP/IP, and print using AppleTalk. The Novell client software lets your Mac access the Novell Directory Services (NDS) to log into file servers and printer functions.

Connecting to Windows NT Server

Windows NT Server, yet another common Windows-based networking software kit, comes with software called Windows NT Services for Macintosh (SFM). (Although SFM comes on the Windows NT Server CD-ROMs, it must be installed and configured separately.)

Like PC MacLAN, SFM installs on the NT Server, and gives Macs access to the server using AppleTalk. Once you're hooked up this way, you log onto the NT server through the Chooser, just as you would on an all-Mac system. Unlike PC MacLAN, the SFM file service is one-way — Windows PCs can't access the Macs on the network.

Macs also use the printers connected to Windows NT servers — sort of. If the printer is not a Postscript printer, then Macs can only print in black and white and at 300 dpi — even if the printer supports color and higher resolutions.

On the other hand, SFM has the Microsoft logo on it, which makes it attractive to many of the people who run the networks in today's companies.

Sharing files with AppleShare IP and Web Technology

The Personal Web Sharing feature available in Mac OS 8 and later lets Windows users browse the files on your Mac (using the TCP/IP protocol). To them, your Mac looks like a Web server, and your shared folder looks like a Web site! (Personal Web Sharing is great for this purpose — sharing your Mac's files over a local network. But it doesn't include the security features of

a real Web server, making it less attractive for making your folders available to the actual Internet.) (For more on Personal Web Sharing, see Chapter 4.)

Another program, called AppleShare IP, performs a similar function — letting Windows users browse your Mac's hard drive with their Web browser — but with more features. For example, AppleShare IP lets Macs access files on the network using AppleTalk. The software also has FTP capabilities that Windows users can access (thus turning your Mac into a miniature software library), and includes an Internet e-mail server (POP3/SMTP), an HTTP Web server, and an AppleTalk print server.

OpenDoor's Shareway IP, another cross-platform networking product, is difficult to categorize. This Macintosh software can make an AppleShare-compatible server available to any platform over a TCP/IP local-area network, or over the Internet itself. "Any AppleShare-compatible server" includes Windows NT running SFM, PC MacLAN, AppleShare file servers running on Macs, or Mac workstations running personal file sharing.

Using Shareway IP, a Mac can log onto Windows NT Server via TCP/IP instead of AppleTalk (nothing special needs to be installed on the Windows server). It also enables Windows users to access AppleShare-compatible servers via TCP/IP and a Web browser.

Running Windows Programs on a Mac

Now that using PC disks, documents, and networks has become child's play, some Mac users are getting greedy — they want to run Windows *programs*.

This is a more ambitious proposition. You can't run a PC program without running a PC operating system — DOS or Windows. And everything they say about DOS is true: It's hopelessly outdated, extremely complex, and nearly impossible to troubleshoot unless you're a true DOS expert. Windows 95, Windows 98, and Windows NT are much easier to use than DOS, but not much easier to troubleshoot.

If you really want to go for it, your options fall into two basic categories: (a) use a software emulator, or (b) install a PC-compatibility board into your Mac.

The advantage of these two solutions seem clear-cut: They can save money (over buying a whole PC system), and they save desk space by allowing you to run two computers with one box, one monitor, and one keyboard.

But these days, shop first; buying an actual PC may not actually cost more than, say, a PC compatibility card in your Mac. Furthermore, both of these solutions require you to dedicate a wide swath of your hard drive as a "virtual" PC drive; your Mac stuff lives on one side, and your PC stuff lives on the other.

The emulator program or PC compatibility card software sets up a large Mac file — several hundred megabytes — that acts as a virtual PC boot drive (what Windows users would call the *C: drive*). Inside the virtual C: drive file is the Windows operating system, plus all of your PC programs and data files (see Figure 16-9).
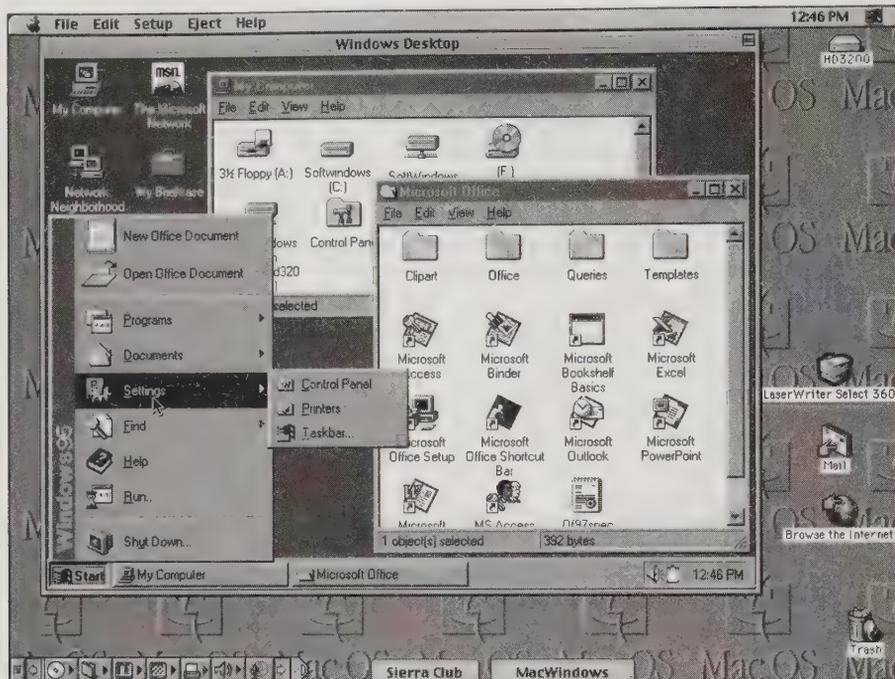
Figure 16-9: Booting Windows on a Mac with an emulator or PC compatibility card gives you both worlds on a single screen.

Software PC Emulators

Emulators, such as VirtualPC (Connectix) and SoftWindows (Insignia), trick your copy of Windows and your Windows programs into thinking they're running on an actual IBM-PC clone. But these programs must translate code intended for an Intel processor into something a PowerPC processor can understand. As a result, emulator software runs Windows programs more slowly than, say, PC compatibility boards (and actual PCs).

It's difficult to say exactly how fast Windows will run on your Mac with an emulator; the faster your Mac's processor, the faster the imitation Windows PC will run. On the fastest G3 Power Macs and PowerBooks, you'll run Windows as fast as a medium-speed Pentium PC.

At this writing, two companies make emulator programs. Insignia Solutions offers RealPC (an emulator that comes with DOS and is aimed at game fans) and SoftWindows 95 (which comes with Windows 95). Its rival, Connectix, sells Virtual PC, which you can buy equipped with DOS or Windows 95. The Insignia emulators cost a little more than Virtual PC, but are faster, especially if you have a slowish Mac. (Virtual PC requires a minimum of a 180 MHz PowerPC 603e, whereas SoftWindows 95 can run on any PowerPC processor.)

One Virtual PC benefit, however, is that it can run *any* PC operating system, including Windows NT, UNIX, or OS/2. RealPC and SoftWindows 95 can only run DOS, Windows 3.1, Windows 95, and Windows 98.

VirtualPC/SoftWindows Speed Secrets

RAM is it

VirtualPC or SoftWindows requires enough RAM in your Mac to run Mac OS, the emulator, Windows, *and* your Windows programs — 48MB is the bare minimum for tolerable speed. Less RAM slows Windows down, and more RAM speeds it up.

To give the emulator — and Windows — more RAM, use the same technique you'd use to give any Mac program more RAM (see Chapter 9): increase the Preferred Size memory box in the emulator program's Get Info box.

Gamers' revenge

If you're primarily interested in running PC *games* on your Mac, consider buying a *3dfx graphics accelerator board* to go with your emulator software. These cards, which cost a few hundred dollars, greatly increase the speed of certain PC games (only those specifically written to take advantage of 3dfx boards).

The Quitting-the-Finder myth

You can't believe everything you read on the Internet. One widespread "tip" about emulators — one submitted no fewer than 38 times to this year's *Mac Secrets* contest — is a myth. On some Web sites, this "tip" was actually (and falsely) attributed to Apple cofounder Steve Wozniak, which has given it credibility.

The myth goes like this: To get greater speed out of VirtualPC or SoftWindows, you can trick the Mac into running without the Finder. (This involves renaming your emulator program "Finder," using ResEdit to change its creator code [see Chapter 15] to *MACS* and its type code to *FNDR,* and placing this edited file into the System Folder on a new hard drive partition, which you designate as the startup disk. When you start up the Mac, you launch right into the emulator and Windows, and the Mac desktop is not displayed.)

It's true that you can launch Windows without the Finder. The problem is that doing so doesn't speed up PC emulators. Not running the Finder frees a couple of megabytes of RAM for use by your emulator — but that's too little extra RAM to result in any significant speed increase.

The bottom line: If you need more RAM for Windows, buy some.

PC Compatibility Boards

A *PC compatibility board* is like a little PC motherboard running in your Mac. Most of today's PC compatibility cards have a Pentium or Pentium-clone processor, their own RAM slots, and their own video RAM, sound chips, and graphics accelerator chips. You can also find boards that offer standard PC ports for peripherals, such as the parallel and serial ports, sound in and out, and joystick port.

A PC compatibility board costs much more than VirtualPC and SoftWindows, but gives you much better speed—speed similar to an actual PC (usually slightly slower). On the other hand, PC compatibility boards for Macs don't usually offer the latest-generation PC processors. For instance, at this writing, nobody's making boards with Pentium II processors.

Apple discontinued its own line of compatibility boards in 1997. Another company, Reply, sold its compatibility-card line to Radius, which soon after also got out of the business. This transaction left Orange Micro as the sole provider of compatibility cards.

Orange Micro was building its OrangePC cards long before Apple entered the market. Today, Orange Micro offers boards at wide range of prices and feature sets.

Besides using faster processors, one advantage of current Orange Micro boards over the older Apple and Reply/Radius boards is that only Orange boards support 32-bit Windows drivers. This important feature lets Windows on the Mac use modern PC "NDIS" networking, long Windows file names, and a wider range of peripheral gadgets.

Using PC Peripherals on the Mac

Fortunately, you don't need to run Windows on your Mac in order to use certain PC peripheral products—printers, CD-ROMs, scanners, monitors, and so on. You can often plug a device directly into one of your Mac's ports or slots, or use a converter box.

However, physically attaching a peripheral is just the first step—the key to using it is finding a corresponding *driver* for the Macintosh. Drivers are small pieces of software that load into memory to tell the computer how to speak with the add-on gadget; drivers aren't, alas, cross-platform. If no one has written a Mac driver for the peripheral device, you probably won't be able to use it.

Monitors

There's little or no difference between today's PC and Mac monitors. (Years ago, PCs introduced *multi-sync* monitors, which let you zoom in or out of the image on your screen, as described in Chapter 11. Today, all Mac monitors are multi-sync.)

The only difference you might encounter is the connector. *All* monitors use a 15-pin connector to plug into a computer, but desktop Macs' connector is arranged in two rows of pins. The connector on PCs (and modern PowerBooks), on the other hand, has three rows of five pins instead (known as the *standard VGA connector*). All you need to use a PC-type connector on your Mac is an adapter, which you can get from a computer store or from a PowerBook owner who doesn't need the adapter that came in the original box.

Keyboards, Mice, and Joysticks

Using a PC keyboard is trickier than using a PC monitor because the interface to the computer differs — and we're not just talking about a difference in connectors. Most PC keyboards plug into a PC serial port, also known as a PS/2 serial port. Most Mac keyboards plug into the Mac's Apple Desktop Bus (ADB) jack (see Chapter 10) and contain an ADB chip inside (which PC keyboards lack).

The solution: Get an ADB-to-PS/2 converter box. Such a box plugs into the Mac's ADB port and offers one or more PS/2 serial ports, into which you can plug PC keyboards, mice, some joysticks, and even receptor docks for wireless keyboards. (Some of these converter boxes are *input only*, and therefore don't work with devices that require two-way communications, such as software copy-protection dongles.)

USB Devices

As you can read in Chapter 10, some newer Mac models, such as the iMac, use Universal Serial Bus (USB) jacks and cables for the keyboard and mouse instead of ADB. USB keyboards on Macs and PCs are basically the same, although a special software driver is still usually required for each kind of computer.

Scanners

There isn't much difference between Mac and PC scanners. Most scanners plug into the Mac's SCSI port — or a SCSI *card* on a PC.

As usual, the key ingredient for making a scanner work on the Mac is a software driver (usually in the form of an extension) and scanning software that works with the scanner. The first place to look for a Mac driver is the scanner manufacturer's Web site. If you can't find it there, call the manufacturer and ask for a Mac driver.

Printers

The biggest barrier to using PC printers with a Mac is the language used by the computers and printers to communicate. Macs and many Windows systems speak Postscript, described at length in Chapters 30 and 31. Macs

and Windows machines can both print to Postscript printers *if* they're both using the same network protocol (such as AppleTalk) or are both connected to a printer server.

However, many PC printers use Hewlett Packard's Printer-Command Language (HP PCL) instead of PostScript. Some printers are bilingual, and can automatically recognize what page description language each computer is speaking. But on their own, Macs can't speak PCL.

You can, fortunately, equip a Mac to print to HP PCL printers with the addition of InfoWave's PowerPrint kit. This package contains driver software for a variety of different types of printers, including inkjet and color printers, and even a cable adapter that lets you connect PC printers to the Mac's printer port.

The expansion slot in networkable PC printers can accept a *network interface card* that lets the printer accept such wiring types as LocalTalk and Ethernet. Network printers also use a network *protocol*, such as AppleTalk or TCP/IP, as described earlier in this chapter. (The LaserWriter driver — the Chooser icon — in Mac OS 8.1 and later can print to TCP/IP printers.) Some printers can use multiple network protocols simultaneously.

PCI Cards

The same PCI expansion slot found in most Macs (see Chapter 34) is also used in most PCs. Many graphics accelerator cards and video cards are available for both Mac and PC; so are more specialized PCI cards, such as video input and output cards and data-capture cards (used in engineering). As with other peripherals, the only difference in the Mac and PC versions is the software for each platform — as long as the card fits into your Mac, of course.

Chapter 17

Word Processing

In This Chapter

▶ Basic word processing power tricks

▶ The mother of all Microsoft Word sections

▶ WordPerfect and ClarisWorks tricks

▶ Unleashing the thundering raw power of SimpleText

A Few Words About Word Processing

It's the Number One use of a Mac. It's the Number One use of any personal computer, actually. The lure of being able to rearrange text and replace pieces of it without involving eraser crumbs or white-out is enough to draw even card-carrying technophobes into the world of personal computing.

The Mac marketplace isn't as riddled with competing word processors as the IBM marketplace is. But there are more than enough choices, from the simple and easy, like AppleWorks (formerly ClarisWorks), to the mega-wordcrunchers like Microsoft Word and WordPerfect. (We actually know one woman who runs her entire office using SimpleText, for Heaven's sake. She's in absolute heaven.)

Universal Word Processing Secrets

Text-editing basics

Mac Basics

We're always amazed at the number of 12-year Mac veterans who are astounded to learn that you can, for example, double-click a word to highlight it. It occurred to us that *somebody* ought to put together a complete list of Macintosh-standard editing techniques. Here's our attempt:

■ Drag through some text to highlight it. If you're dragging horizontally and accidentally dip down, move the cursor back up to the original line and continue.

- If you're going to select pages' worth, click at the beginning — scroll — and then Shift-click at the end. Everything between your clicks is highlighted.

- Double-click a word to highlight it. At that point, you can press the right or left arrow keys to move the cursor to the right or left edge of the highlighted word.

- Once text is highlighted, you don't have to delete it before typing over it. Just start typing over the highlighted text; it goes away instantly.

- There's no apostrophe in the possessive word *its,* as in, "Poor thing! Its paw is all dirty!"

Double-click/drag and much more

Now that you know about double-clicking to select a word, and dragging to highlight text, you're ready for our favorite text-selection trick of all. But you can combine the best aspects of these two methods, resulting in a *double-click/ drag,* as shown in Figure 17-1.

Help! Help! I'm being held prisoner inside a computer-book company!

Help! Help! I'm being held prisoner inside a computer-book company!   Help! Help! I'm being held prisoner inside a computer-book company!
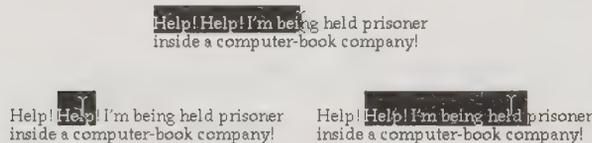
Figure 17-1: The normal method of drag-selecting text (top) is too slow because you have to be letter-accurate when you drag. This famous shortcut lets you select one word by double-clicking (lower left). For extra efficiency, combine these two techniques into a double-click/drag (lower right).

Mac Basics

You point to the first word you want included in the selection. Double-click, but *keep the button down* on the second click. With the button still down, drag sideways (or diagonally) to select text in complete-word increments.

You should probably get used to this trick; in real life, you use it more often than you use simple dragging. After all, how many times are you trying to select only *part* of a word? (Word 98 and Word 6 both do this word-by-word selecting automatically, thanks to the Preferences option called "When selecting, automatically select entire word" [in Word 98] or "Automatic Word Selection" [in Word 6].)

Every program has its own additional text-selecting shortcuts. In Word, you can triple-click a paragraph to select it. You can ⌘-click a sentence to select *it.* You can click (to select one line) or ⌘-click (to select the entire document) in the thin margin to the left of your window. The point is: Learn your word processor's shortcuts and apply them!

High-speed Delete

How often do you really stop to think about the ergonomics and interface design aspects of your everyday work? Not as much as we interface nerds do, we bet.

It occurs to us that, on a Mac keyboard used by a right-handed person, the Delete (Backspace) key is in an incredibly dumb place! Think about it for a minute: It's at the upper-right corner of the keyboard. And where, nine times out of ten, is your right hand located just before pressing the Delete key? It's on the *mouse.* (At least it is if you're editing previous work.) That means that your right hand is traveling back, forth, back, forth, mouse, Delete, mouse, Delete — and your *left* hand sits there twiddling its thumb, so to speak.

Our suggestion is to install a Delete key on the *other* side of your keyboard. This doesn't require a soldering iron. You already have a key there that you rarely use — a couple of them — the tilde key (~) and Esc.

Speed Tip

Teach your Esc key to be the Delete key. We *guarantee* that you'll love this the minute you start editing a document. For the first time, you'll be two-handed: mouse with one hand, position the cursor, delete with your left hand. It's sheer joy.

If you use Microsoft Word 5, teaching this key to be Delete (in *addition* to your regular Delete key, of course) is easy; see our Microsoft Word Secrets, later in this chapter. In Word 6 and Word 98, you can't reassign the Backspace command. You can, however, record a macro that consists of one press of the Delete key. You can't assign it to the Esc or tilde key alone, unfortunately — you must include a modifier like the ⌘ key — but that's better than nothing.

CD

If your word processor doesn't let you retrain your keys, use OneClick, included on the CD-ROM with this book. Teach *it* to "press" the Delete key when you hit Esc or the tilde key.

Master fractional character widths

If you want to look good in print, learn about *fractional character widths.*

Mac Basics

The Macintosh screen, regardless of the make or model, uses 72 dots (pixels) for every actual-size inch. As it turns out, $\frac{1}{72}$ inch is a large enough distance to be visible, especially in a beautiful laser printout.

On the screen, the position of every character is rounded off to the nearest $\frac{1}{72}$ inch (because that's the closest the Macintosh can come to putting it where it really belongs). For a year or two in Macintosh history, the world was filled with awkwardly (loosely) spaced words in laser printouts, as every character's position was nudged into $\frac{1}{72}$ inch slots.

Finally, one program after another introduced the Fractional Character Widths option. When text is printed using fractional widths, the printer is allowed to place each character at its typographically correct position, which isn't necessarily in a multiple of $\frac{1}{72}$ inch. The second letter of a word may be, for example, $\frac{1}{100}$ inch closer to the first letter than it would have been allowed. As a result, the printout

is slightly tighter, looks much more professional, and no longer has those funny extra-wide spaces between words.

Each program has its fractional character widths on/off switch in a different place. In Word, you must choose Options (Word 6) or Preferences (Word 98) from the Tools menu, then click the Print tab to find the Fractional Widths check box. In Word 5 and WriteNow, it's in the Page Setup dialog box. And in AppleWorks/ClarisWorks, it's a check box in the Preferences dialog box (see Figure 17-2).
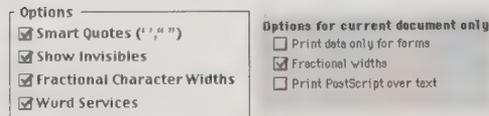
Figure 17-2: The Fractional Character Widths option in ClarisWorks (left) and in Word 98. In both cases, you get to this checkbox via the Preferences command.

So why doesn't everyone leave the fractional-widths feature turned on all the time? Because the screen display, limited as it is to $1/72$ inch increments, suffers when Fractional Character Widths is on. The Mac has no choice but to overlap the characters, which makes them harder to read (see Figure 17-3). As a result, many people do their editing with this feature *off*, and then they turn it on just before printing. (You could easily create a QuicKeys, OneClick, or Tempo macro to do this for you; see Chapter 22. Turning Fractional Widths on and off is also easy to do with a Word 98 macro — and from there, you can make a toolbar icon or keystroke trigger that macro.)

Figure 17-3: This is the trouble with fractional character widths: They make text look harder to read on the screen. Some people, therefore, do their word processing with fractional widths turned off (left). They turn it on for printing (right) so that the printer will give the pages that nicely typeset look. Of course, turning fractional widths on or off affects the spacing of the words — and therefore the page breaks, indexing, placement of graphics, and so on — so use with care.

Fewer fonts = faster word processing

If you crave fast word processing speed, go easy on the fonts you load into your system. Every time you launch your word processor, the program first has to peek into your Fonts folder and load up every one of the fonts it finds there into its own font menu. Every time you choose the pop-up font menu (or, in Microsoft Word, open the Character dialog box), all those font choices must be loaded into the menu before it's displayed. It all takes time; in Word 6, it takes a *huge* amount of time. In Word 98, you must wait out this font-loading process only first time you launch the program each day, but it's still time waiting.

Speed Tip

Having 500 fonts to choose from may be fun, but, frankly, most people can word process with just a handful. (In fact, limiting the number of fonts you use in a document makes good page design sense; see Chapter 18 for details.) If you keep your set of active fonts small, your word processor will launch faster, and formatting text won't take as long.

Of course, installing and removing fonts each time you want to do some word processing can be a headache. But if you have a font-management utility such as Suitcase or ATM Deluxe, you can load a particular set of fonts with a few button clicks (see Chapter 29 for more on font management).

The basics of drag-and-drop

Mac Basics

Being able to drag and drop chunks of text within a document—and between documents—is a writer's dream. To recap: Highlight some text. Release the mouse button. Point to the highlighted area—and drag to a new position to move the text without having to copy and paste.

You can drag highlighted text elsewhere in the document; *out* of that document and into a different window; or even out of the window and onto the *desktop*. When you drag text onto the desktop, it becomes a Text Clipping file, making your Mac's backdrop become a handy scrapbook for paragraphs and bits of text you plan to use later. (When you want to re-insert them into something you're writing, just drag their icons off the desktop and into your word processing window.) One more drag-and-drop trick: If you hold down the Option key as you drag, you make a *copy* of the dragged text (instead of moving it).

These days, almost every self-respecting program offers this delicious feature: Word 98, ClarisWorks/AppleWorks, America Online, Claris Emailer, InfoGenie, Netscape Navigator, WordPerfect, SimpleText, the Scrapbook, the Note Pad, and many more. (Word 6 lets you drag within a given document or program, but not *between* programs and not to the Desktop.)

CD

If you have a text-based program that doesn't have drag-and-drop, we've got a trick for you: install the free extension called DragClick (it's on this book's CD-ROM). Amazingly, with DragClick installed, you can drag text between just about any two programs you can think of.

Microsoft Word

Oh, yes, we *know* this section is hugely out of proportion to our coverage of other programs. But we figure if you do any serious writing at all on your Macintosh, chances are you do it with Word. With the release of the absurdly bloated Word 6 a few years ago, many people switched over to leaner, faster programs—or stuck with Word 5.1. But then came Word 98—a smart, speedy, Mac-savvy, word-crunching powerhouse that quickly made Word the "standard" Mac word processor, as it had been in days of old.

CD

Using Word straight out of the box without modifications is like buying an expensive suit straight off the rack and then refusing the free alterations provided by the shop's tailor. Word is *made* to be customized. You can assign a keyboard shortcut to virtually *any* Word command, option, or feature. You can also doctor up the menus and toolbars however you please. And so on.

Our purpose here isn't to provide a primer on Word. We're going to focus on some of the most powerful (but lesser-known) features in Word 98 and Word 6. If you're one of the many who are contentedly sticking with Word 5, don't be alarmed: We still have dozens of Word 5 secrets. You'll find the complete collection in Chapter 17 of the electronic version of *Macworld Mac Secrets, 4th Edition* (on the CD-ROM that came with this book).

Customizing menus

Ever notice that there are Word commands you almost never use? Yet there they are, taking up space on your menus. On the other hand, there are probably plenty of other commands, buried deep within one of Word's many dialog boxes, that you use all the time. Why not doctor up the menus, getting rid of the commands you don't use and adding the ones you really need?

Adding an item to a Word menu

Here's the easiest way to add a command to a Word menu: In Word 5 or 6, first bring onto the screen the particular option you want to add. If the option is on one of the toolbars — centered text, for example — make sure the toolbar is visible. If the option appears in a dialog box, open the dialog box.

Then activate the Add to Menu command by pressing ⌘-Option-plus sign (the plus sign on the *keyboard,* not the numeric keypad). The pointer changes into a boldface plus sign (see Figure 17-4).
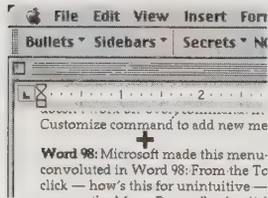
Figure 17-4: The pointer changes to a bold plus sign, indicating that you're in Add to Menu mode.

After the Add to Menu plus sign appears, all you have to do is click the option you want to install on a menu. The plus sign changes back to the standard pointer, and the item is added to the appropriate menu (see Figure 17-5).
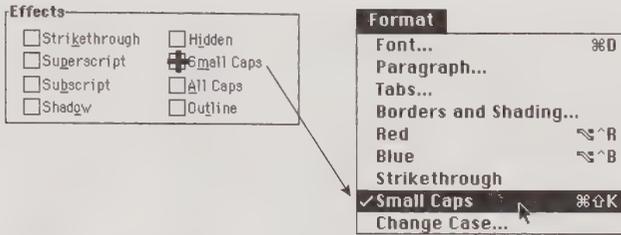
Figure 17-5: You can turn any of the Font dialog box formatting options into a menu command. Open the dialog box, position the cursor directly over the check box of the option you want to add — in this case, Small Caps. Then activate the Add to Menu command by pressing ⌘-Option-plus sign, and click. The option instantly appears on the Format menu as a new command.

In Word 98, for some odd reason, you have to activate the Add to Menu command *first*, and *then* open the dialog box you want. Furthermore, the bold "Add to Menu" plus sign disappears as soon as a dialog box opens. In fact, sometimes the bold plus sign fails to appear at all. But don't worry — after you press ⌘-Option-plus sign, the next command you click on will be added to the appropriate menu.

Unfortunately, in both Word 98 and Word 6, this quick Add to Menu method doesn't work on every command. In some cases, you have to use Word's Customize command to add new menu items. Here's how you do it.

Word 98: Microsoft made this menu-customizing scheme incredibly convoluted in Word 98: Choose Tools ➪ Customize. In the list of toolbars, turn on the Menu Bar toolbar by clicking the appropriate checkbox.

A bizarre, *duplicate* menu bar appears immediately beneath your regular menu bar. Now click the Commands tab in the Customize dialog box. Select a category from the Categories list on the left; and select the command you want from the scrolling Commands list on the right. (If you're not sure what category a particular command falls under, choose All Commands from the list on the left.) Then *drag the command* you want up to the appropriate menu on the duplicate menu bar. Drop it into the menu at the location of your choice (see Figure 17-6). (Remember: drag-and-drop commands into the duplicate menu bar, not the actual menu bar.)

Strange But True

You can even rename your newly installed menu command: Control-click it. Type the new name into the Name box and press Return.

Finally, when you close the dialog box, your changes will be reflected in the real menu bars.
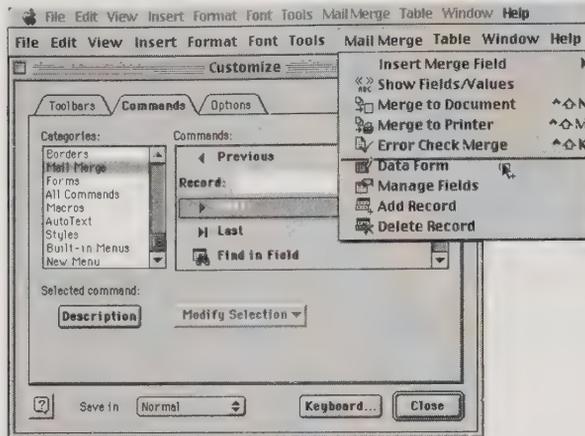
Figure 17-6: Drag a command from the Customize window to the Menu Bar toolbar, which displays replicas of your actual menus; then drop the command exactly where you want it to appear.

Word 6: Choose Tools ⇨ Customize ⇨ Menu tab. As in Word 98, select a category from the Categories list on the left and select the command you want from the list on the right. Click the command you want to add, click the Add button (or just Press Return), and close the dialog box.

Scrolling through the list of commands in the Customize dialog box, you may notice that *most* of the commands available in Word — there are hundreds of them — are not installed on the menus by default. You have to put them there, using the method described earlier. (If you're using Word 4 or 5, you can also put commands under any menu you want using the Commands dialog box, which you open by choosing Commands from the Tools menu.) Indeed, there are a number of commands you *should* install on your menus. Here are a few we think are worthwhile.

- *Small Caps:* A priceless, good-looking style variation for subheads and titles.

- *View Page Width:* Automatically zooms the screen to the maximum magnification that still lets you read the full width of your page.

- *Insert Date Field:* Plugs the current date into your document. This is different from the Date and Time command, already on the Insert menu, which opens a dialog box from which you then pick a date format.

- *List Commands:* See our "Print a list of every Word command (Word 6 and 98)" secret, later in this chapter.

- *Fractional Character Widths:* See "Master fractional character widths," earlier in this chapter. (Word 5 only, although you can re-create the effect with a Word 6 or 98 macro.)

■ *Sentence Case*: Invaluable when you get an e-mail or other document that's been typed in all capital letters. This command converts text to normal upper/lowercase instantly. (Word 5 only. Word 6 and 98 let you install the Change Case command, which also gives you the Sentence Case option. Here again, though, you can easily create macros that change highlighted text from one case to another.)

Actually, you can do more with the Customize dialog box than add commands to menus. You can move a command from one menu to another, rename a command, rename a menu, or create a new menu. We'll get to all that in a moment.

Removing an item from a Word menu

Removing items from menus is even easier than adding them — and it works the same way in every version of Word, from 5.0 to 98. After you zap unneeded items from view, you're left with shorter menus containing only those commands you want.

CASE HISTORY

Word menus of the rich and famous

We know a very, very famous movie actor who wrote a book a few years ago. (He's a client, so we're not going to name him. But trust us: His name-in-*People*-magazine quotient is among the top ten in the nation.)

He's a little bit intimidated by computers. When we told him about the Remove From Menu command we're discussing in this section, he asked for us to trim down the superfluous options from his Word 5 menus.

Open Mail and Send Mail, of course, were the first to go (why on Earth did Microsoft insist on putting them there by default?). Our client said he was writing a manuscript to turn in to a publisher —so out went Table of Contents, Index, Hyphenation, and all the page-layout commands. Insulted, he also had us take out the spelling checker, grammar checker, and thesaurus.

Before long, we were in a frenzy of menu-shortening. Down the hatches went Character, Paragraph, Section, Document, and other fancy formatting commands. Renumber, Calculate, Repaginate Now — "If I don't even know what that *means,*" we were told, "I certainly won't ever use it."

Then we came to Find and Replace. We explained why one might like controls like these: "Suppose you misspelled somebody's name all the way through your manuscript —" we began. We should have known. "I won't misspell any names. Take it out," he said.

When we were finished cleaning the useless and extraneous commands out of our client's Word menus, there were exactly three commands left he considered worth having: Bold, Save, and Print.

Hey, what do we know? Maybe there's an untapped market here.

To delete commands from menus, press ⌘-Option-minus sign (again, use the main keyboard and not the numeric keypad). The pointer becomes a boldface minus sign. When you select a command, the menu bar flashes, and the item you selected disappears from the list (see Figure 17-7).
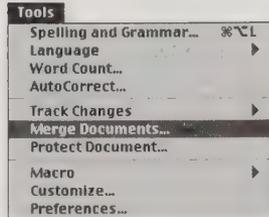
Figure 17-7: Selecting an item after activating the Remove From Menu command strikes it from the menu. You know you're in Remove From Menu mode when the pointer is a boldface minus sign.

Word 98 is a bit fussy about this process, too. The Remove From Menu command works, but you don't always see the big fat minus sign. Despite the lack of visual clues, the next command you select will be removed from its menu.

Removing commands from menus doesn't delete them from *Word*. To restore a command you've removed from a menu, reinstall it using the Add to Menu command described earlier — or use the Customize dialog box (or Commands dialog box, in Word 5) explained in the following section.

Creating new menus

Word lets you do more than add items to existing menus. It lets you create completely new menus, name them whatever you please, and fill them with any of the commands available in the program. In essence, you can design your own version of Word, scrapping the default menus completely. For example, if you do a lot of mail merges in Word, you can make your own Mail Merge menu, grouping all the merge-related commands you need in one place (see Figure 17-8). Or you can set up an Open menu that lists just the files you open frequently.
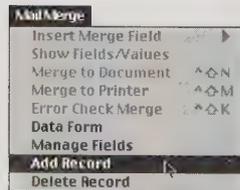
Figure 17-8: A Mail Merge menu in Word? Sure, if you want one. With Word 6 and later, you can add any new menu you dream up.

Word 98: Start by following the procedure described earlier in this chapter for adding new items to a menu using the Customize dialog box. After activating the Menu Bar toolbar and clicking the Commands tab, scroll to the bottom of the Categories list (left side of the window) and click New Menu. Drag the New Menu command from the Commands list (right side of the window) to the Menu Bar toolbar. Put it anywhere you want — between the Insert and Format menus, for example.

With the new menu still selected, Control-click your new menu (or, alternatively, click the Modify Selection button in the Customize dialog box). Type a name for your new menu into the Name field. Finally, press Return (see Figure 17-9). (Control-clicking also offers you the Begin Group command, which inserts a separator line into your menu-under-construction.)
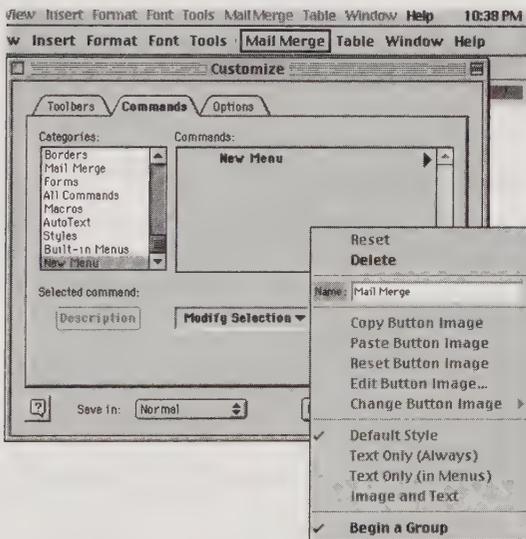
Figure 17-9: Plant your new menu anywhere you want along the menu bar; then click Modify Selection and give it a name.

Your new menu is installed. Now you can add to it any commands you want, using the same Add to Menu technique described earlier.

Word 6: To create a new menu, choose Tools ⇨ Customize ⇨ Menu tab, and then click the Menu Bar button. A dialog box appears, prompting you to name your new menu and indicate where you want it to appear on the menu bar.

The next step is to add commands to this new menu. In the Customize dialog box, first choose the name of your new menu from the Change What Menu pop-up menu. Now, select any command from the scrolling Commands field and click the Add button to install it on the menu. (We suggest setting the Categories field to All Commands, so you'll have access to every command available in Word.)

Notice that each time you add a new command to your menu, you can also indicate where on the menu it should go (by using the Position on Menu pop-up menu). You can also give it any name you want (by typing a new name in the Name on Menu field). If you want a group of commands to be set off by a separator line, you can add one. The separator is the first item in the Commands field; add it to a menu just as you would any other item.

By the way, if you don't have Word, but would still like to rename menus and menu commands in your word processor — or any other program, for that matter — check out Chapter 21, where we show you how to do this using ResEdit.

Creating new menus (Word 5.1 and earlier)

Earlier versions of Word let you create only one new menu — the Work menu. If you'd like to know how to install and use the Work menu in Word 5, see the electronic version of *Macworld Mac Secrets, 4th Edition* (on the CD-ROM that came with this book).

CD

Adding keyboard shortcuts

Many of the frequently used Word commands already have preset keyboard equivalents, but plenty don't. For example, you can trigger the Spelling and Thesaurus commands from the keyboard, but not Word Count. Fortunately, you can create your own key assignment for it by using the Assign to Key command.

Adding a new key assignment is similar to adding a menu command. Again, you press ⌘-Option-plus sign. But this time, use the plus sign on the *numeric keypad* and not on the keyboard. The pointer changes into a boldface ⌘ symbol, as shown in Figure 17-10.
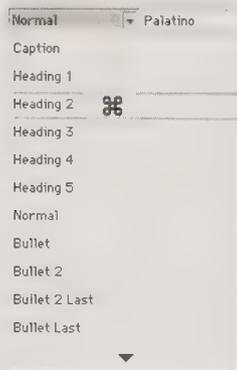
Figure 17-10: The pointer appears as a boldface ⌘ symbol when in Add to Key mode. Selecting a style with the pointer, as shown in this example, allows you to set up a key combination for that style.

After the ⌘ symbol appears, select the menu item, pop-up menu item, or other option whose keyboard equivalent you want to create. In Word 6 and 98, the Customize dialog box opens; the cursor is blinking where it says Press

New Shortcut Key. Do so — press the key combination you want — and then press Return.

If you choose a key combination that's already used by another Word command, the Customize dialog box shows you which command has it. To reassign that keystroke to the new command anyway, just click the Assign button. To keep the current setting, press Delete, and then try another keystroke.

Obviously, you can't have two commands linked to a single keystroke. However, you *can* create more than one keyboard shortcut for a single command.

Customizing Word Toolbars

Microsoft introduced toolbars in Word 5.1 and added even more of them in later versions. However, we find the program's default toolbars visually overwhelming; all those little 3-D buttons everywhere make us feel like we're staring into the cockpit of the Space Shuttle. We've never yet been able to remember what those little icons mean, and the darned things take up too much screen space.

We turn most of our toolbars off. Frankly, we prefer firing off commands from the keyboard to clicking teeny buttons scattered all over the place. We purposely configure the program so that it looks and works more like Word 5.0 for fast, clean, uncluttered word processing.

If you do like using toolbars, however, it makes sense to display only those buttons that you really use. Fortunately, Word lets you add and remove toolbars, and group buttons on them in any combination.

Moving and removing buttons

Suppose you often use the Table button on the Formatting toolbar, but rarely use the other buttons on that toolbar. It doesn't make sense to display a whole toolbar just to access one button. So why not *move* the button to a toolbar you use a lot, like the Formatting toolbar?

Worth Learning

To move a button, you don't need to mess with the Customize dialog box and all that jazz. Instead, simply ⌘-drag the button to another toolbar! Drop the button where you want it. You can also use this same method to *rearrange* the buttons within the toolbar, placing them in any order that seems logical to you (see Figure 17-11).
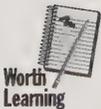
Before: After:

Figure 17-11: You can move buttons around on a toolbar by holding down the ⌘ key while dragging them.

To get rid of a button completely, ⌘-drag it *off* the toolbar, dropping it anywhere else in the document window. Don't worry; eliminating a button doesn't delete any features from Word — just the button itself. You can always reinstall a button by opening the Customize dialog box (or the Word 5 Commands box) as described earlier.

Adding new buttons

If you don't like Microsoft's collection of buttons, you can make your own. Almost any command in Word can be turned into a button. Let's say you want to make a new button that will automatically insert the current date into your document — a command that Word supports but isn't on any of the default toolbars. Here's how:

Word 98: Choose Tools ⇨ Customize ⇨ Commands tab ⇨ Insert (which is among the categories on the left side of the dialog box). You'll see all the different commands Word has available under this category in the Commands list. Scroll through the list to find the Date command. Hey, you're in luck — it already has an icon associated with it. Just drag the command itself *out of the dialog box* and onto a toolbar — where its button is now installed (see Figure 17-12).
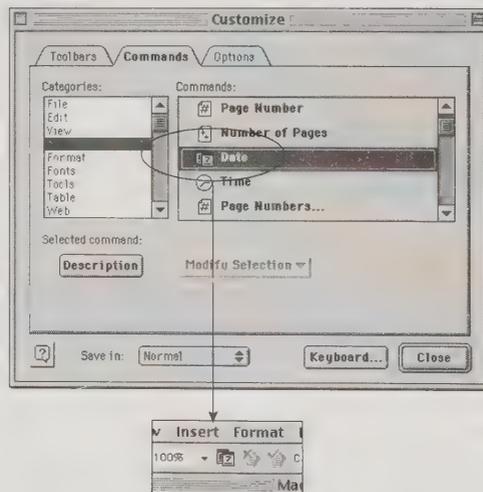
Figure 17-12: Add a new button to any toolbar by dragging a command from the Customize dialog box to the toolbar of your choice.

If you dragged a command that didn't have a prefab icon, it shows up on the toolbar as a text button (such as Insert Page Break). What if you'd prefer it to have a picture button — or what if your command *does* have a picture button, but you don't like it? See "Editing button pictures," coming up.

Word 6: Choose Tools ⇨ Customize ⇨ Toolbars tab ⇨ Insert (which is in the Categories list). You'll see all the ready-made buttons Word has available for inserting various items. (To identify one, click it and read the text in the Description area.) Sure enough, there's an Insert Date button; it's the one with the tiny calendar pages. Drag the button out of the dialog box and onto the toolbar of your choice — and it's installed.

OK, so what if there is no button for the particular command you want added to the toolbar? You can design such buttons from scratch. Choose All Commands from the Categories list in the Customize dialog box. Now you can turn *any* item in the Commands list into a button — by dragging it onto a toolbar.

For example, to create a button that opens the Customize dialog box itself (which is a pretty good idea), click All Commands on the Categories list. Then scroll down to *ToolsCustomize* on the Commands list. Drag that menu item — ToolsCustomize — to a toolbar and drop it into place. As soon as you start dragging, you'll see the outline of a button with a tiny plus sign (see Figure 17-13).
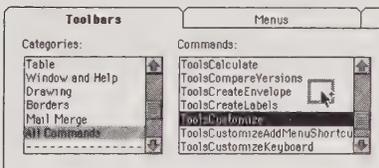
Figure 17-13: A command turns into a new button when you drag it to a toolbar.

Editing button pictures

Suppose you drag a new command onto a toolbar, but the command has no prefab icon associated with it. In Word 98, it turns into a text button — no picture. If an icon is what you'd prefer, Control-click the button you've just installed. (Alternatively, click the Modify Selection button in the dialog box.) The pop-up menu offers two pertinent choices: Change Button Image (including a pop-up submenu of 42 pre-drawn pictures) or Edit Button Image (which brings up a tiny graphics window, so that you can actually draw in a new picture). (Word's painting tools are about as easy to draw with as an elephant, but that's your punishment for violating the Microsoft design scheme.)

In Word 6, dragging a text-only item to a toolbar automatically opens the Custom Button dialog box. You can choose one of the 37 ready-to-use button images, edit an existing button (by clicking it and then clicking Edit), or just leave it as a text button. To do that, type the name you want it to display into the Text Button Name field — and click Assign.

In both Word 6 and 98, remember that you can add almost anything to a toolbar using these methods: macros, style sheets, fonts, and so on (see Figure 17-14). Accessing your favorite fonts and styles is much handier this way if you're using Word 6, which lacks a Font menu.
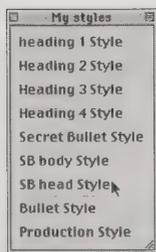
Figure 17-14: Make a toolbar containing text buttons for all the fonts or styles you use most. Then, to apply a style, all you'll have to do is click a button.

Toolbar pop-up menus

We've never been huge toolbar fans, but we have to admit that this is cool: All three Office 98 main programs (Word, Excel and PowerPoint) let you install custom pop-up menus on the toolbars, providing easy access to a large number of commands without having to cram tiny buttons all over the place.

To make a new pop-up menu, choose Tools ⇨ Customize ⇨ Commands tab ⇨ New Menu (at the bottom of the Categories list). On the Command field on the right, a new item called New Menu appears. Drag it on to the toolbar of your choice. Control-click your newly installed menu (or click Modify Selection button in the Customize dialog box) and type a name for your new menu into the Name field. Then press Return.

Now that you've installed your custom pop-up menu, you can add commands to it. Click a category of commands from the Categories list (or All Commands). Then start dragging commands from the Commands list onto your new menu, as shown in Figure 17-15. You can even ⌘-drag existing buttons onto your new menu, so that they'll appear in the pop-up menu instead of on the toolbar itself. When you're done, you'll have a pop-up menu on the toolbar containing exactly the commands you want.
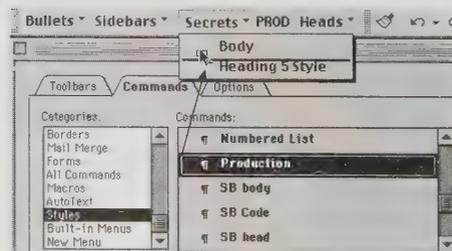
Figure 17-15: Dragging commands into a newly-hatched Secrets pop-up menu on a Word 98 toolbar. The thick horizontal line indicates where in the pop-up menu your command will appear.

ANSWER MAN

Microsoft Weird 5.1

Q: I'm puzzled by an entry in Word 5's thesaurus; maybe you can shed some light on it. What's the bizarre hyphenated word that pops up when you look up "common"?

A: The word that comes up when you look up "common" is coaybtete-leranous.

Q: Yes, obviously. I mean what does it mean?

A: We have no idea. It's not even a word.

Q: OK, then what about the disgusting synonym for "matter"?

A: The synonym for "matter" to which you refer is *discharge pus*.

Now, if you're asking *why* those words appear, we have no idea.

Just be glad you're not still using Word 3 or 4, whose spellchecker flagged the word *childcare* as incorrect — and proposed, as its replacement, *kidnaper*.

And gee — as long as we're discussing the mental problems of Microsoft programmers, let's not forget the psychologically dysfunctional Word 6 spell-checker. You know the one — that's where, in a new Word 6 document, you type *zzzz*. Word's spelling checker flags "*zzzz*" as incorrectly spelled, all right — but proposes *sex* as the equivalent.

Worth Learning

This approach is great for cleaning up existing toolbars, but it's also useful if you have a stylesheet-heavy document, and you want an easier way to apply styles. Instead of having to choose styles from one giant list on the Formatting toolbar, you can break your styles up into a few logical categories, creating a series of shorter, easier to use style pop-up menus (see Figure 17-16).
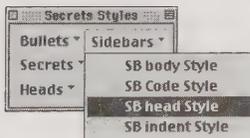
Figure 17-16: A custom-made pop-up menu containing styles grouped into logical categories.

Styles and style sheets

A *style* is a set of specific character- and paragraph-formatting characteristics — font, size, margins, line spacing, borders, and so on — all saved together under one name.

Suppose you're formatting a business report. You decide to set the first section subhead in 18-point Helvetica bold, centered on the page, with a 1-point border. After you format the text the way you want it, save all those settings as one style, called, say, Subhead. Subsequently, any paragraph assigned the Subhead style will automatically change font, size, margins, and so on, to match your style definition. Word 6 and 98 let you save two kinds of styles —

paragraph-level styles (which apply to a whole paragraph at a time) and *character-level* styles (which can be applied to isolated words or characters).

Here are three key advantages to formatting paragraphs by using styles:

- *Consistency.* After you've defined a style, every paragraph to which it is applied will be formatted identically. Because you can transfer styles from one file to another, you can also assure consistency between documents. (This paragraph, for example, is set in our *Bullet* style. It's used anywhere in this book where there's a bulleted, indented block like this.)

- *Speed.* Applying styles is much, much faster than individually applying each formatting option to a paragraph. By using a style sheet, you can change numerous paragraphs in a single bound.

- *Convenience.* Styles can be turned into menu commands, toolbar buttons, and keyboard shortcuts, so you can apply formatting using whatever working style best suits you.

Sad to say, we know people who completely ignore Word's style features. They painstakingly format each paragraph in a long document from scratch, wading through layers of dialog boxes — when all they had to do was create a handful of styles that would have reduced the formatting to a few keystrokes.

Creating a style

The fastest way to create a style is by example. Format a paragraph the way you want it. Click within the paragraph, and then click in the style box on the Formatting toolbar (or, in Word 5, in the Ruler), as shown in Figure 17-17. Type in a name for the new style and press Return.

First click in the paragraph with the format you wish to define as a style
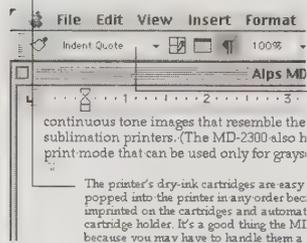
Then click the Style field on the toolbar and type the new style name

Figure 17-17: The making of a new style.

Applying a style

After you've created a style, applying it to subsequent paragraphs is easy. Click within the paragraph — or, to apply the style to more than one paragraph, select all the paragraphs you want formatted. Then use the Style pop-up menu on the Formatting toolbar (or Word 5.1 Ruler) to pick the style you want. In Word 98, you don't even have to remember what your style looked like — the pop-up menu of styles shows you (see Figure 17-18).
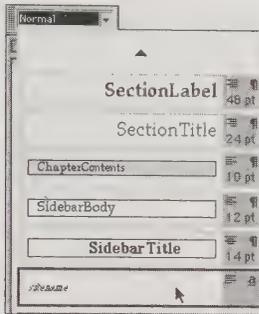
Figure 17-18: Word 98's Style menu shows exactly what the style looks like once it's applied. This feature isn't lightning-quick on slower Macs. But on a G3-based Mac, it's dreamy.

Remember, though, you can use the methods outlined earlier in this chapter to assign a style to a keystroke or turn it into a toolbar button, making it even easier to apply a style once it has been defined.

Renaming, deleting, and moving styles

What happens if you need to change some characteristics of a style you've created? How do you rename or delete a style? For this purpose, you use the Style dialog box. That's also where you transfer a document's complete set of styles — called a *style sheet* — to another document.

Open the Style dialog box by choosing Format ⇨ Style. Once the box is open, you can go to town.

■ *To rename a style:* In Word 98, click the name of the style you want to rename; click Modify; type a new name; click OK, and then Apply. In the Word 6 Style dialog box, click Organizer, select the style you want to rename from the list on the left, click Rename, type the new name, and click OK.

■ *To modify a style's look:* In either Word 6 or 98, click the style's name, and then click Modify. Use the commands in the Format pop-up menu (Font, Program, and so on) to change the formatting characteristics. (You can also modify a style by example, as we'll describe in the next section.)

■ *To transfer styles among documents:* This one zaps just about every Word user who experiments with style sheets. You create a long list of beautiful style sheets for a screenplay you're working on: Character Name, Stage Directions, Dialogue, and so on. But when you open the file that contains Scene II, none of your styles are present!

To solve this problem, choose Format ⇨ Style ⇨ Organizer. You'll see the current document's list of styles on the left side, and the styles in the Normal *template* (a basic "stationary" document that all future new documents are based on) on the right side (see Figure 17-20). By clicking style names and clicking the Copy button, you can transfer styles back and forth. By all means add common styles to your Normal template, so they'll be available to all new documents you create.

If it's too late, though, and you've already created new documents — without the necessary styles — you can still import the styles. Open the style-less document. Open the Style dialog box. Click the right-side Close File button, and then click it again (it now says Open File). From the pop-up menu in the next dialog box, choose Word Documents, and navigate to the document you that contains the styles you'd like to slurp up. You'll see the styles listed on the right; again, click them and use the Copy button to transfer them into the open (style-less) document on the left.

Speed Tip

We think it's good to know about the Organizer, clunky as it is. But actually, there's a sneakier way to transfer a *style sheet* (a set of styles) into a different document: Just copy and paste the contents of an existing document into a new document. The entire style sheet of the first document is carried to the new one, even if you now delete all the pasted text.

If the incoming styles have the same names as styles in the open document, the new styles replace the old.

Updating a style

The beauty of styles, of course, is that you can change a style's look *once,* and every blob of text that uses that style is instantly updated.

You *can* change a style's appearance in the Style dialog box, as described earlier. But most people use this faster method:

1. Highlight a paragraph that has the style. Change some formatting (switch fonts, use bold, adjust the line spacing, and so on).

2. Click the style's name on the Formatting toolbar. Press Return.

3. You're asked what you're trying to do: *Update* the style (which you are) or *reapply* the style to some text where the formatting got messed up (no, but this could be useful another time).

   In Word 98, you're also offered the unbelievably convenient checkbox at this point: "Automatically update the style from now on." That means that, for this particular style, *any* changes you make to it, ever, will be instantly reflected throughout the document, wherever that style may occur — without any confirmation from you. We adored this feature until we forgot we had it turned on once and made mincemeat of our file.

   Now we adore it *cautiously.*

AutoCorrect, AutoText, and the Glossary

Two of Word's best labor-saving features are AutoText and AutoCorrect. Both are typing shortcuts; they let you store frequently used words, phrases, graphics, or table formats, and then retrieve them with a couple of keystrokes. These features can shave hundreds of keystrokes off your work day.

MACINTOSH SECRET

Word's secret keyboard shortcuts

In many Word dialog boxes, you can "click" buttons by pressing only the first letter of the button's name — *without* any modifier keys. For example, in Yes/No dialog boxes, instead of clicking the Yes, No, or Cancel buttons, type a **Y**, **N**, or **C**. This delightful shortcut works in Word 5 and up.

But here's our wildest keyboard secret: Press ⌘-Tab in Word 6 or later. Suddenly, underlines appear in every menu — meaning that you can control them from the keyboard. Use the underlined letter to drop the menu down — Windows style. Then just type the underlined menu-command letter to trigger that command. To open the Customize dialog box, for example, you can press T to activate the Tools menu, then press C to open the Customize dialog box.

In Word 5, pressing ⌘-Tab (or the decimal point key on the numeric keypad if num lock is turned off) makes your menu bar turn black. The same trick goes, even though you don't see the little underlines: Type the first letter of a menu name to make the menu drop. Then navigate the menu with the first initials of the commands — or use the arrow keys — and finally press Return to execute the command.

In fact, believe it or not, *every* button, check box, and pop-up menu in Word's dialog boxes can be triggered from the keyboard. To figure out which keys to press, hold down the ⌘ key after opening any dialog box, such as Options, Customize, Font, Paragraph or Spelling. After a moment, one letter of each option's name appears underlined. The underlined character is the one to press in combination with the ⌘ key to trigger that option.

In Word 98's Font dialog box, for example, you can press ⌘-C to make the Color pop-up menu pop up, then use the arrow keys (up/down or left/right) to select a color. Checkboxes, such as Small Caps and Hidden Text, also can be toggled on and off with ⌘-key shortcuts. In the Customize dialog box, you can switch between the Toolbar, Commands, and Options tabs by pressing ⌘-B, ⌘-C, and ⌘-O.

In short, if there's ever a program you want to be stranded with when your mouse dies, it's Microsoft Word.

AutoCorrect (Word 6 and 98)

With AutoCorrect, you can teach Word abbreviations for frequently used words, phrases, even whole paragraphs. Then, whenever you type the abbreviations, Word automatically expands what you typed into the complete entry. For example, when writing this book, we had to type phrases like "Power Macintosh 8600/300" over and over again. To save time, we saved that phrase as an AutoCorrect entry. Now, we just type **p86**, press the spacebar, and Word does the rest.

If you have a *graphic* you often use as a logo or letterhead, you can save the picture as a AutoCorrect entry, too. Call it, say, "logo1." To add the graphic to a document, type **logo1** and press the spacebar.

AutoCorrect entries have no fixed length limit; the only limit is the amount of memory available on your computer. Therefore, you can create AutoCorrect entries for entire form letters, invoices, address lists, and so on, and add them to your documents with just a keystroke or two.

To create an AutoCorrect entry, select the text or graphic for which you want to record an abbreviation. (Just highlight it — you don't have to copy it.) Then choose AutoCorrect from the Tools menu. When the AutoCorrect dialog box opens, type the new abbreviation, click the Add button, and then press Return (see Figure 17-19).
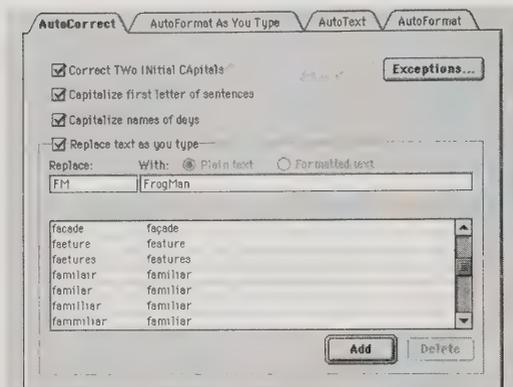
Figure 17-19: Teach Word to type frequently used words and phrases using the AutoCorrect dialog box. Note that many frequently misspelled words come pre-loaded as AutoCorrect entries, saving thousands of people from embarrassment without their even noticing it.

As you create AutoCorrect entries, sometimes you'll want to preserve an entry's format (the fonts used in your letterhead, say), and sometimes you won't (*boilerplate text*—words or phrases you insert into a variety of documents).

If you want formatting preserved with an entry, click the Formatted Text radio button in the AutoCorrect dialog box; otherwise, click the Plain Text radio button. (Plain text entries *do* have a size limit — 255 characters.)

So why is it called *AutoCorrect?* Because the real purpose of this feature is to correct common typos and misspellings. With AutoCorrect, you can have Word automatically replace *teh* with *the* as you type. You can have it automatically fix double caps at the beginning of words — LIke THis — and turn your straight quotes (" ") into curly quotation marks (""), too.

In fact, Word 6 and 98 include hundreds of pre-defined AutoCorrect entries, designed to catch frequent typing and spelling errors. If your typing suddenly seems cleaner and more accurate after you install Word, it's not your imagination. Behind the scenes, AutoCorrect is quietly turning "andteh" into "and the" and "comapny" into "company."

If you come to love AutoCorrect as much as we do, don't forget that you have TypeIt4Me, a spectacular typing-shortcut utility (it came with this book). It does exactly what AutoCorrect does, but it works in *every* program — *including* Word. Check the appendix for details.

CD

AutoText and the Glossary

Word's AutoText command — called the Glossary in previous versions — also stores frequently-used text and graphics. But while AutoCorrect expands your abbreviations on the fly, AutoText requires you to trigger a special command to expand the phrase after typing the abbreviation. (In Word 98, you have to choose AutoText from the Insert menu; in Word 6, the default keyboard shortcut is ⌘-Option-V.) Frankly, we can't think of many reasons why you'd use AutoText instead of AutoCorrect, but here are a few:

- You can link an AutoText entry to a keyboard shortcut, turn it into a toolbar button, or put it on a menu. AutoCorrect entries can only be inserted by actually *typing* into your document.

- AutoText entries can be stored either globally (for use in all your Word documents) or in one specific template. And they can be moved from template to template using the Organizer command. AutoCorrect entries, on the other hand, are always global, saved into your default Normal template.

- In Word 98, AutoText spots your abbreviations on the fly and suggests — in a pop-up yellow box — the expanded entry. (Just press Return to trigger the expansion.) But if you prefer, you can ignore the suggestion and keep on typing. AutoCorrect, on the other hand, doesn't ask — it just changes what you've typed, like it or not.

To save an AutoText entry, select some text or graphics, and then choose Insert ⇨ AutoText ⇨ New. (In Word 6, choose Edit ⇨ AutoText). In the AutoText dialog box, type a name for the entry, and click Add.

To recall an entry in Word 98, just start typing the entry. As soon as Word recognizes the abbreviation, a tiny yellow box containing the expanded AutoText entry pops up just above the cursor. If the suggested entry is indeed what you want typed in, just press Return; Word finishes typing it for you. If you don't want to use the AutoText suggestion, just keep typing; the suggestion disappears. (Alternatively, you can use the keyboard-customizing tips found earlier in this chapter to create a keystroke that lets you insert AutoText entries on demand.)

In Word 6, you recall an AutoText entry by typing its name, then pressing ⌘-Option-V (or clicking the AutoText button on the Standard toolbar). As mentioned earlier, you can also use the Customize dialog box to make a button that triggers a specific AutoText entry, or put the entry into a menu.

(For details on Word 5's Glossary feature, see Chapter 17 of *Macworld Mac Secrets, 4th Edition,* which is on the CD-ROM that accompanies this book.)

CD

Templates and Settings files

Okay, so you've read and digested all of these Word-customizing features. You added keyboard shortcuts to your favorite styles and AutoText entries. You created a custom menu of the files you use most. You wreaked havoc with

your menus, adding, subtracting, rearranging, and renaming commands until no one but you can possibly use the program. You created a masterful, interior-designed set of color-coordinated style sheets.

So where do all those painstakingly created customized settings live? It depends on which version of Word you're using.

The Normal template

With Word 6 and later, every new document you create is based on a *document template* — a prepared, preformatted blank document, complete with its own interface-customization settings. You'll usually use the Normal template, but you can create as many different templates as you want. All your customized menus, toolbars, styles, keyboard shortcuts, and so on are linked to a specific template.

Every time you customize Word's interface (using any of the methods described earlier in this chapter), you can choose which template inherits your changes. In the Customize dialog box, you choose the target template with the Save In pop-up menu (in Word 6, the "Save Changes In" menu). By saving different sets of customized options into different templates, you can easily switch between different settings for Word — all you have to do is attach the template containing the options you want.

For example, *Macworld* magazine uses one set of style sheets. The publisher of this book uses another. Neither wants to get files turned in that contain style sheets from the other company. So we begin each writing project by choosing File ⇨ New — and choosing a corresponding template (Macworld or IDG Books) in the dialog box that appears. (This dialog box *doesn't* appear when you use the ⌘-N keystroke, however.)

You can move your customized settings from template to template using the Organizer (choose File ⇨ Templates ⇨ Organizer). Once you're in the Organizer dialog box, use the Open File and Close File commands to select the two documents between which you wish to exchange options (see Figure 17-20). Then use the Copy button to move the items from document to document.
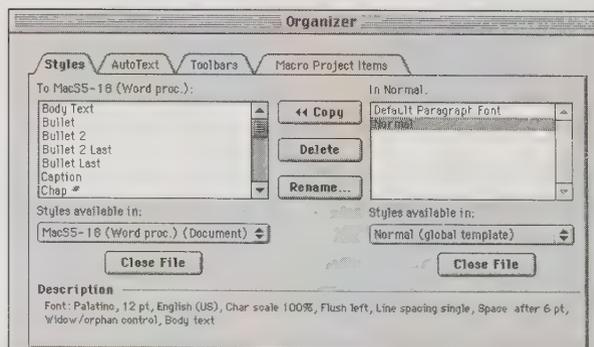
Figure 17-20: Is it our imagination, or does this look like the old Font/DA Mover, one of the Worst Hits of the '80s? It's the Organizer, which lets you move settings from one Word document into another.

ANSWER MAN

Where to keep your various Word support files

Q: Hey, how come my Microsoft Word spelling checker stopped working? And how come it doesn't remember my preferences?

A: Clearly, you've moved some of Word's 10,000 little support files since installing it. Some features of Word won't work if the program doesn't find these files exactly where it left them.

Word 5: Word, the program, must be inside a folder that also contains a Word Commands folder. Inside Word Commands should be all the files that make your spelling checker work *(Spelling* and *U.S. English Dictionary),* your thesaurus operate *(Thesaurus, U.S. English Thesaurus),* the little filter that lets Word 5 read Word 6 files *(Word 6.0 for Windows&Macintosh),* and the filter that lets it read Word 98 files *(Word 97-98 Import).* Move Word itself out of the folder that contains Word Commands, and none of these features will work. Meanwhile, your preferences are in your System folder's Preferences folder, exactly where they belong, in a file called Word Settings (5).

Word 6: This program is more forgiving about file locations. You're actually allowed to move

Word, the program, out of its original folder. The spelling dictionaries, thesaurus files, and translators are in a separate Microsoft folder on your hard drive. (The Templates folder, Word Extensions folder — which contains the hyphenation dictionaries and the Word 97-98 Import filter — and help files are all within the Word 6 folder itself.) Your preferences are once again stored in the Preferences folder in your System folder.

Word 98: Word must live in a folder that also contains three other vital folders: Shared Applications, Office, and Templates. These hold all of Word's various support files. It doesn't matter what folder all these items are in, as long as they're together. Take out the Shared Applications folder, and you lose the Spelling and Grammar checker. Move the Templates folder, and Word won't be able to find any stored templates. The Office folder is particularly critical; move *it,* and Word won't even launch. Preferences are stored in the usual place — the Preferences folder inside the System Folder, in a file called Word Settings (8).

Frankly, we think Word's document template system is way too confusing — hardly an improvement over the settings files of previous versions (see the next section). The important thing to remember is that your customized settings are, in fact, saved in a template — usually the Normal template — and *that's* the file you want to back up for safe-keeping, or move to another machine if you want to transfer your custom settings to another copy of Word.

(Templates are also where the insidious *Word macro viruses* live, but that's a topic for another chapter. Chapter 22, in fact.)

Settings files (Word 5.1 or earlier)

If you're using Word 5.1 or earlier, all your custom changes are stored in a Word Settings file in your System folder (within the Preferences folder). We have lots to say about the Word Settings file, but we've tucked this information away in *Macworld Mac Secrets, 4th Edition* (on the CD-ROM that accompanies this book).

CD

Microsoft Word Secrets ───────────────────────────

CD

Except where noted, these tricks work in Word 6 and up. Our favorite Word 5-only secrets await you in the electronic *Macworld Mac Secrets, 4th Edition* (on the CD-ROM that came with this book).

Print a list of every Word command

Word is loaded with hidden commands — dozens of powerful commands for which there are no keystrokes, no menu items, and no toolbar buttons. Of course, any of these commands *can* be on a menu or a toolbar and *can* have a keyboard shortcut, but it's up to you to assign those, using the Customize dialog box, as described earlier in this chapter.

Worth Learning
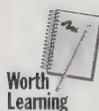
So how do you even know what these commands are? And how do you keep track of which keystrokes are assigned to which commands? Use the ListCommands command, which is itself a hidden command (of course). To access it, choose Tools ⇨ Customize. Select All Commands from the Categories list and scroll down to *ListCommands* in the Commands list. Now you can assign a keyboard shortcut to this command or stick it on a menu.

Once you do, this command produces a lengthy Word table listing every command in the program, along with its keyboard and menu assignments. Alternatively, you can have it list only those Word commands that are actually active in your current configuration (see Figure 17-21).

Figure 17-21: When you use the List Commands command, you have the option of listing all commands, or only ones you currently have set.

Changing typewriter quotes to typographer's quotes

Most of the time, you'll want "smart quotes" turned on — the Word feature that turns straight quotes, like "this," into curly quotes, like "this." But when typing inches or degree marks, curly quotes are inappropriate.

Worth Learning

When that happens, getting an on-the-fly straight quote mark is simple: Just press ⌘-Z just after the quote appears. Instantly, Word 6 or 98 gets the idea — and changes it back into a straight quote!

But what if it's too late? What if you've got an entire document filled with straight quotes? First, make sure the quote-curlifying feature is on. (Choose

Tools ➪ AutoCorrect — or Tools ➪ Preferences in Word 5 — and turn on the "Straight quotes to Smart Quotes" option.)

Now use the Replace command (⌘-H) to replace each quotation mark with another seemingly identical quotation mark (see Figure 17-22). As the Replace command inserts the new quotation marks, they're changed into typographer's quotes.
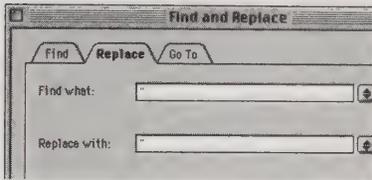
Figure 17-22: This may feel silly: It looks as if you're just replacing a quotation mark with itself. But if Smart Quotes is turned on, all the straight quotes turn curly after you click Replace All. This works with apostrophes, too. And it also works in reverse: If you turn Smart Quotes off, the setup in this figure will render all quotes non-curly.

Instant pop-up menus — anywhere

Long before Apple introduced contextual pop-up menus in Mac OS 8, Microsoft added them to its Office suite. In Word 6 or later, you can access some of the most frequently used menu commands by Control-clicking anywhere in the document window. When you do, a pop-up menu appears right under the pointer.

If you Control-click in your text, the Word 98 pop-up menu contains commands for font and paragraph formatting, bullets and numbering, as well as the standard Copy, Cut, and Paste commands. Best of all, Word 98 also offers suggested alternatives for misspelled words and — *wow,* do we love this one — a list of synonyms, right at your cursor.

Control-clicking a *table* produces a similar pop-up menu, with added commands for inserting and deleting cells and access to Word's Table AutoFormat command to apply a style to the whole table.

Speed Tip

You can also Control-click anywhere on a Word 98 toolbar for a list of all toolbars — as well as the Customize and Toolbars commands for making your own toolbars. Using this pop-up menu is the easiest way to open and close toolbars on the fly.

The Word 98 Font menu

The Font menu, which Microsoft had eliminated in Word 6, is back in Word 98 — and better than ever. Now, for the first time ever in Word, fonts appear in their actual typefaces, so you can see the difference between, say, Helvetica Condensed Bold and Helvetica Condensed Black just by glancing at the menu.

MACINTOSH SECRET

Word's dirty little secrets

Bill Gates is so fed up with programmers planting secret credits and other surprises (*Easter eggs*) in their work that he put his foot down. "You put an Easter egg in Microsoft software," he said, "and you're fired."

Maybe that's why there are so many Easter eggs in Microsoft Office.

In any case, some of the Easter eggs in recent versions of Word — on both Mac and Windows — show a positively perverted streak among Microsoft's best and brightest.

See the sidebar called "Microsoft Weird 5.1" earlier in this chapter for one example. And consider shielding your eyes for this example — it's definitely on the racy side.

Anyway, the secret goes like this: In a new Word document, type *unable to fish,* or *unable to follow instructions,* or *unable to* (your favorite word that starts with F here). Highlight that phrase and open up Word's thesaurus. (You can't use the control-key menu in Word 98 in this case; you must use the Shift-F7 keystroke — or add the Thesaurus command to the Tools menu, as described in "Adding an item to a Word menu" early in this chapter.)

The synonym Word proposes, we're guessing, most definitely did not get inspected by the Microsoft Family Purity Board.

But it gets worse. Now open a new document and type *I'd like to see you naked* (or anything else that begins *I'd like to*). Check that in Word's thesaurus — and you'll find out that the other Word programmers are every bit as lonely.

Displaying fonts in their own typeface doesn't work for symbol and dingbat fonts, however. Instead of Zapf Dingbats, for example, the menu entry reads: ✹❂▢❖✦⬧❘■✳❂✿▼▲. The solution: Hold down the Shift key while choosing the Font menu to display the font names in good old Chicago or Charcoal.

Worth Learning

Backward-compatibility protection

If you're using Word 98, but sharing documents with users who haven't upgraded yet, you can teach Word to automatically save your files in the format of an earlier Word version. You won't be bugged by warnings every time you save, either — you'll never know the difference.

For example, suppose you're sharing files with a group of Word 5 users. In Word 98, choose Tools ➪ Preferences ➪ Save. Change the "Save Word files as:" pop-up menu to Word 5.0 for the Macintosh. From now on, every new file you create will automatically be saved in that format. (You can always override this new default by using the Save dialog box's pop-up menu of file types.)

Of course, you can accomplish this same task — intentionally saving documents in the format of an earlier version — by using the Save As command and changing the file type yourself. But setting the default saves you steps, liberates you from having to think about compatibility every time you save a document, and

eliminates the warning dialog box every time you save (except for the very first time you save a new backwardly-compatible file).

Time-saver in the Customize box

If you want to get the most out of Word 6 or Word 98, you'll have to spend a lot of time in the horribly designed Customize dialog box. Word 5 users, in particular, will cry out to discover that you can't navigate these ridiculously tiny lists by typing the first few letters of the commands' names — you *must,* apparently, use the microscopic scroll bar (see Figure 17-23).
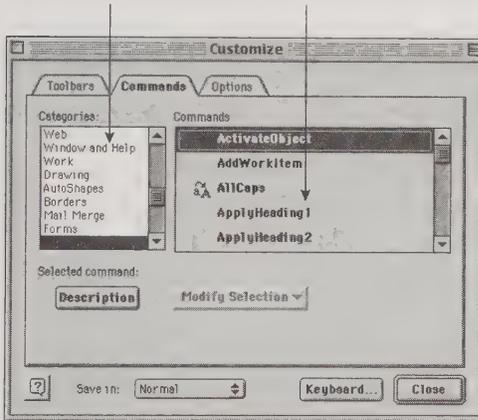
Figure 17-23: You can type to select — but you have to click to indicate which list first, as shown by the arrows.

Speed Tip

Actually, you *can* type to select, but you first have to *click* — or press Tab (to move to the right) or Shift-Tab (to move to the left) — to select a list (the Categories list at left, or the Commands list at right). In typical Microsoft style, there's absolutely no visual indication that one list or the other is selected for typing — but at least it can be done.

Changing font sizes from the keyboard

Word provides two different sets of commands that let you change the size of selected text from the keyboard. These commands are particularly helpful if you use Word for page-layout tasks that require you to fit titles into a certain space.

Pressing ⌘-] increases the size of selected text by one point size. Pressing ⌘-[decreases the size of selected text by one point size.

Speed Tip

To change the point size in larger leaps than one point at a time, press ⌘-Shift-> (greater than) and ⌘-Shift-< (less than). These commands jump from one point size to another as they are listed in the Font Size menu (9, 10, 12, 14, 18, and so on) in the Font dialog box.

Turning toolbars in palettes and vice versa

You can turn any of Word's toolbars into a movable, floating palette by double-clicking its handle (or by simply dragging it anywhere into the document window). Conversely, you can transform a palette back into a toolbar by double-clicking it or dragging it to *any* edge of the screen. Keep this in mind if you have too many toolbars stacked up at the top of your screen; you can always anchor some of them to the bottom and sides of the screen instead.

Quick access to Symbol font

Every now and then you need to insert a special symbol into a Word document — something like a ♠ or a ♦. That's just what the Symbol font is for; it's a whole collection of special symbols that can be typed right into a document.

Speed Tip

But changing fonts in the middle of your work to type a single symbol character is a hassle. Fortunately, Word is equipped with a special feature that lets you jump right into the Symbol font *temporarily.* Pressing ⌘-Shift-Q switches to the Symbol font for *the next typed character.* After you type it, Word automatically returns to your previous font.

Even better, both Word 6 and Word 98 make it easy to set up a custom keyboard shortcut for any symbol character you want. Choose Symbol from the Insert menu, click on the particular character you want to insert, then click the Shortcut Key button and assign the keystroke of your choice. Word 98 also lets you assign an AutoCorrect entry to symbol characters so that the word "dingbat," for example, can be automatically replaced by a † when you type. (See the section on AutoCorrect earlier in this chapter for details.)

Welcome to the Word Wide Web

Strange But True

We don't know how practical this is, but it's so wild it's worth trying, at least once: Word 98 lets you capture pages directly from the Web and turn them into editable Word documents. So much does it aspire to be a Web browser, in fact, that it actually comes with a browser-style *toolbar,* complete with Back, Next, and Home buttons.

You don't even have to use a Web browser to pull off this stunt. Just choose Open Web Page from Word's file menu and type in a URL. If you have a standard Internet connection (see Chapter 26), Word will use your TCP/IP connection to retrieve the page itself, even maintaining the graphics and layout of the original page and keeping any hyperlinked text active.

Word isn't a great Web browser; it gets easily overwhelmed by complex Web pages, large graphics, or nested frames, and may not be able to display the page correctly. Still, this is a slick way of grabbing text off the Web and having it ready to plug into another document without ever leaving the warmth and comfort of your word processor.

MACINTOSH SECRET

The ultimate "Speed Up Word 6" guide

Sick of Word 6's lethargic speed? Microsoft offers no apologies — only the suggestion that you upgrade to Word 98, a much faster and more responsive program.

For those of you still saddled with Word 6, however, Microsoft offers the following advice. First, avoid using fonts and extensions. (Great. Thanks a lot.)

Microsoft further suggests that you give Word 6 more memory (using its Get Info box, as described in Chapter 9). Finally, try these memory tweaks.

If your Mac has 4MB of RAM:

1. Launch Word 6. Choose Tools ⇨ Customize ⇨ Menu tab.

2. Under Categories, select Tools. Under Commands, select ToolsAdvancedSettings. Click Add; click Close.

3. If you don't work with graphics much, from the Tools menu, choose Advanced Settings. In the Categories box, choose Microsoft Word.

4. In the Option box, type *BitMapMemory*. In the Setting box, type *512*. Click Set and then OK.

If these steps don't help the speed problem, repeat Step 3; then, in the Options box, click the BitMapMemory setting, and then click the Delete button. Click OK.

5. Repeat Step 3. In the Option box, type *CacheSize*. In Setting, type *128*. Click Set and then OK.

If your Mac has 8MB of RAM or more:

If your documents use a lot of graphics, do Steps 1, 2, 3, and 4 — but type in a higher number in step 4. If you have 8 megs of RAM or more, you can set the BitMapMemory as high as 2,048K.

If you work with large documents, do Steps 1, 2, 3, and 5 — but in 5, change the CacheSize setting to 256K. If that doesn't help, increase it even more — all the way up to 1,024K.

Be aware that both of these steps sap even more memory from your Mac. Don't do *both* of the two steps above, either; just one or the other, depending on which works.

For even faster speed, get a Power Mac — or a different program.

Go away, blue underlining!

Speaking of Word going Web-crazy: You may have noticed (with some alarm) that whenever you type an e-mail or Web address, Word 98 automatically turns it into a live hyperlink, complete with blue underlining. Click that link, and you'll find yourself on the Internet.

Unfortunately, that's not what we expect clicking text to *do* in a word processor! How do you correct a typo, for example, if you can't click some text? Answer: you can't. You have no choice but to delete the entire hyperlink address and retype it.

If this feature bugs you, turn it off by choosing Tools ⇨ AutoCorrect ⇨ AutoFormat, and turning off "Internet paths with hyperlinks." Better yet: Keep in mind that quick thinking can save the day. If Word ever creates a hyperlink when you didn't want one, press ⌘-Z. Presto—the hyperlink turns back into human-editable form.

Worth Learning

Styles can have more than one name

You can give a style two different names. You might create one that adequately describes the use of the style, such as *Chapter Subheading 3*, and another abbreviated name to use when changing styles from the keyboard (using the ⌘-Shift-S command described below), such as *3*.

To double-name a style, either as you're creating it or later, type both names into the name field of the Style dialog box, separating them with a comma, as shown in Figure 17-24.

Style:
sidebar,sb

Figure 17-24: Giving a style a second name, or even more names, is easy if you separate the names with commas.

Change fonts from the keyboard

Speed Tip

You can choose a new font from the keyboard by pressing ⌘-Shift–F (in Word 6 or later) or ⌘-Shift–E (in Word 5.1 or earlier).

When you issue this command, the Font field on the Formatting toolbar appears highlighted. Type the first few letters of the font name you want —just **pa** to select Palatino, as long as there are no other fonts that begin with those letters— and then press Enter. Coolly enough, you can also tap the up and down arrow keys to scroll through the fonts one at a time.

ANSWER MAN

Complete keyboard control in Office 98

Q: I've enjoyed your guys' secret about triggering any Word, Excel, or PowerPoint menu or dialog box element from the keyboard, just by holding down the ⌘ key long enough for the cheat-sheet labels to appear on the screen. But what about those tabbed dialog boxes? I can't seem to find any way to change tabs without using the mouse.

A: You haven't tried pressing Control-Tab (to go forward through the tabs) or Control-Shift-Tab (to go backwards).

Q: How do you know these things?

A: We were kidnapped as children and brainwashed by Bill Gates.

Applying styles from the keyboard

You can change styles from the keyboard, too. If you're working with a lot of styles, repeatedly pulling down the Style menu on the Formatting toolbar or the Ruler can be pretty tedious. (And in Word 98, the WYSIWYG Style menu can be very slow.) We prefer the keyboard shortcut that lets you select any one of your defined styles with just a few keystrokes — no mouse, no menus.

Speed Tip

Press ⌘-Shift-S. The Style field on the Formatting toolbar gets highlighted. Then just type the name of the style you want to apply, and press Return. Caution: In Word 6 and up, you *can't* type just the first few letters of a style's name to select it, as you can in Word 5; you wind up defining a whole new style whose name is that abbreviation! You must type the *entire* style name.

Now you see the vital importance of our previous secret — the shorter the style name, the faster you can apply it from the keyboard.

Of course, using the methods described earlier in this chapter, you can also assign each style its *own* keyboard shortcut, reducing your keystrokes even further. In Word 6 and up, you don't even have to mess with the Customize dialog box. Choose Format ⇨ Style, and then click the name of a style. Click Modify ⇨ Shortcut Key; assign a keystroke to the style and click OK.

Split-screen shortcut

Word gives you three different ways to split a window in half horizontally, providing two independent views of the same document.

You can double-click the split box in the upper-right corner of the window (see Figure 17-25). You can move the pointer to the split box and then drag down to a convenient spot. Or, easiest of all, you can press ⌘-Option-S.
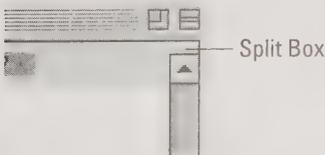
— Split Box

Figure 17-25: Split a window by double-clicking the split box, or just press ⌘-Option-S. Unsplit the window by double-clicking the small black split box.

To return to a single window view, either double-click the split box again, or press ⌘-Option-S again.

In Word 6.0, there's actually a *fourth* route to split-window mode: Install a window-splitting button on a toolbar and click *it*.

Strange But True

In Word 5, whichever pane contains the cursor is the one that fills the window when it *unsplits*. That's important to learn; if your cursor is on page 1 in the top pane and you've been editing page 100, you have a lot of scrolling to do after the window unsplits. (In Word 6, stupidly, it's just the opposite — the pane that

doesn't contain the cursor fills the window when you unsplit. Word 98 is a little smarter; it drops you into roughly the right portion of the document, but, oddly enough, not always at the exact location of your cursor.)

Indents from the keyboard

To set indents without dragging indent marks on the Ruler, press ⌘-M (or ⌘-Shift-N in Word 5) to indent a paragraph. To move the indent-level back to the left, press ⌘-Shift-M.

You can also create *hanging indents* from the keyboard (see Figure 17-26). The shortcut is ⌘-T (or ⌘-Shift-T in Word 5). In Word 6 and up, you can also un-hang an indent — creating a paragraph in which only the first line is indented — by pressing ⌘-Shift-T after you've already indented the paragraph with ⌘-M.

Crest has been shown to be an effective decay-preventive dentifrice
that can be of significant value when used in a conscien-
sciously applied program of oral hygiene and regular profes-
sional care.

Figure 17-26: The hanging indent. Do it from the keyboard.

Selecting odd-shaped regions

When you drag your cursor in Word, you're probably used to the highlighted part beginning at the first character and stretching through all the text to your current position (see Figure 17-27).
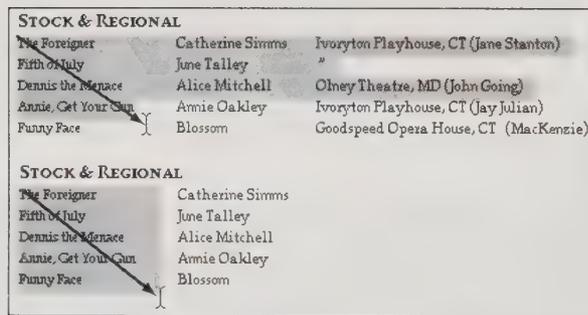
Figure 17-27: If you try to drag normally (top), you only succeed in selecting everything. But if you Option-drag (bottom), you can select text in any rectangular area — such as a column of text.

If you *Option*-drag, however, you select a region that only includes text in the diagonal line from your initial click. This is a great shortcut for italicizing one column of text (in a play program, for example). It's also great for removing

those annoying little squares that sometimes appear at the left margin of a document that was created on a Windows machine.

Don't spell-check the Ukranian names!

Word 98's spelling checker is smart enough to skip over Internet addresses. But there are plenty of other words that choke Word unnecessarily, as we discovered when preparing a list of software to include on the CD with this book (such as AreaCodeFinder, TypeIt4Me, Snapz, and so on).

You can make Word skip over such patches of text by highlighting it and choosing Tools ⇨ Set Language; select No Proofing in the next dialog box.

Picking the paragraph

You can select the invisible, nonprinting paragraph mark (¶) at the end of a Word paragraph quickly — and without having to turn on the Show ¶ command — by pointing to the end of the paragraph and *double-clicking* in the white space right after the last word of the paragraph (see Figure 17-28).
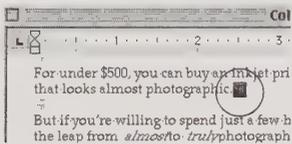
Figure 17-28: Double-click the space right after a paragraph to select the Paragraph mark.

Why bother? Here's one good reason: Word stores each paragraph's formatting — style, margins, font, and so on — in that little paragraph mark. By simply dragging a paragraph mark (or cutting and pasting it) to the end of *another* paragraph, you transfer all of the first paragraph's formatting to any other.

The mighty Go Back command

Speed Tip

If you edit long documents, you'll appreciate the Go Back command. No matter where you are in a document, the Go Back command scrolls you back (or forward) to the last spot in which you did any editing. The magic keystroke: ⌘-Option-Z — or just the zero key on the numeric keypad.

This command will even jump you back to another *document,* if that document is open and it contains the location of your most recent editing action. Press the command repeatedly, and you can find up to the last *three* spots where you were editing.

Our big fat bulls-eye *Mac Secrets* suggestion: change the keystroke to something simpler, like F1 or ⌘-G.

Returning to Normal style

After you've tried formatting a paragraph in right-justified 18-point Monaco Bold Shadow, you'll probably want to change your mind and return to Normal style. You can undo all that formatting in one fell swoop by selecting the paragraph and pressing ⌘-Shift-N (or ⌘-Shift-P in Word 5). No matter which formatting options were applied, this keystroke returns the text to the style you defined as Normal.

This isn't quite the same thing as Word's Reset Paragraph (⌘-Option-Q) and the Reset Character (Control-spacebar in Word 98, ⌘-spacebar in Word 6) commands. They strip out all extra formatting and restore the text to whatever the style is supposed to be (not necessarily the Normal style).

In Word 5.1 or earlier, you can accomplish the same thing with the Revert to Style command (⌘-Shift-spacebar).

Format text without selecting it

Strange But True

In just about every Mac program on Earth, you must *select* a word before applying formatting to it — but not in Word 6 and later. You can apply formatting attributes such as font, size, style, and color to a whole word by simply positioning the insertion point anywhere within the word; Word assumes you want the attribute applied to the *whole* word (which, in most cases, you do).

You can turn this option on and off by in Word 98 choosing Tools ⇨ Preferences ⇨ Editing; you'll see the "When selecting, select entire word" checkbox. In Word 6, choose Tools ⇨ Options ⇨ Editing to access the Automatic Word Selection checkbox.

Of course, if you want to apply an attribute to more than a single word — a whole sentence, for instance — you still must select the text completely.

Wildcards in the spelling checker

Contest Winner

Free book winner Paul Gerstenbluth discovered an undocumented word-lover's tool in Word: the asterisk (*).

Turns out that when you omit part of a word and substitute the asterisk, the spelling checker proposes words that match whatever part of the word you *have* typed.

Why is that useful? Paul suggests numerous possibilities. If you can't remember how to spell *pneumonia,* just type *pneum** and let the spelling checker provide the rest. Solving a medical crossword puzzle? Got *b**itis* but don't know the middle part? Highlight it and run the spell checker to see your options

(bronchitis, bursitis, and so on). Poets, too, will enjoy this feature: just type *ing to find a list of rhyming words that end with those letters.

Unfortunately, the asterisk trick works in Word 98 only when it's in the middle of a word. In Word 6, however, it can come at the beginning or end, too.

Customized spacing

Word doesn't contain any tools for precisely adjusting the spacing between individual words. But you can rig up some custom-sized spaces using the following method.

Select a character with the width of the custom space you want to create. Then, using the Color pop-up menu in the Character dialog box (⌘-D), pick White as the color of the character.

The character becomes invisible and can be used as a space. Use large characters to make wide spaces; use tiny characters, such as punctuation marks, to make narrow spaces.

To make the whited-out characters readily available for spacing, save them as AutoText or Glossary entries and assign them keyboard equivalents. When you save the spacing characters in the Glossary, all the formatting, including the color, are preserved.

Alternatively, you can add White as an option in the Format menu or create a keyboard shortcut for applying it.

Merging graphics into a Word document

Most people use Word's Print Merge feature to merge text data from other programs (such as databases) into Word documents. But you can also merge a Word *table* into a document, with the table serving as your data document. Because Word table cells hold graphics as well as text, this trick means that you can merge graphics into a document.

Place your letterhead, for example, in a table cell. Merge that table into a regular document to automatically insert your letterhead. You'll save disk space — you only have to create your letterhead once, in the original data document.

Mail merge made easy

Creating a mail merge with each piece of data in a separate field — name, address, city, state, and so on — can get time-consuming. This is especially true in Word, which requires any fields containing punctuation to be enclosed in quotation marks.

Speed Tip

However, if you don't need to sort your data by field, you can simplify this process. Put each *whole* address in one cell of a Word table, complete with punctuation, carriage returns, and other formatting. Then, when it's time to do the mail merge, you only have to work with a single address field.

Creating inverted text

Inverted text — white lettering against a black background — gives titles and headings a bold, dramatic look. Here's how to create the reversed lettering in Word.

Select some centered text to invert. Make sure the color of the text is set to Auto (or choose White as the text color from the Color pop-up menu in the Font or Character dialog box. White text becomes invisible; don't worry, it's still there). Don't deselect the text yet.

Now, choose Format ➪ Borders and Shading ➪ Solid (100%) from the scrolling list of shading options, as shown in Figure 17-29.
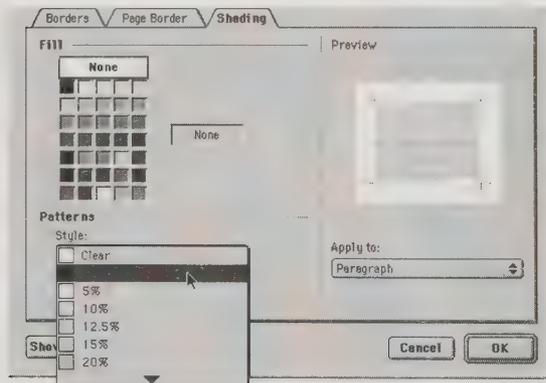
Figure 17-29: Use the Borders & Shading dialog box to add shading to type for easy reversed-text effects.

To tighten the border around the title, use the ruler. Drag the margins in toward the center until the title is framed the way you want. You'll end up with something like this:

Finally, save the inverted format as a new style. This way, you can apply the reversed-text style again without going through all the formatting steps again.

You can create a host of other slick effects using some slight variations. Try using a different level of border shading — say, 50 percent. Use a different text color background. Try aligning the text to the right margin, or changing the spacing between the text and the border.

Adding a new row to a table

Speed Tip

Here's the absolute easiest way to add a new row to a Word table, without messing with any Table commands or dialog boxes: Click in the last cell of the last row and press the Tab key once. Word inserts a new row at the bottom.

And if you want the new row in the middle of the table and not the end? Easy. Click at the far left edge to highlight the entire new row. Then drag and drop it to wherever in the table you want it to go!

Deflating bloated files

When you enable Word's Allow Fast Saves option, Word keeps track of your changes by appending them to the end of the file. This speeds up saving a large document, but it bloats the file. Each time you use the Save command, the file grows larger as Word tacks on the latest set of changes.

The solution: Periodically disable the Fast Saves option — or use the Save As command to save the file under a new name. In either case, Word performs a full save, shrinking the file back down to its actual size.

Worth Learning

And definitely turn off Fast Saves the last time you save your document before trying to import it into Quark or PageMaker. You'll have far fewer problems with the importing process.
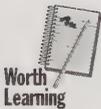
Our suggestion: Using Word 5's Commands command, *add* the Allow Fast Saves command to your menu! Then switching it on and off is simply a matter of selecting it. If you're using a later version of Word, record a macro that turns this option on and off with a keystroke. (See "Word Macros: The Menu-Changer's Workaround" later in this chapter for tips on Word macros.)

ANSWER MAN

That darned Summary box and more

Q: I've got Word 6. It drives me crazy that every time I save a new document, that darned Summary box pops up. Is there a way to turn this annoying box off?

A: Yes, it's annoying. And yes, you can turn it off. Choose Tools ⇨ Options. The option you want to turn off is called Prompt for Summary Info. (This feature is available in Word 98, too, but at least it's not turned on by default.)

Q: Okay, how about this one? Every time I open a text file — just a text file, for Heaven's sake! —

Word 6 gives me some stupid dialog box asking if I mean a text file, or Text With Layout, whatever that is.

A: You can shut this one up, too. Go to the Finder and open your Word folder. In the Word Extensions folder (or, in Word 5, the Word Commands folder), you'll find the Text With Layout converter. Throw it away. Then you won't be asked about it every time you open a text file.

The WordTemp/Word Work files old wives' tale

If you've worked with Word for any length of time, you've probably seen mysterious files lurking around your system called either WordTemp or Word Work. The files are usually followed by a number — WordTemp-1, WordTemp-2, and so on (if you're using Word 5), or Word Work File A 1270, Word Work File D 2678, and so on (if you have Word 6 or later).

What exactly *are* these files and what are you supposed to do with them?

Word Work files (or WordTemps) are temporary files that Word uses to store unsaved data while you work. When you save your files and quit the program, Word automatically deletes these temporary files, which are no longer needed. Under ideal circumstances, you'd never encounter a Word Work file — because you always exit Word the right way, using the Quit command.

But more realistically, you'll trip over the power cord, or your system will crash, and you'll unwillingly abandon Word with files still open and unsaved. In such cases, the temporary files remain. You can throw them away without a second thought.

In principle, you should be able to recover unsaved work from these files. You move the temp files out of the System folder (sometimes they show up in the Trash, in a Rescued Items folder) and give them new names. Launch Word and choose the Open command. In the List Files of Type pop-up menu, select All Files, navigate to the renamed temp files, and open one. If your lost work shows up, great — copy it into a new file.

But in the real world, you can generally salvage nothing at all. Word Work files generally contain nothing but what you see in Figure 17-30. Cumulatively, your not-so-cheerful authors have weathered hundreds of Word crashes. Only *twice* were we able to salvage anything we really needed from a WordWork file. (We even called Microsoft on this topic; the rep conceded that the recovering-data-from-temp-files trick is essentially bogus.)
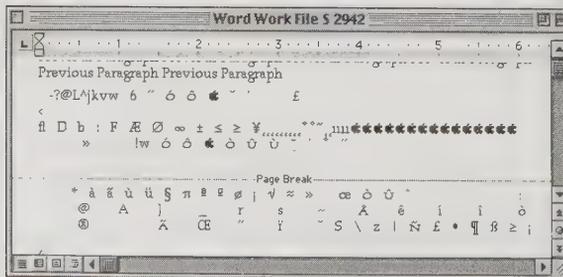
Figure 17-30: Just when you think you've lost your work, you can open a salvaged Word Work file and — find pages of gibberish.

Shortcut to the Paragraph dialog box

Speed Tip

You don't have to choose the Paragraph command from the Format menu to open the Paragraph dialog box. Instead, just double-click the left or right indent marker on the Ruler.

When the New command isn't the New command
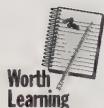
Worth Learning

What do you do when you want to create a new document in Word? You either choose the New command from the File menu or press ⌘-N — they both do the same thing, right?

Not at all. Pressing ⌘-N simply opens a new, blank document based your default Normal template — no questions asked. Choosing New from the File menu, however, opens a *dialog box* asking which template you want to use as the basis for your new document.

As it turns out, the template you want to use 99 percent of the time is, in fact, the Normal template. The point is, then, to use the New *menu command* when you want a choice of templates — and the ⌘-N *keystroke* when you just want a simple blank page to start typing onto.

Copying section formatting

Word stores all the formatting for a section in the *section mark,* the double-dotted line that runs across the screen at the end of a section. You can copy the formatting — columns, page numbering, and so on — for an entire section by simply copying the section mark. When you paste the mark at a new location, all the text preceding it takes on the formatting stored in the mark.

Incidentally, you can double-click any section mark to open the Page Layout dialog box. (In Word 5, this opens the Section dialog box.)

Speedier spell checking

You're probably familiar with how Word 98 checks the spelling of your documents while you type, drawing a wavy red line under misspelled words. Control-click on the word in question and Word pops up a list of suggested alternate spellings. Spell-checking couldn't be easier.

Speed Tip

But here's an invaluable tip for users of earlier versions of Word (and Word 98 users who have the "Check spelling as you type" preference turned off). Unless you begin spell checking with the insertion point placed at the very beginning of the document, you inevitably get a "Continue checking from beginning of document?" message. To avoid this, use the Select All command *first,* and *then* activate the spell checker. (That is, get into the habit of pressing ⌘-A, ⌘-L in rapid succession.) Regardless of where the insertion point is in the document, every word gets checked, without any additional dialog boxes appearing.

Introducing the Spike

Strange But True

What on Earth is the Spike? It's Word's built-in multiple cut-and-paste tool (Word 6 or later). You can use the Spike if you want to delete several *different* pieces of text or graphics from one document and then paste *all* of them — with a single keystroke — into another document.

To put an item in the Spike, select it, then press ⌘-F3. This deletes the selected text or graphics and stores it. Each additional piece of text you delete with ⌘-F3 gets added to the Spike. When you're ready to paste everything you've collected into another document, click to pinpoint the location and then press ⌘-Shift-F3. All the items you deleted are pasted in the new location, in the order you deleted them.

If you want to paste the contents of the Spike *without* clearing the Spike (so you can continue adding deleted items to it), choose AutoText from the Insert menu, find the AutoText entry called Spike, and click Insert.

Word 98 goes postal

For years, Word included a Send Mail command in the File menu that left most users confused; it didn't do *anything* unless you were on a network running Microsoft Mail.

Word 98 is a different story. The Send To command provides a direct hookup to regular e-mail programs such as Eudora Pro and Claris Emailer. Suppose you've got a document in Word that you want to mail to a colleague using Claris Emailer. In the past, you'd have to save the document; launch Emailer; create a new message; address it; attach the Word document; and then send it off.
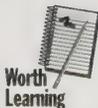
Worth Learning

But Word 98 can take care of most of this for you. Just choose Mail Recipient from the Send To submenu (see Figure 17-31). Word automatically launches Emailer, creates a new message, and attaches the document for you. All that's left for you to do is plug in an address and send off the message.

And how does Word know what e-mail program to use? You had it running in the background the very first time you used the Send To command. Thereafter, any Office program (Word, Excel or PowerPoint) can launch the e-mail program by itself.
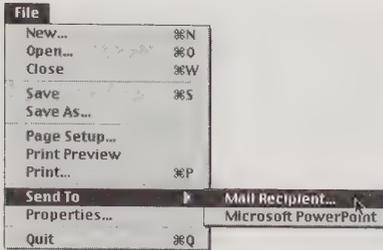
Figure 17-31: Word 98's Send To command is a direct link to your e-mail program.

Roll credits!

Word 98 stunned Mac fans by being — well, *good.* Few could believe that Microsoft, so often the bastion of mediocrity, had delivered a Mac-like program — one that launches in five seconds, has a WYSIWYG Font menu, supports QuickTime/MacinTalk/drag-and-drop, and even has a dancing, talking Mac Classic as its Office Assistant help character.

But the ultimate proof that real Mac programmers were at work on Word 98 is its secret Easter egg. It's funny, witty, animated, and hip. We sent a free book to the *Mac Secrets* reader who submitted it — but he'll have to remain anonymous, since he'd get in big trouble from his bosses at Microsoft if word got out that he leaked this gem to us.

Launch Word 98. Close all toolbars except the Standard one (use the Toolbars command in the View menu to do this, or Control-click any visible toolbar). Undock the Standard toolbar — that is, grab its left-edge handle to pull it away from the top of the screen. Close the Office Assistant's window, if it's open.

Now grab the floating Standard toolbar palette's title bar. In one continuous diamond-shaped drag, bounce it off the top, left side, bottom, and right side of the screen — and then dock it at the top of the screen. (By "bounce," we mean drag it to the edge of the screen so that its outline snaps into edge-grabbing position, as though you're about to dock it there — but don't release the mouse button.)

Now open the Office Assistant (choose Help ⇨ Microsoft Word Help). Click in the search-text area of the Assistant window and type the following, including precise punctuation: *"Think Different"? Think Grammar!*

Click Search — and watch the fun begin! First, a huge, animated, special-effect-filled credits screen appears. Second, Max the dancing Mac Classic begins reciting hilarious limericks and other poetry (see Figure 17-32). Our favorite:

```
There once a bunch of geek coders,
Who exhibited various odors.
Of coding for Mac,
They each had the knack,
But they couldn't think of a rhyme.
```

Figure 17-32: Word 98's credits display is not to be believed.

Word Macros: The Menu-Changer's Workaround

We've mentioned numerous useful features that Microsoft, in its questionable wisdom, *removed* from Word 5. Among them is the ability to put any command you want into your menus. Think of all the useful options that, in Word 5, you could easily pop into your menus — but that are no longer even *listed* in Word's Customize dialog box: Fractional Widths; Allow Fast Saves; Smart Quotes (Word 6); Background Pagination; Show Picture Placeholders; and much more.

If you complain to Microsoft, they'll inevitably tell you to *write a macro* that simulates the missing feature. Fortunately, doing so isn't as technical as it sounds. Here's the quickest way to create a macro in Word 6 and 98. Fortunately, you have to do this only once per feature.

Step 1: Set up the macro

■ **Word 6**: Choose Tools ➪ Macro. In the dialog box that appears, type a name for the command you're about to add — "FractionalWidthsOff," for example. In typical stupid Microsoft style, you're not allowed to use spaces or punctuation of any kind (see Figure 17-33). Don't click the default Create button, as you might guess; instead, click Record.

In the next dialog box, you'll see three square buttons: Menus, Toolbars, or Keyboard. Click the one that represents how you'd like to trigger your new command when this is all over. For example, click Menus if you'll want the Smart Quotes feature to be a menu command. (See Figure 17-33.)

Figure 17-33 : To create a macro in Word 6, you first encounter the Macro dialog box (top). In the next box (bottom left), you'll see three buttons. If they're dimmed, it's because you use a space or punctuation mark in your macro name. When you're finished doing your macro's steps manually, click the square button on the floating Macro palette (lower right).

■ **Word 98**: Choose Tools ⇨ Macro ⇨ Record New Macro. In the dialog box that appears, type a name for the command you're about to add. You'll see two buttons: Toolbar (for creating a *button* that will trigger your macro) and Keyboard (for macros you'll launch with a keystroke). Click the one you want to use. (Don't worry about this choice; you can always turn a macro into a keyboard shortcut, menu command or button — or all three — later on.)

Step 2: Assign a trigger

What happens next depends on which of the buttons you clicked. If you clicked Menu (Word 6), click Add and then Close (after first specifying which menu you want your new command added to). If you clicked Toolbar, drag your new macro's name from the right side of the dialog box onto any open toolbar on the screen. And if you selected Keyboard, now press the keystroke you'll want to trigger this macro. Click Assign, then Close.

Step 3: Record the macro

And now you're actually recording. *Do* whatever it is. For example, to create a Fractional Widths Off command, choose Options from the Tools menu, click the Print tab, click the Fractional Widths check box, and click OK. (Unfortunately, you must create two macros for this example: one that's FractionalWidthsOn, and another for FractionalWidthsOff.)

Other examples of things to do at this stage are performing a search-and-replace, turning other Options items on or off, or doing a repetitive editing process (deleting the little Internet box in front of each line, for example).

When it's all over, click the square Stop button on the floating Macro palette.

Now you're in business. Your macro should always work when you trigger it from your menu, keyboard, or toolbar. Despite the ridiculous complexity of setting up one of these macros, we must admit that, when they actually run, they're fast and efficient.

Our final suggestion, however, is to *quit* Word promptly after creating your macros — that's how they get saved into your Normal template. If your Mac were to crash before you did so, you'd lose all of the macros you just created.

WordPerfect

The first Mac edition of this popular IBM word processor left a lot to be desired — a Mac interface, for starters. But with version 3 and later, WordPerfect became a mean, lean, high-powered Word 6 killer that was the Number Two word processor in the Mac marketplace. The current version is even better, embracing just about every relevant technology developed by Apple: QuickTime, AppleScript, Macintosh Guide, WorldScript and speech synthesis.

During the dark period before Word 98, many faithful Microsoft customers became disenchanted with Word 6's slogging performance and turned to WordPerfect instead. Here's a collection of insightful tidbits.

WordPerfect Secrets

Kerning from the keyboard

You can, if you want, perform kerning numerically, by typing numbers into the Line dialog box (Layout menu). It's faster (if less precise) to do it by eye, though.

Just click between the letters you want to kern, and press Shift-F1 (to move the letters one point closer) or Shift-F2 (farther apart).

Setting up your default style

Speed Tip

If you're a power user, you know this. If you're sick of having to reselect Palatino 10-point and .75-inch margins every darned time you start a new document, you'll appreciate this. It's the instructions for changing the default (Normal) style.

Make sure the Layout ruler is visible (we're talking about version 3 here). Click the Styles button and then the Edit button. Scroll so that you can see the Normal style name. Double-click it.

Use the regular menus to specify a type size, font, column setup, and so on. You'll see WordPerfect storing this information in the styles-editing window at the bottom of the screen.

Startup macros

WordPerfect has a *macro language* — a set of commands you string together to perform powerful text-manipulation stunts. For example, one such macro may sweep through the document, changing all your straight quotes to curly ones, eliminating double spaces after periods, and turning double hyphens into em dashes.

If you create a macro called OnStartUp and (using the Librarian feature) stick it into your USA Private Library, it runs every time you launch the program. Or, if a macro is called OnOpenDocument and saved with a particular document, it runs each time you open that document. (It does if you use WordPerfect's Open command, anyway — not if you double-click the file's icon in the Finder to open it.)

Character-level styles in WordPerfect

WordPerfect offers character-level styles — you can apply your styles only to selected words or phrases, not entire paragraphs — but the feature is completely undocumented.

To apply character styles, create and run the following one-line macro: *Formatting (Character)*. Choose that new macro from your Tools menu. Now, whenever you apply a style, it will affect only the selected text, not the entire paragraph. A character style otherwise works just like a regular style sheet — every occurrence changes when you update the style. For best results, create a second macro — *Formatting (Paragraph)* — to switch back to regular paragraph-at-a-time style-applying.

Pop text into your style sheets

In most word processors, a style sheet consists of character and paragraph *formatting*. But, in WordPerfect, *text* can be a part of a style. For example, every paragraph in your Legal style could begin with the word *ITEM:*, automatically typed; another style could have automatic bullets or check marks, and so on. To set this up, click New or Edit on the Styles button bar, click Edit, and then simply type whatever text you want as a prefix.

To crop a graphic

Press the Option key as you drag the handle of a graphics box. The frame chops off (or reveals more of) your graphic, depending on which way you drag.

Search backward

If you press Shift while clicking the Find button in WordPerfect's Find/Change dialog box, WordPerfect will search your document in the direction opposite what's indicated.

The world's best Find Next command

To find the next occurrence of a word in a WordPerfect document, you don't even have to visit the Find/Change dialog box. Instead, just highlight the word, then press ⌘-G to jump instantly to the next occurrence of that word.

Do a little horizontal math

You probably already know that when you have part of a table highlighted, you can click the Sum button on the Table/Math Bar to add up the individual columns. Here's the secret that's almost universally ignored: If you press the Option key while clicking the Sum button, WordPerfect totals the horizontal *rows.*

Ready-to-print cheat sheet

Worth Learning

WordPerfect is crammed with shortcuts that use the function keys on a Mac extended keyboard — F1, F2, F3, and so on. But how are you supposed to remember all those ⌘-Option-function key combinations? Inside your WordPerfect folder, inside the Documentation folder, is a Function Keys Template document — a cheat sheet that's meant to be taped right on to your keyboard. Print it, cut it on the dotted lines, and slap it on your keyboard for quick reference.

Taming WordPerfect's style sheets

Worth Learning
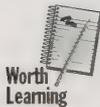
WordPerfect's style sheets function a little differently than those found in other word processors and page layout programs. By default, WordPerfect's applies a new paragraph format not only to the text you have selected, but to the remainder of your document. To make WordPerfect work like other programs, choose Preferences from the Edit menu, click Environment, and choose Single Paragraph from the Format menu in the dialog box. Now you can apply styles on a paragraph-by-paragraph basis.

WordPerfect's built-in multi-Clipboard

Speed Tip

Normally, when you use the Copy command, the text you're copying replaces the previous contents of the Clipboard. WordPerfect, however, has a secret *cumulative* Clipboard. If you highlight some text and press ⌘–Shift-A instead of it ⌘-C, your selection gets added to a *cumulative* Clipboard. After copying with ⌘–Shift-A repeatedly, you can choose the Paste command — and paste *everything* you've copied at once.

Nisus, WriteNow, MacWrite Pro

Each of these word processors has a small, but fiercely passionate, following. Nisus Writer is a high-horsepower, multiple-Undo, programming-languaged word processor.

MacWrite Pro is marked by the late Claris Corp.'s usual elegant, clean design — not nearly as overwhelming as Word or WordPerfect, yet it has many of the same features. And WriteNow was once the fastest (and smallest — a tiny 267K) word processor ever written for the Mac. Unfortunately, these programs are no longer sold or developed.

CD

We have a few secrets for each of these programs; while they don't appear on these printed pages, they're safely on your *Mac Secrets* CD-ROM, in *Macworld Mac Secrets, 4th Edition*. (Many of the AppleWorks/ClarisWorks Secrets later in this chapter work in MacWrite, too, as noted.)

AppleWorks/ClarisWorks

AppleWorks — whose name was born when Apple dismantled Claris and adopted custody of what used to be called ClarisWorks — has a surprisingly good word processor: clean, well designed, and extremely fast. It even has a quick and polished style-sheet feature: click a style's name (such as Heading 1), and the selected text is instantly reformatted. Better yet, there are also Table styles (various shadings and line-thickness schemes); Outline styles (Roman numerals, diamonds, and so on); even styles for objects you create in the drawing and painting modes (for example, particular colors and line thicknesses).

And because ClarisWorks can open and save Microsoft Word documents (or any of a dozen other Mac and IBM file formats), you can have the joy of writing in ClarisWorks — and turn in finished Word files, so your correspondents and editors will never know the difference. Most of our secrets work in versions 4 and 5.

AppleWorks/ClarisWorks Word Processor Secrets

Get it from the Library

Don't pooh-pooh the Library — a floating palette that shows thumbnail representations of frequently used material (clip art, text, spreadsheet cells — almost anything). You can drag one of these thumbnails into your document to place the material there. Although you may suppose, at first, that

they're for kids to store little clip-art pictures in, the Library is also extremely useful for such hardcore business elements as your logo, your scanned signature, return address, boilerplate text, and so on.

Quick access to Preferences (MacWrite Pro, too)

Speed Tip

Option-click the page number indicator (lower-left corner of the screen) to open the Preferences dialog box — with the relevant section (such as text or spreadsheet) already scrolled into view.

Keyboard shortcuts revealed

Worth Learning

Like most Claris programs, AppleWorks provides plenty of keyboard shortcuts that trigger commands *within* dialog boxes. To find out which keystrokes provide shortcuts, press the ⌘ key while in a dialog box (such as Open or Save — the ⌘-key shortcuts corresponding to each command will be displayed right on screen. (See Figure 17-34.)
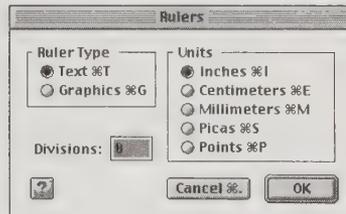
Figure 17-34: Who would suspect that ClarisWorks's dialog boxes are every bit as keyboard-controllable as, say, Word's? Just press the ⌘ key to reveal the secret keystrokes.

Open a document directly on startup (MacWrite Pro, too)

Under normal circumstances, when you double-click the AppleWorks/ClarisWorks application icon, you get a dialog box offering a choice of document types: word processing, painting, and so on. If you want instead to open an existing document, press ⌘ as the program is launching. You are presented with the usual Open File box, from which you can select the existing document you want to open.

Cursor manipulation keys (MacWrite Pro, too)

Here, for your reference, are the key combos for making the cursor jump around:
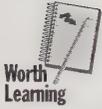
- **Jump by one word:** Option-arrow key (left/right)

- **Jump to the start or end of the line:** ⌘-arrow key (left/right)

- **Jump up or down a paragraph:** Option-arrow key (up/down)

- **Jump to the beginning or end of the document:** ⌘-arrow key (up or down) — or just use the Home and End keys

Add the Shift key to any of these combos to *select* the text as you move the cursor.

Selection shortcut guide (MacWrite Pro, too)

Here are the click-tricks for selecting text quickly:

- Double-click. . . to select a word.

- Triple-click. . . to select a line.

- Quadruple-click. . . to select a paragraph.

- MacWrite only: *Quintuple*-click. . . to select the entire document (except headers and footers).

Insta-indent

Reader François Brahic points out a handy paragraph-indenting keystroke for the AppleWorks/ClarisWorks word processor. Just place the cursor anywhere in the paragraph and press Control-right arrow. You can do this several times, indenting the paragraph more each time.

And Control-*left* arrow, of course, moves the paragraph's left edge toward the *left* side of the page.

The wonderfulness of Click-and-Drop

Perhaps even more useful than AppleWorks/ClarisWorks' drag-and-drop editing it its "click-and-drop" feature for moving text around.

It works like this. You highlight some text. You move the cursor to a new spot — and you ⌘-Option-click. The highlighted text instantly jumps to the new location (see Figure 17-35).

In a way, this shortcut is even more useful than Drag-and-Drop, because it's easier to move text long distances. For example, you wouldn't want to move some text from page 1 to page 35 by dragging — but it's easy to scroll and then click.

Confessions of a Mac Therapist
Nobody knows the troubles I've seen

I am a Macintosh therapist. By that I don't mean that my *clients* are Macs, although that's a fascinating concept. ("Doc, you gotta help me! I have bad F-line instructions every night, I'll be discontinued in 18 months, and people say my market share is too small.")

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Figure 17-35: ClarisWorks bypasses the cut-and-paste routine with its secret text-moving click trick. Highlight text (left), then ⌘-Option-click. The text moves (right).

That amazing Font menu

One thing that's cool about AppleWorks/ClarisWorks is its Font menu, which displays each font name in the actual typeface. One thing that isn't cool is that, therefore, you can't read the names of symbol fonts like Symbol, Zeal, or Zapf Dingbats — you see only a string of symbols in your menu!

The trick: Just as in Word 98, you can press a key — in this case, Option — as you pull down the menu. Every font name will appear in the usual Chicago font, as they would in any other program.

But wait — there's more! If you press Option *after* pulling down the menu, each font in the menu your mouse touches instantly converts back to Chicago, leaving the others alone.

For example, if you open the Font menu and move your cursor to what looks like the Symbol font, press the Option key — the font's name, Symbol, appears instantly in normal Chicago.

In fact, the same trick works in reverse. When you pull down the Font menu with the Option key pressed, every font's name appears in the Chicago font. But when you *release* the Option key, every font your cursor touches changes back into its WYSIWYG, own-typeface mode. Press Option again, and the font's name switches back to Chicago yet again!

(Clearly this is part of Claris' core programming — FileMaker Pro and ClarisImpact 2.0 exhibit the same behaviors.)

TRUE FACT

Breach of security

ClarisWorks 5.0 allows you to password protect individual documents. Choose File ⇨ Document Summary ⇨ Set Password. After you enter the password and confirm it, your document becomes unopenable without first entering the correct password.

Or does it? Reader Ellis I. Lee points out that Claris has padlocked the front door, but left the back door wide open.

Because this password protection scheme doesn't use encryption, breaking past the password isn't difficult. You can easily force a ClarisWorks word processor document open, for example, with Microsoft Word (choose Word's Open command, and change the File Type to All Files). ResEdit and CanOpener (on this book's CD-ROM) also make quick work of cracking into a locked file. (The latter two programs can also extract *pictures* from a password-protected ClarisWorks drawing.)

Of course, this rather lax approach to document security can work in your favor, too. If you forget your password and absolutely must retrieve an essential piece of data, you're not up the creek without a paddle.

How to set up your default fonts

Worth Learning

If you're still manually selecting your favorite font every time you begin a new document in ClarisWorks, it's time to create your ClarisWorks WP Options document.

In other words, create a new word processor document. Change the font to something you like. (Change everything else while you're at it — the margins, the line spacing, and so on.) Choose Save from the File menu. In the next window, click the Stationery button. Give your new document the name "ClarisWorks WP Options," and save it into the Claris folder (inside the System folder).

From now on, every time you create a new word processing document, it will have the font you want.

By the way, you can also create stationery default documents for the other ClarisWorks document types. Follow the same steps; but in place of the WP (for word processing), type **GP** for graphics, **DB** for database, **SS** for spreadsheet, and so on — for example, **ClarisWorks GP Options**.

(A related trick: Put a macro file named ClarisWorks Macros in the Claris folder inside your System folder. ClarisWorks will automatically load these macros when it's first opened.)

QuickHelp's Secret Credits

Software engineers are notorious for plugging little secret messages into their software and the folks who wrote QuickHelp, ClarisWorks' online help system, didn't hold back a bit. Open QuickHelp from the Help menu by choosing any

of the ClarisWorks Help commands. Hold down the Option key while choosing About QuickHelp from the menu — and the show begins. You'll see credits for Constant Nag, Immigration Specialist, and the Man in Love with Rita Kan, among many others.

The longer you watch, the funnier it gets. As you run the credits, new items appear. Revisit a few times and you'll see credits, epigrams, and other little items that get wackier and wackier.

Avoiding QuickHelp bloat

QuickHelp, mentioned in the previous secret, is actually a separate little program from Altura Software. Various other programs — not just AppleWorks — rely on QuickHelp as the basis for their electronic help system. As a result, it's easy to end up with multiple copies of QuickHelp. Install Macromedia Director, Freehand and ClarisWorks, you'll end up with three copies of QuickHelp.

Trash all but the newest version of QuickHelp on your hard drive (or download the latest version from Altura's web site at www.altura.com). Leave the most current version loose in the System Folder. Then rebuild the desktop file (see Chapter 1 for instructions). Now all the programs that require the QuickHelp engine will use the one copy stashed in the System Folder.

SimpleText: The ReadMe Machine

Don't give us grief: SimpleText is a word processor, and it was probably the *first* Mac word processor you ever used. It comes with every Mac — heck, it comes with every *program* you can buy. It was originally called TeachText, because its primary purpose was to let you read Read Me files (text files containing last-minute information about a piece of software), which, we gather, are meant to *teach* you a few critical lessons.

TRUE FACT

Got a problem? Call C-E-S-S-P-O-O-L

Today's spell-checking software is certainly more sophisticated than it was five years ago, but it's still far from perfect. Even the best spelling programs choke when they encounter certain proper names and technical terms. Still, the erroneous suggestions spit out by a word processor's spell checker sometimes seem downright suspicious. Case in point: One *Mac*

Secrets reader was proofing a ClarisWorks document when his spell checker paused on the phrase "800-SOS-APPL" — Apple's toll-free technical support phone number. ClarisWorks flagged the phone number as having a questionable spelling and suggested, as an alternative, only one other word: *Cesspool*.

SimpleText, heir to TeachText, serves the same purpose. However, it's been substantially enhanced (and tripled in size). In SimpleText, multiple fonts and sizes can appear in the same document; you can open more than one document at once; it can read back text to you in a variety of voices (see Chapter 23); it offers Macintosh Drag-and-Drop (see Chapter 1); it can display GIF, PICT and JPEG graphics, not to mention QuickDraw 3D images; it can play QuickTime movies; and you can record (and store) a sound file with each document, if you have a microphone.

SimpleText Secrets ──────────────────────────────■

Graphics? In SimpleText!?

Yes, indeed! Of course, you can't *paste* anything into a SimpleText document. (A beep is all you get.)

CD

In the previous edition of this book (which is on your CD-ROM in electronic form, if you really want to see it), we prided ourselves on presenting the sneaky method for embedding graphics into SimpleText. It only took three or four hours, involving Option-spaces, trial-and-error spacing, and surgery in ResEdit.

Contest
Winner

But free book winner Bill Sveinson pointed out a far easier method. Just write up your document in Tex-Edit Plus, a smooth SimpleText alternative that's included with this book. You can drag-and-drop (or paste) pictures right into your work.

Then, when you save the document, you're offered a choice of file formats. Save it as a SimpleText-Read Only document, and you're done — no ResEdit required.

Edit the uneditable documents

Ever noticed this? When you double-click SimpleText, it opens a new blank document and lets you word process. You can drag through text, cut, copy, paste, and so on.

But when you open a Read Me file that comes with a program you buy, you're usually not allowed to edit it or copy from it! You can only read or print it.

The secret lies in the four-letter *type* code for the document (see Chapter 15). There are two kinds of SimpleText documents: one that can't be edited and one that can. All you have to do is change the non-editable type code to the one that can be edited.

CD

You can do this with FileTyper (included on the CD-ROM with this book). Drag the Read Me file's icon onto FileTyper; in the dialog box that appears, change the file's type code to *ttro* (to make an uneditable document) or TEXT (to make it editable). (Capitals count.) When you close the window, you'll see your document's new icon (see Figure 17-36).
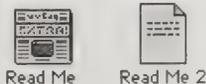
Read Me   Read Me 2

Figure 17-36: On the left: the familiar Read Me-style "Extra!" newspaper icon. This is a file whose type has been changed to ttro. (Stands for TeachText, read only, get it?) On the right, a normal TeachText document, like the one you'd create yourself. This one you can edit. Its type is TEXT.

Write your own Read Me files

Suppose you want to do the opposite of the previous secret — turn an ordinary SimpleText document into an uneditable Read Me-type file, complete with its own little "Extra!" newspaper icon. You can do it, without even resorting to using four-letter type codes.

Once again, the solution is to create the document using Tex-Edit, the surprisingly powerful little word processor included on this book's CD-ROM. When you go to save your document, you'll notice that one of the options listed in the pop-up menu in the Save dialog box is TeachText Read Only. Anything saved in Tex-Edit with this option selected will indeed become a genuine, read-only SimpleText file.

Making SimpleText even better

SimpleText is called SimpleText for a reason — it's not exactly a high-powered word processor. But you can give it a free upgrade by installing SimpleText Color Menus, a free program that patches all sorts of new features into SimpleText, including colored text, a Find-and-Replace command, margin control for printing, word count capabilities and more. It's on the CD-ROM that comes with this book.

Unexpected smarts

When you drag text out of a drag-and-drop-savvy program, it turns into an icon on your desktop called Text Clipping. But not if you're using the latest version of SimpleText, and you're reading a Read Me file. In that case, Mac OS 8 is smart enough to name the clipping file Read Me Clipping!

Roll credits! (SimpleText only)

While pressing ⌘ and Option, choose About SimpleText from the Apple menu. You get to see some additional credits. Hurray!

Chapter 18

Page Design

Today's page-layout programs and word processors aren't as drastically different from each other as they once were. Word processors can easily field the kinds of tasks that once demanded a PageMaker-type program: wrapping text around a graphic on the page, laying out text in multiple columns, creating reverse type (white lettering on black), and so on.

But as word processors have grown up, so have the page-layout programs: PageMaker and QuarkXPress, the most popular pair, as well as high-end multiple-platform powerhouses like FrameMaker. Anyone who wants to design and publish professional magazines, books, advertising materials, and other documents on the Mac still needs one of these page-design workhorses. Only page-layout programs, for example, can turn your magazine pages into *color separations,* which are needed to create plates for full-color printing on a printing press. Only page-layout programs are equipped to provide your documents with multiple underlying design layouts (master-page templates). And only page-layout programs provide super-precise typographical control — allowing you to adjust the space between characters to the thousandth-of-an-inch, for example — so you can produce truly high-quality page designs.

A few years ago, hardly a week went by without us hearing of another famous publication finally embracing the Mac and scrapping its age-old page-makeup routines — pasting wax-backed, column-width vinyl strips onto page-sized cardboard sheets on which the designer's blue pencil lines indicate where each slab of type is to go. Nowadays, with Windows-compatible versions of applications such as PageMaker and QuarkXPress readily available, more and more people are trading in their old typesetting equipment for Windows-based systems instead of Macs. But make no mistake about it: Despite any "Mac-is-dead" hype you may hear, the Macintosh still utterly dominates the

world of desktop publishing. Most of the page designs you see every day—in magazines, newspapers, or brochures—were created on a Mac.

Page-Layout Principles

Because much of page layout involves typography (and good editing), we encourage you to read ahead to "The Non-Typographer's Guide to Type" in Chapter 29.

Those Chapter 29 guidelines (kerning, type tips, hyphenation, and so on) should carry just as much weight in page layout. More, really. As for page *design,* here are some additional hints that can go a long way toward ensuring that your documents look good.

Two font families, three at most

With 10,000 fonts at your disposal in the Macintosh world, we can understand the temptation to go type crazy. But the best page designs rein in those madcap font instincts. One possible guideline: Choose one *serif* typeface for the main body text, and one *sans serif* font for headlines, captions, and pull quotes.

DIALOGUE

PageMaker versus Quark

DP: Ohhhh, no you don't. We are not going to take up valuable page space rehashing this old PageMaker-versus-Quark argument. End of Dialogue.

JS: C'mon, c'mon. It's a classic confrontation! What are you, a wuss?

DP: Look, I've read the equivalent of this discussion in every Mac book and magazine ever printed. It's meaningless. No sooner have you finished a sentence than either PageMaker or Quark has a new version out. And your whole debate is obsolete.

JS: No way! Look, it's not about *features.* It's about *philosophy*—

DP: Well, I'm not going to get sucked into any PM-versus-Quark debate with you. Period.

JS: —and PageMaker's philosophy is: Make it easy and powerful. Quark's philosophy is to bury every feature, and then come up with a bad manual that doesn't tell you where they are. And if there's a more customer-hostile company than Quark anywhere—

DP: You're living in the past! Quark is *light years* more elegant than PageMaker. In PageMaker, you can't even do *basic* page design stuff, like group and lock objects on a page, or move them forward or backward a layer at a time. And in PageMaker, you can't set up master pages. I don't want to talk about this.

JS: Got news for you: PageMaker 6.0 nuked *all* of those old drawbacks. You can create up to 256 master pages in a PageMaker document. And it's still easier to use.

DP: Well, Quark's got XTensions. Little plug-in miniprograms that add some pretty incredible features.

JS: PageMaker's got Plug-ins. Same thing, but they're almost all *free.* You don't have to fork over hundreds or even thousands of bucks for them.

DP: They're *not* the same thing. Xtensions add qualitative, brand-new features; PageMaker's things are just macros.

JS: You've been writing too many ". . . For Dummies" books.

A serif font, like the one you're reading, has tiny ledges at the edges of the letters; Times, Palatino, and New York are some examples. A sans serif font, as shown in Figure 18-1, has no such *serifs,* as they're called. Helvetica and Avant Garde are sans serif fonts.

Serif
Sans

Figure 18-1: The top font shows the little serifs on the ends of each stroke. The lower font is without serifs — or, in French, *sans serif.*

This doesn't mean that you can't use variations. For example, if you choose Futura (a great-looking sans serif face) as one of your two families, you may find that Futura Extra Bold looks good as a headline and Futura Light is perfect for little captions. That's all within the realm of good taste.

The point is that a little consistency gives your self-published document the appearance — or just the illusion — of having been thoughtfully designed and having some thematic tie-ins in its look.

DP: Now what's *that* supposed to mean?

JS: Look, the newest PageMaker Plug-ins add all kinds of additional features. And the program itself has gotten more powerful, too. The newest version allows you to export PageMaker documents as HTML-tagged text for publishing on the World Wide Web. Try doing *that* with QuarkXPress.

DP: OK, I will! I'll get one of the XTensions that do it — and do it a lot more effectively than PageMaker.. Besides, Quark is still way better for high-end color work; it's much better than PageMaker for separations and trapping.

JS: Was. PageMaker 6.0 has automatic trapping and virtually matches Quark's high-end color capabilities.

DP: Did you say high-end? PageMaker doesn't even support two-color gradient fills! Not exactly a high-end feature. We're talking ClarisWorks-level stuff here!

JS: I can't believe we're discussing these minute differences.

DP: Minute? How about character-based style sheets? Quark's got them, PageMaker doesn't. You call style sheets *minute*? How about Quark 4.0's drawing tools? Bezier curves? Text on a path? All missing in PageMaker.

JS: OK, OK, but *basically,* these programs have become almost identical. Whatever Quark had, precision, the Measurements floating palette, drag-and-drop libraries — PageMaker 6.5 can finally do all the good stuff Quark 4.0 does.

DP: Except for text-to-path conversion, and multi-columned frames, and —

JS: Well, perhaps we should mention PageMaker's support for multiple layers and the Hyperlinks palette —

DP: Ah, but you haven't seen what's coming in Quark *4.5.*

JS: Yeah, but *you* haven't seen PageMaker *7.*

DP: *Now* do you see why I didn't want to get into this?

Page grid

Look at a newspaper or a magazine. You'll discover that behind the articles on every page, almost every publication has an invisible set of columns that determines where text flows (see Figure 18-2).
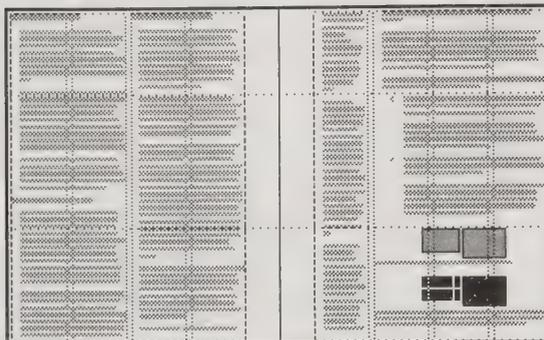
Figure 18-2: In both PageMaker and QuarkXPress, you can add guides to the master page by dragging them "out of" the rulers at the edges of the screen. They form the basis of the underlying page grid. In this example, the four underlying columns are combined in different ways to create different page effects without losing a feeling of consistency.

But if a magazine has a *page grid* of five very thin, invisible columns, that doesn't mean that every page will have text in five thin columns. The designer is allowed to combine column widths and still remain within a tasteful framework. An editorial page may have two columns, for example: one that's *two* invisible columns wide, and another that's *three* invisible columns wide. A Letters to the Editor section, on the other hand, may flow its text in all five thin columns per page.

In any Mac page-layout program, you create these invisible background columns using nonprinting *guide lines.* Generally, you place these guide lines on a master page — a special electronic page whose elements underlie the contents of every *actual* page in your document (see Figure 18-2).

In defense of the ragged-right margin

One trademark feature of professionally typeset publications is a justified right margin — where the right margin is a clean, crisp vertical line. Take a look at magazine and newspaper columns and you'll see what we mean. And in virtually all word-processing and page-layout programs, turning on justification is as simple as clicking a button.

Our advice: Don't turn on justification thinking it will make your document look more like *Time* magazine. Actually, forced justification can make your document harder to read and make it look *less* professional.

You see, unless text is hand-tweaked to fit into those nice clean columns, justified text can look awful, with gaping stretches of white space between words or — even worse — goofy, awkward spaces between letters. This is particularly true if you happen to be using a large font in narrow columns. The justified line breaks can wreak havoc on word and letter spacing. (We could show you a PC-produced club newsletter or two to prove our point.)

So our rule is this: If you must have justified columns of text, be prepared to adjust the kerning (the spacing between individual letters) to get an eye-pleasing fit. (Programs such as QuarkXPress and PageMaker enable you to adjust overall letter and word spacing, called *tracking,* as well as the space between individual characters.) You may even need to change or omit a word here and there to make everything fit properly.

Frankly, we think there's too much ugly justified text in this world. We find ragged-right text easier to read. So don't be afraid to leave text unjustified.

Break up the text

Our definition of a boring page design is one that, if you squint at it, seems to be a wash of unbroken gray. Do what you can to break up vast, dull stretches of body text. Use headlines. Use *pull quotes* (the large-type quotations that are often set in their own boxes in the middle of pages — you've seen them in innumerable magazine articles). Use subheads. You can check out this very book for some examples of these devices. We've done our best to keep the pages interesting by using sidebars, graphics, and headings.

Use rules

A rule, in this case, doesn't mean a law: It means a straight line. Every page-layout program lets you draw lines on your electronic pages: thick, thin, horizontal, vertical, even in parallel sets.

Here again, look at the Sunday magazine section of your city's newspaper. You'll see how a horizontal rule is used to set the masthead apart from the articles; another may be used between columns of an article; a fat one may separate the title of the article from the body (see Figure 18-3).

Not every publication needs to have rules. But there's no question that rules are one of the page designer's most fundamental design elements.

PowerBook screens

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If you've ever seen a PowerBook Duo's
screen, and realized that it's about as thick
as a Wheat Thin, you've realized that it
couldn't work the same way as a standard
Mac monitor. The regular TV-sized CRT
monitors have to be a foot deep, to allow the
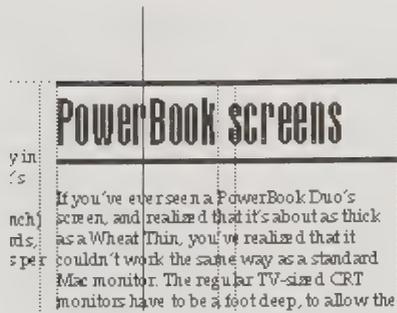
Figure 18-3: Judicious use of horizontal or vertical rules helps break up a page and makes certain elements stand out.

Reverse type

Okay, maybe reverse type (white lettering on black) has been a little overused recently. And reverse type uses more ink than black-on-white, and on cheap paper, it sometimes bleeds a little. But we still run across striking uses, and it's almost always a refreshing break from whatever normal type surrounds it.

In most programs, setting up reverse type is a two-step process. First you make the text itself white. Then you have to draw a black box behind it.

Here's a useful trick: In both PageMaker and Quark, you can set up a very fat *rule* for use as the black box. Set the rule to be very fat — 40 points, for example — and to be drawn above the paragraph. (In PageMaker versions before 5.0, your thickest rule can only be 12 points, so you may have to define rules both above and below the text, each set to the maximum.) Then define the whole thing as a style that you can apply to any headline with a single click (see Figure 18-4).

A word about dpi

You've probably heard the term *dpi*,
meaning dots per inch, used primarily
conjunction with printer quality. That
because, for years, the Mac's monitor
resolution (the number of pixels per in

Figure 18-4: Set up a style that automatically reverses text. Instead of having to draw a black box by hand, let the program create fat rules for you.

Widows and orphans

A *widow* is a line of text all by itself, separated from the rest of its paragraph. On the other hand, an *orphan* is a line of text all by itself, separated from the rest of its paragraph.

If it sounds like there's some confusion among terms, you're right. We looked up these terms in several prominent style books, and guess what? The authors can't even agree on how they disagree! Several use the terms synonymously. Several think that a widow is a solo line of type at the *top* of the page, separated from the previous page; several think that's an *orphan*. On the other hand, some people call an orphan a lone *last* line on the page, split apart from the remainder of the paragraph at the top of the next page.

We vote for the following distinction (which nonetheless doesn't make it right): A widow is a stray line of type at the top of a column or a page — the last line of a preceding paragraph. It's best avoided, either by editing the text before it or by manipulating the type or line spacing.

An orphan, on the other hand, is a single *word* on a line by itself. (We mean on the same page; if it were on a different page, it would *also* be a widow!) An orphan, by this definition, isn't necessarily objectionable. Still, some layout pros try to avoid orphans if they are very short or only the last syllable of a hyphenated word. (Figure 18-5 makes this clearer, or maybe not.)

```
all she wrote.                        ◄─────── A
      Harold, in the meantime, was
struggling with his own problems:
how to get the large icy block out of
his bed and into the bluish hand-
bag.                                  ◄─────── B
      If he had only looked upward,
however, he would have
discovered that nobody at all was
```
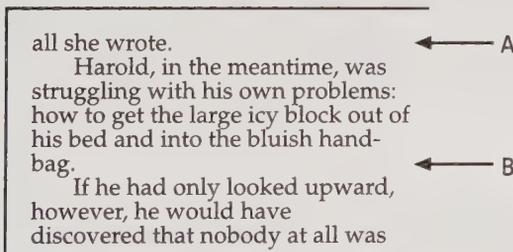
Figure 18-5: A widow (A) and an orphan (B). Or quite possibly, vice versa.

Indents

Now that you've graduated beyond the manual typewriter, using five spacebar clacks to represent a first-line paragraph indent doesn't quite cut it. First of all, as you'll find out in Chapter 29, the space bar does a terrible job of lining up text (it looks fine on the screen but never works in the printout). Second, five spaces isn't even an appropriate amount of space.

Most people we know are in the habit of using the Tab key to indent the first line of a paragraph. And that's fine, although we find the half-inch default tab stops in most word processors to be a tad large. It's better to use your

word-processor or page-layout program's automatic first-line indent feature. (Actually, *most* people we know are in the habit of using *open spacing* — see the next item — and don't indent at all.)

Actual publishers measure the first-line indent based on a unit of measurement called the *em space* (the horizontal width of a capital M in the font and size you're using). They set the indent to be a certain number of em spaces.

How to start a paragraph

This pointer has less to do with page layout than it does with basic business-writing protocol. You have essentially two choices when you type a business letter (or a Macintosh computer book): You can either begin each paragraph with an indented first line, or you can skip a blank line. This latter system is called *open spacing* (see Figure 18-6).

Angela,

    As much as I adore you, we really need to talk about the condition of your living room.
    It pains me to have discovered an issue of *Time* from early 1978 in the cushions of your sofa. Pains me, because a loose staple stabbed me in the palm.
    Would it be so much trouble for you to unleash a horde of housekeepers in your one-bedroom once a year or so?

Angela,

As much as I adore you, we really need to talk about the condition of your living room.

It pains me to have discovered an issue of *Time* from early 1978 in the cushions of your sofa. Pains me, because a loose staple stabbed me in the palm.

Would it be so much trouble for you to unleash a horde of housekeepers in your one-bedroom once a year or so?

Figure 18-6: A tale of two spacing methods. At left: indenting each paragraph. At right: open spacing. Each denotes a new thought. Neither should be combined with the other.

Our suggestion here: If you decide to use open spacing, use your word processor's built-in feature for this. (It may be hiding in a paragraph-formatting command, called Space Before or something.) It's so much easier to edit a document where the program *automatically* inserts space between paragraphs — that *weren't* created with an extra press of the Return key — than to have to deal with 10 million double-Returns.

On the other hand, don't forget to turn those blank lines *back* into double-Returns (it's search-and-replace time) if you plan to paste your writings into an e-mail message. In cyberspace, all paragraphs lose the "blank line before" status they may have had in your word processor.

MACINTOSH SECRET

The secret of page-layout failure

Want to design a truly hideous ad or flyer? It's all the rage! Use an ugly, monospaced font (Courier or Monaco). Scatter words all over the page. Make each word a different type size. Connect them with bizarre straight lines. The effect should be something like the figure below.

uneven characters and ink smears, making it look as if you are a poor slob who knows nothing about desktop publishing. The more high-tech your company, the cruder, sloppier and more poorly aligned the type should be.

the
Microsoft
school
of
design
graphic

Hot New
Technology

So why would anyone create such disasters? You got us there — we have no idea. But as we write this, in the mid-'90s, these concepts of page layout are trendy. We see them everywhere in advertising — notably Microsoft's.

Looking for an even trendier, high-tech effect? Take it a step further: Make each word look like it was typed on a really old, poorly-maintained Smith-Corona manual typewriter, as in the other example shown here. Make sure there are lots of broken,

Then again, Microsoft was never exactly famous for its good taste. We just can't wait for this particular trend to fade away.

Watch those line lengths

Pages with long lines of text and narrow margins are simply more difficult to read. Think about it: The wider you make a block of text, the further your eyes have to travel back and forth across each line and the more information your reader must take in with each sweep of the page. So, as a rule, keep your margins generous and your columns narrow.

How narrow? Well, the page designer's rule of thumb is that no column of text should be more than two-and-a-half alphabets wide. If you can fit three alphabets or more on one line within a column of text, your column is too wide.

(Astute readers who've owned previous editions of this book may, at this moment, be smiling to themselves. They're realizing that this very book's first few editions violated the two-and-a-half-alphabets rule. But not these days, pal!)

Keep your eyes open

For additional lessons in page layout and typography, we refer you to the world of printed materials all around you. Most of this stuff was designed by the pros (maybe you, O reader, *are* a pro, in which case we aren't addressing you) and can probably suggest some interesting ideas to you.

PageMaker

PageMaker was the first significant page-layout program for the Mac. In conjunction with the Apple LaserWriter, it took the world by storm and put the Macintosh on the map. For the first time, designers who had always pasted up their pages manually could have an electronic pasteboard, striking, immediate printouts, and much greater design flexibility.

For a year or two, Aldus, the company that owned PageMaker before Adobe bought it in 1994, reigned supreme. Meanwhile, a rival upstart, QuarkXPress, appeared on the horizon and started gobbling away at PageMaker's market share. Recently, however, Adobe has revved up PageMaker and has pretty much brought it back up to par with Quark, though it still lacks some of the high-end typographic controls and industrial-strength production tools that make QuarkXPress so powerful.

Here are a few of our favorite PageMaker Secrets. Most of them work with any version of the program from 4.2 onward, unless otherwise indicated.

PageMaker Secrets ────────────────────────■

Create evenly spaced duplicates of an object

Using the Multiple Paste command in the Edit menu, it's easy to create several evenly spaced copies of something — *if* you know the exact horizontal and vertical distances by which you want to space the copies.

If you prefer to specify the amount of separation by eye instead, try this: Copy the object you want to duplicate (a horizontal rule, for example). Press Option and then choose Paste from the Edit menu. (Option-Paste puts a duplicate directly on top of the original.) Drag the new copy where you want it.

Then, each time you Option-Paste again, another copy appears, the same distance from the previous one as the first copy is from the original.

Make notes to yourself

Sometimes it's handy to leave notes to yourself: revision dates, client feedback, whatever. It's easy to do. Define a style for this text called, say, Reminder. Anytime you want to create a note to yourself, assign it to this style. Define a

point size large enough that you can still read it when you zoom out to Fit in Window view.

Then, before printing, simply change the color of the style to Paper — that is, invisible — so that it doesn't print. (In PageMaker 6.0 and later, the easiest way to do this is to ⌘-click the name of the style on the Style palette, which automatically opens the Edit Style dialog box. Then click Type and change the color to Paper in the Type Specifications dialog box.)

Default page setup

Speed Tip

If you're working on a number of documents that have a similar nonstandard page setup, you can save yourself a lot of time by teaching PageMaker what its default page setup should be.

Close all documents and then choose Document Setup from the File menu (or Page Setup in versions earlier than 6.0). In the Page Setup dialog box, specify your preferred page size, orientation, and so on. Click OK.

From now on, each time you create a new document, its page setup matches your preferences.

Jumping views

Here's an incredibly useful tip that saves all kinds of trips to the menu.
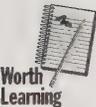
Worth Learning

If you ⌘-Option–click the page window, you jump to actual size. Then you can ⌘-Option–click a second time to zoom into Fit in Window view. (Add Shift to the mix to jump to 200 percent.)

Using this shortcut, you can stay in Fit in Window mode as necessary to get an overview of your document. Whenever you want to read some actual text, you can instantly zoom any page to actual size.

You may find it even faster to use PageMaker's keyboard shortcuts to accomplish all of the above — ⌘-1 for Actual Size, ⌘-0 (that's a zero) for Fit in Window, and ⌘-2 for 200 percent.

Speaking of Fit in Window, here's a quick-click shortcut for doing just that. Point to the page icon (at the bottom of the window) of the page that you want and Shift-click. You'll jump to that page in Fit in Window view (even if it's the one you're on).

Keyboard tool shortcuts

Here's how you can switch tools in PageMaker 6.0 and later without having to use the mouse. (You need a keyboard with function keys for these.)

Pointer Tool: Control-Shift–F1. (Then again, ⌘-Space *also* selects the pointer, and it's certainly easier to remember.)

Text Tool: Control-Shift-F2.

Ellipse Tool: Control-Shift–F3.

Rectangle Tool: Control-Shift–F4.

Line Tool: Control-Shift–F5.

Horizontal/Vertical Line Tool: Control-Shift–F6.

Polygon Tool: Control-Shift–F7.

Magnifier Tool: Control-Shift–F8.

Rotate Tool: Control-Shift–F9

Cropping Tool: Control-Shift–F10

(Some earlier versions of PageMaker also allow you to switch tools using Control-Shift-F-key combinations, but the shortcuts aren't exactly the same as the ones listed here.)

Set the default font

Before you begin working on a new document, you can set the default font and paragraph information for all new text blocks you create.

With the Pointer Tool selected, choose Type Specs from the Type menu (or just press ⌘-T). Change the settings in the dialog box to your tastes and click OK. Then choose Paragraph (also in the Type menu) to preset your preferred paragraph settings.

Keyboard navigation keys

Don't bother with that mouse! Try these page-navigation shortcuts: ⌘-Tab moves to the next page and ⌘-Shift–Tab moves back a page.

To slide the page around without having to use the scroll bars, press Option. When you hold down the mouse button, the cursor changes to a hand-grabber tool. Drag it across the page window to shift the page on your screen.

Drag the object, not the outline

Normally, when you drag a graphic or text block, PageMaker shows you only the outline of the block while you drag. If you prefer, you can see the actual text or the actual detailed graphic: After you first click the box, hold the mouse button down, still, until the screen blinks. That's your cue that you can now move the object, whose detail will be visible as you drag.

Auto-positioning from the Scrapbook

When you ⌘-Option–Paste a page element from the Scrapbook back into a PageMaker document, the object jumps exactly into the original position from which it was copied or cut.

Speed Tip

Keep this in mind whenever you cut or copy text or graphics for pasting into the Scrapbook for later use. If the item is correctly positioned when you cut or copy it, it will be correctly positioned when you ⌘-Option–Paste it.

Quick style selection

When you name your most frequently used styles, precede the name with a bullet (•, which you produce by pressing Option-8). That bullet character will force the style names to the end of the style list, where they're easy to find. (Example: •Body Times 10, or •Futura 18 Heading.)

You can also force a style name to the *top* of the list if you precede it with an Option-space (type a space while pressing Option).

A quick way to spot expensive mistakes

Worth Learning
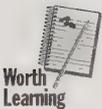
Before you send your finished document file off to be printed on an expensive Linotronic, here's a good way to get an overview (and to spot potential problems).

First, switch the view to Entire Pasteboard. Then, with the Pointer Tool selected, press ⌘-A to see all the page elements at once, even those you may have dragged off the page.

In this condition, you can easily spot remaining blocks of white text, which appear as empty text blocks; empty text lines, which show up as gray blocks; and any other wayward and unnecessary Pasteboard clutter. Every object takes time to image when printing day comes, so the less extraneous stuff there is, the smoother printing will go.

Graphics information panels

When you create your graphics, use a basic font like Courier to add some information at the bottom edge. For example, include the name and figure number of the graphic; its date, perhaps; and the name of the program that created it.

Then, when placing it into PageMaker (or any other page-layout program, for that matter), simply trim off this information from the bottom of the graphic using the Cropping Tool (see Figure 18-7).

However, if each pixel can be one of *four* colors, then it requires *two* bits of memory. (Two bits, each of which can be either on or off, result in a total of *four* possible combinations.)

```
╔═══════════════════ Launcher ══════════════════╗
║                                                ║
║  ┌─────────┐  ┌─────────┐  ┌─────────┐  ┌─────────┐  ║
║  │         │  │         │  │         │  │         │  ║
║  │   ◈     │  │   ⬟     │  │   ▲     │  │   ✎     │  ║
║  │         │  │         │  │         │  │         │  ║
║  Apple Backup   ClarisWorks   Mouse Basics   TeachText ║
║                                                ║
╚════════════════════════════════════════════════╝
```
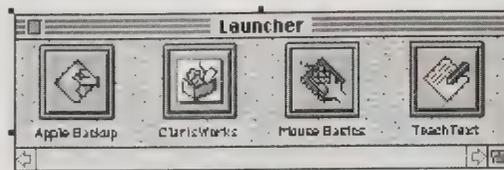
Fig. 5-22, The Launcher. Canvas 3.0.4 document
October 23, 1993

A palette of four different colors for your whole screen isn't exactly what you'd call photorealistic color, however. So they've got what they call *eight-bit* color; this is the most popular Mac video setup. If you count up all the possible combinations of on/off that those eight bits of VRAM can be, you find out that there are 256 possible combinations. Therefore, in eight-bit color, there can be 256 *different* colors displayed on the screen at the same time.

Figure 18-7: If you take the trouble to embed graphics information as part of the graphic, you'll be amply rewarded when deadlines and confusion descend. Just use the Cropping Tool to bring the lower panel into view when necessary.

When confusion over figure numbers arises or when a graphic needs to be revised, it's a simple matter to peek at this helpful information, saving you a good deal of otherwise-complicated record-keeping.

Notes on the Story Editor

You can open the Story Editor by pressing ⌘-E, of course, but it might be faster to triple-click anywhere in your document.

To *exit* the Story Editor, you have two ways to go back to your layout. If you press ⌘-E again, you're teleported to the page that corresponds to your cursor's last location in the Story Editor.

But what if you want to remain where you were before you ever *entered* the Story Editor? In that case, just close the Story Editor window. You'll be back where you started, even if you scrolled in the Story Editor.

Grab an object that's underneath another
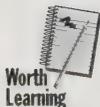
It's frustrating to try to grab a rule, for example, that's covered up by a graphic object. At least it is until you know the secret for selecting overlapping objects: ⌘-click. Each time you ⌘-click, you select the object another layer down.

The fabulous automatic scrolling trick

Here's a great trick for getting an overview of a document.

While pressing Shift, choose Go to Page from the Layout menu (the Page menu in earlier versions of PageMaker). The program begins to flash through your pages, one after another. When it gets to the end, it begins again with page one. To stop the slide show, click the mouse.

Bonus hint: You may want to change all the pages to Fit in Window view before you begin (see the next secret).

Change the zoom levels of all pages at once

PageMaker has this famous quirk: When you zoom in or zoom out, you're only changing the size of the *current* page or spread. If you move on to the next page, you have to change its degree of magnification all over again.

But if you press *Option* as you choose the new zoom level from the View submenu in the Layout menu, you do, in fact, change the magnification levels of all the pages at once.

Define styles by example

Worth Learning

One nice aspect of Word and other word processors is that you can format a paragraph first, and then define it as a style simply by giving it a name. Afterward, you can apply all of that formatting to any paragraph just by calling up that style name.

You can accomplish the same fast-and-easy style-creation in PageMaker. Select the text you want to format. Then format the heck out of it: font, tracking, paragraph specs, whatever. When it's all ready to go, open the Style palette (⌘-Y) and then ⌘-click the words No Style.

Instantly PageMaker displays a dialog box in which you can name the new style (see Figure 18-8). All the type and formatting characteristics you set up are already entered for you.
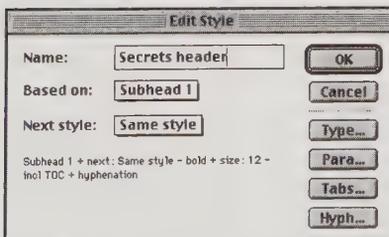
Figure 18-8: Define a style by example. This is where you're finally asked to give the new style a name of its own.

Super-nudge keys

When an object or text block is selected, you can press the arrow keys to nudge it one point at a time in any direction.

But you knew that. Our secret here is that if you press ⌘ while nudging, you nudge faster (*ten* points at a time).

Automatic TIFF compression

Here's a great way to reduce the size of PageMaker files containing large TIFF images: You can automatically compress the TIFF files as you import them into PageMaker 5.0 or later.

To trigger the compression, import the TIFF files using the standard Place command, but press the ⌘ and Option keys while clicking the OK button in the Place dialog box. For an even higher level of compression, hold down ⌘-Option-Shift while importing the TIFF files.

When you do this, PageMaker creates a new, compressed copy of the TIFF file and leaves the original untouched.

Automatic TIFF decompression

Suppose you use the preceding secret to compress the TIFF files you use in a PageMaker document. And suppose you throw away the original uncompressed versions of those TIFF files to save space. No problem — until you find you need to use those same TIFF files in a program that *doesn't* support compressed TIFF images. Now what do you do?

The answer: Reimport the images into PageMaker, this time holding down the ⌘ key. PageMaker will save a new, uncompressed version of the TIFF file.

QuarkXPress

We're not exactly sure why, but everybody calls this program *Quark*. That's the company name, not the product name.

Anyway, Quark is about precision. It's also about the capability to design text boxes and links without having to actually have any text to play with. In other words, you can design a newsletter's fundamental shape in an empty Quark document. Then, as the stories come in each month or each week, you can just import them directly into the waiting text-box chains. PageMaker 6.5 and later also lets you create text boxes of this type, but its support for such frames is pretty limited; you can't create boxes containing more than one column of text, for example.

Measurements palette

One of the interface elements that first put Quark on the map (and that was soon imitated by PageMaker's programmers) is its floating palettes. The Measurements palette is a good example: With a couple of clicks, you can change the size, position, rotation angle, leading, or type style of any selected object.

You don't have to use the mouse to select anything on the Measurements palette. You can, for example, press ⌘-Option–M (for Measurements) to highlight the first field (the horizontal size measurement) in the palette (see Figure 18-9).
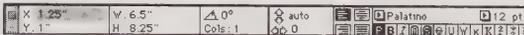
Figure 18-9: One keystroke takes you to the first field on the Measurements palette. Add the Shift key to the mix, and you jump directly to the font name.

From there, you can press Tab to highlight successive fields in the palette or Shift-Tab to go backward.

MACINTOSH SECRET

Typing measurements into the Measurements palette

When you're changing an item's size or position by typing new numbers into the Measurements palette, you don't have to type out inches. You can't exactly go wild with abbreviations and expect Quark to know what you mean, either.

Here's a table of exactly what Quark understands, measurement-wise:

You can type:	and Quark will know you mean:
"	Inches
p	Picas
pt	Points
cm	Centimeters
mm	Millimeters
c	Ciceros

You're *not* allowed to type *in* for inches or *pts* for points.

By the way, you can (and should) combine points and picas in the same measurement. To indicate 10 picas and 4 points, you can type *10p4.* (Remember: 12 points in a pica and 6 picas per inch.)

Then there's the Measurement palette's best-kept secret — it can do arithmetic. Suppose you have a text box that's 6p9 and you want to make it exactly three times larger. Instead of mentally converting points to picas and doing the math in your head to come up with 20p3, you can just type a *3 after the 6p9 on the Measurements palette. Quark will automatically do the math and convert the 6p9*3 into 20p3 for you. You can type a +, -, * or / into any of the numeric fields to add, subtract, multiply, or divide.

Our favorite, though, is to throw the Shift key in *with* the ⌘-Option–M keystroke. If you do that, you jump directly to the font name field. When you're there, you can change the font of the selected text by typing only a letter or two of the new font name. (Quark automatically expands what you typed; if you type *He*, the program will add *lvetica* for you.)

We hit upon this keystroke after much consternation; we were trying to teach a QuicKeys macro how to change a selection to a certain font automatically. Trouble was, QuicKeys can never *find* the Measurements palette. If the palette is moved, QuicKeys clicks blindly and futilely where it *used* to be.

Then we taught QuicKeys how to type Shift-⌘-Option–M, plus the first letters of the desired font name. It was smooth sailing after that.

In fact, the Measurement palette is a natural for QuicKeys; any setting you make more than once — for example, rotating a certain kind of text block 30 degrees — is something that's much more easily and quickly typed by a macro than by you.

Document palette

Another of Quark's floating palettes is the handy Document Layout palette, where each page of your publication is represented by a page icon (see Figure 18-10).
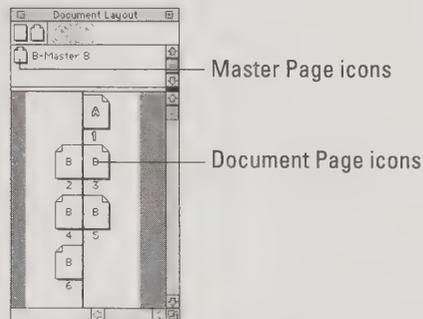
Figure 18-10: The Document Layout palette gives you a constant overview of the pages in your document. The Master Pages are indicated by icons at the top.

Here are a few things you can do with this palette:

- Double-click a page icon to make the document window jump to that page.
- Single-click a page *number* to jump to that page.
- Drag a page icon into a new position to rearrange your pages.
- Double-click a Master Page icon to edit that Master Page.
- Drag a blank page (top left of the palette) or a Master Page icon in between two existing document-page icons to insert a new page.

- *Option*-drag a page or master page into place to insert *multiple* new pages. The Insert Pages dialog box appears, where you can specify how many you want.

- Select any master or document page and click the Delete button to delete it. (In version 3.1, the palette has a Trash can instead of a Delete button, and in version 3.3, the button has been replaced by a page icon with an "X" through it. To delete pages, you select them and click the icon.)

QuarkXPress Secrets ───────────────────────────────

Take one text box out of the chain

Linked text boxes can be tricky if you're not familiar with Quark's quirks. Suppose that you want to take one page's text block out of the chain, for instance. If you do what you'd expect you ought to do — click that text block with the Unlinking Tool — you'll destroy the entire chain for the rest of the document (see Figure 18-11). And there's no Undo.

To take just one text block out of the chain, *Shift*-click it with the Unlinking Tool. The rest of the chain will remain — it will simply leave out the text block you clicked.

A   B   C
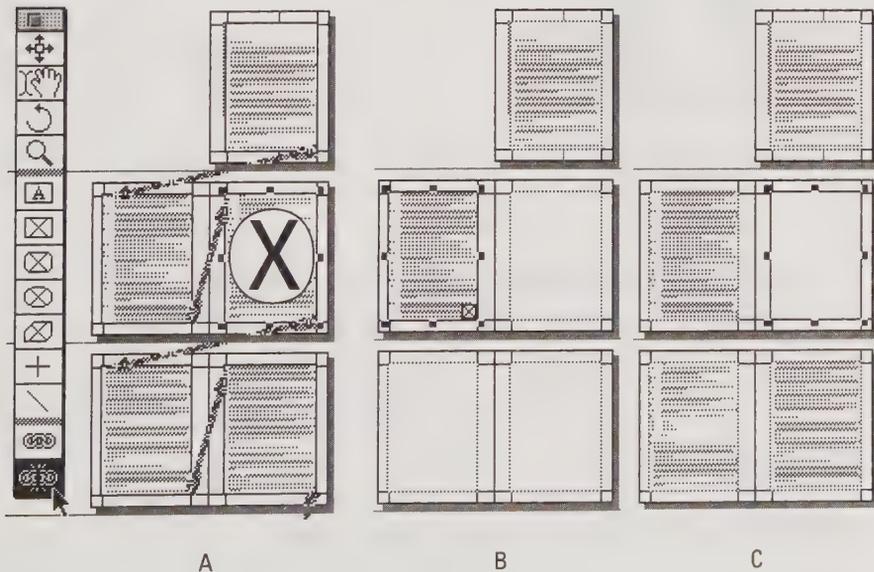
Figure 18-11: Here's a document set up with linked text boxes. If you want to take page 3 out of the chain (figure A), you may think to click the page with the Unlinking Tool (marked by the X). But what you'll get is figure B: a broken fragment of a chain. If you use our secret, though, you'll get figure C, which is what you wanted all along.

Multiple clicks to select text

As in any program, a double-click in text highlights one word. As in some word processors, Quark lets you *triple*-click to highlight a line.

There's more: A *quadruple* click highlights an entire paragraph, and five clicks select the entire story.

Change the first page number

If you don't want to start numbering your document's pages with one, here's a quick way to access the Section dialog box to change this setting:

Click the page in the Document Layout palette whose numbering you want to change. Then click the words "Page 3" (or whatever it says) at the bottom of the palette (or the top of the Document Layout palette if you have version 3.1) as shown in Figure 18-12.
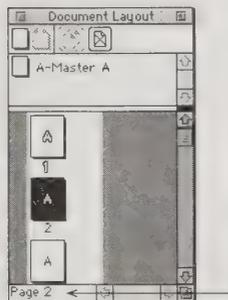
Figure 18-12: After a page is selected, you can change its starting page number by clicking in the strip indicated in this figure.

Drag the object, not the outline

Like PageMaker, Quark shows you the actual graphic or actual text inside a box that you're dragging (as opposed to just the box outline, which it usually shows). As in PageMaker, the trick is to hold the mouse button down, stationary, for a moment after you first click the box. You'll see the screen blink; that's your cue that you can now move the object, and you'll see all the detail inside as you drag.

How to keep a tool selected

We know you've wished for a way to do this! (We sure did, until we learned the secret.)

Worth Learning

Normally, every time you use a tool that creates, links, or unlinks something, Quark switches you back to the Item Tool the instant your finger is off the mouse button. But, if you *Option*-click a tool, it stays selected until you click another tool.

Instant switch to the Item Tool

Regardless of which tool is selected, pressing ⌘ switches to the Item Tool for as long as you press the key. That's a handy shortcut when you just imported a graphic, for example, and now want to move it slightly.

Automatic "Continued on page 4" notices

Quark lets you create this kind of *jump line* automatically. It's smart, too. If the continuation of the article is moved to a *different* continuation page, the jump line that refers to it is updated automatically.

To create a jump line at the end of a column or page, create a new text block that overlaps the main text of a story. Type **Continued on page** and then press ⌘-4. Quark automatically fills in the correct page number (if you have, indeed, linked the story to a text block on another page).

On that continuation page, you can easily create a "Continued from" notice. Again, create a small text block overlapping the main story. But this time, type **Continued on page** and then press ⌘-2 (see Figure 18-13).

name was Tia She told me that
her father had been a promi-
nent televangelist in the 70s,
but she wouldn't say who it
was
    Not that I cared; it was
enough just to be around this
vision of beauty, gossamer, and
Continued on page 3

Continued from page 1
feeling She was a fragile crea-
ture, really. A thing of absolute
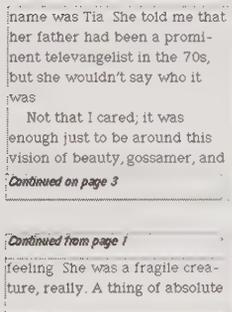
Figure 18-13: Let Quark fill in the page numbers automatically. Type the text you want at the end of one column (top) into a separate little text box. Do the same thing where the story continues (bottom).

What page am I on, anyway?

Sometimes — especially when you're working on two-page spreads — it's hard to tell what page you're on in QuarkXPress. The Document Layout palette may tell you you're on page 4, because a tiny corner of it is still showing in the screen, even though the text box you're editing is actually on page 5, on the other side of the spread.

Our tip is to use Quark's automatic page-numbering command — ⌘-3 — to instantly determine your real location. Just type ⌘-3 wherever you happen to be. Quark will fill in the page number. Once you've got the answer, just delete the number and continue with your editing.

One-shot Symbol-character typing

Quark has a handy keyboard shortcut (only one keystroke) that switches you to the Symbol font for one moment, which is ideal for popping in a single character in that font. It's ⌘-Shift–Q. The next character you type will be from the Symbol font. The next character after *that* will be in your original font.

You can switch from one character to the Zapf Dingbats font, too. That keystroke is ⌘-Shift–Z.

How the heck to turn off Facing Pages

It's easy to turn a single-sided document into one with two-page spreads: Open the Document Setup dialog box (File menu) and turn on Facing Pages.

To turn *off* Facing Pages after you turned it on, however, is trickier. Quark dims the check box so that you can't get to it. The solution is to delete all the facing *master pages* first. Then you can turn off the check box.

Quick access to reverse type

Exactly as we pointed out in our general page-layout secrets, the easiest way to create white-on-black (reverse) type is to define a style. In Quark's case, however, you have even more control over the result. We thought we'd spell out the process here.

Start by choosing the type style you want for the text. Now choose Rules from the Style menu. Click the Rule Above check box in the resulting dialog box. The box expands to look like Figure 18-14. Choose an appropriate Width (they actually mean height for the rule).
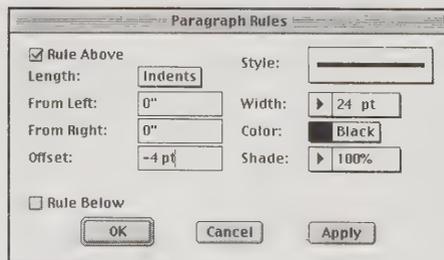
Figure 18-14: The first step to creating easy reverse type in Quark.

If you leave the Offset at zero, you get the baseline-hugging effect shown in Figure 18-15. (An Offset of, say, –2 points better centers this text in the rule.) Click OK.

Then open the Color palette (View menu). Click the Text icon (the little A in a box) and click White. The text is white on the dark rule (see Figure 18-15).
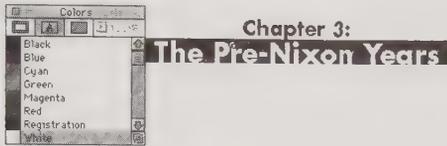
Figure 18-15: Using the Colors palette, turn the text white so that you can see it.

Finally, to define this setup as a style, just choose Style Sheets from the Edit menu. Click New, give the style a name, and click Save. Next time you need this nice-looking reverse-type effect, just select the paragraph and select the style you defined from the Styles palette.

Finer nudging

Exactly as in PageMaker and other graphics programs, pressing an arrow key moves any selected object one pixel in the corresponding direction. In Quark, however, pressing Option and the arrow key makes the movement much finer — tenths of a point. (The Item Tool must be selected, of course.)

Page navigation from the keyboard

This is a great trick. You probably already know that you can press the Page Up and Page Down keys on your keyboard (if yours has these keys) to jump one screenful backward or forward in your document.

But if you press Shift, too, you move by *pages.* That is, Shift-Page Up shows you the top of the previous page. Shift-Page Down jumps to the top of the next page. These are excellent shortcuts for skimming through your document (when you're looking for the beginning of a new section, for example).

Grab an object that's underneath another

We mentioned this one in our PageMaker secrets, too, but the keystroke is different here. This is the trick to select an object that's covered up by other objects. The secret: Hold down ⌘, Shift, and Option as you click. With each click, you select the object another layer down.

Notes on dialog boxes. . . and Apply

Most of Quark's dialog boxes aren't typical dialog boxes — they have title bars, which means you can move them anywhere on the screen by dragging the title bar.

The buttons in these dialog boxes are special, too. You can usually press them without using the mouse: press ⌘-A for Apply, for example.
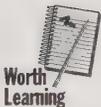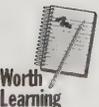
This keyboard button-pressing isn't nearly as full-fledged a feature as it is in the Microsoft programs; you can't activate radio buttons or check boxes from the keyboard, for example. It only works with actual buttons.

In fact, ⌘-A is a particularly useful tool to learn. In the Formats dialog box, you can make a change and then "click" the Apply button to see its effect on the document before committing to it. When you press *Option* and click Apply, you enter "continuous apply" mode. That means that every time you change a number in the dialog box, you see its effect on the text in the document immediately. You don't even have to click Apply.

Oh, and one more thing: Use ⌘-Z while a dialog box is still open to undo all the changes you've made since opening the box. Now *that's* something they should do in all programs!

Secret message

Here's the smallest Quark secret of all: Open the Quark Help window. Turn on Balloon Help and point to the word Quark. You find out that it's "a fundamental particle."

Quark the Alien — and other classic Easter eggs

Highlight any object in your layout. Press either ⌘ -Option-*Shift*-K or ⌘-Option-Shift-Delete. (In versions before 3.3, it was ⌘-Option-K.)

Strange But True

Out walks Quark the Alien, antennae focused, making clomping footsteps as he invades your document. He takes careful aim with his ray gun and blasts your picture or text box into oblivion. (We know some editors who greatly enjoy importing a photo of their boss into a Quark picture box and then using the spaceman to vaporize the picture.)

Also, press Option and choose About QuarkXPress from the Apple menu. Then ⌘-Option-Shift-click the window. Presto: a picture of the programmers!

One note: The ⌘-Option-K key combination also happens to activate Apple's CloseView control panel (which provides a magnified view of the screen, for visually impaired). If you have CloseView installed, and you're running QuarkXPress 3.2 or earlier, you may not be able to coax the Quark alien to make an appearance.

By the way, if you have QuarkXPress 4, our friend Quark the Alien has a buddy. Make Quark the Alien appear (as just described) five times in a row. The fifth time, you'll get to meet the alien's little friend!

Instant paragraph format copying

Worth
Learning
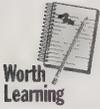
After you format a paragraph, you can instantly transfer that same formatting to any other paragraph with one click.

First, select the unformatted paragraphs. Then Option-Shift-click a paragraph that *has* been formatted. That's it!

Keep your page numbers straight

When you're designing a document that will ultimately be folded into shape, keeping track of the page numbers can be a mathematical nightmare.

It's much easier if you create tiny annotative text blocks, each showing what the page number *really* is, and pop them out on the pasteboard. Figure 18-16, we hope, makes this trick clearer.
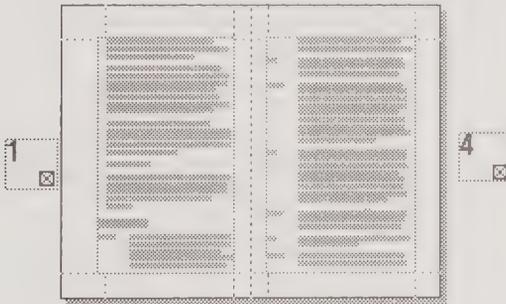
Figure 18-16: Put floating text blocks out on the pasteboard. They help you figure out which page will be which when the document is finally printed and folded.

Zoom to your satisfaction

You don't have to make do with the standard degrees of magnification. With this shortcut, you can specify a *region* of the display to fill your screen, regardless of what amount of magnification is required.

Press the Control key. (This switches you to the Magnifying Glass, regardless of which tool is currently selected.) Then just drag diagonally across the area you want to see more clearly. When you release the mouse, the area you selected will fill your monitor. Quark's zooming capabilities max out at 400 percent, but plug-ins from Extensis and A Lowly Apprentice Productions can boost magnification to 1,200 percent.

Faster EPS drawings

This is a neat secret—but it got us into deep trouble.

Mac Basics

An *EPS* (encapsulated PostScript) graphic has two parts. First, there's the invisible part, which consists of complex PostScript-language instructions to the printer. And, for the benefit of us humans, there's a PICT file (a graphic image) that appears on the screen.

The reason EPS graphics take so long to draw in Quark is that the program is attempting to interpret the PostScript instructions for the most accurate possible display. Here's a trick: Use the Measurements palette to rotate each EPS graphic some minuscule amount—.01 percent, for example. Quark is forced to display the PICT file instead of worrying about the EPS instructions. The graphic will always redraw much more quickly—especially if it's a complex one.

However, rotate the graphics *back* into position when you're ready to print. Otherwise, the PostScript interpreter aboard your laser printer or imagesetter will spend extra time performing all the recalculations necessary to render the image with the minute rotation. We forgot to mention this in earlier editions of this book and heard from more than a few furious readers who tried this little trick—and had to wait hours for their rotated graphics to print.

How to rescue a damaged Quark document

Sooner or later, it happens to every long-time QuarkXPress user. You double click on a Quark document but it doesn't open. Instead, you get the dreaded Bad File Format error message. It means your file is hopelessly corrupted, beyond recovery.

Strange But True

Or is it? As it turns out, some "bad file format" problems have to do with corruption that crops up in the graphics imported in the Quark document. Sometimes, one of the images that you've pulled into a picture box is the source of the problem.

Here's one tried and true way to recover such a document. First launch Quark—the application itself, not the troubled document. Open a Quark library (make one if you don't have one already) and expand the library palette so that it fills the screen. Then, use the Open command in Quark to open your document.

You've just managed to open your document without displaying any of the imported pictures—they're hidden behind the library palette, so the Mac doesn't have to draw them. Now, with the library palette still filling the screen, open Quark's General Preferences dialog box and turn on the Greek Pictures checkbox. Now close the library. With Greek Pictures turned on, plain gray placeholders appear instead of your imported graphics. Delete the contents of all the picture boxes, then save a new version of your document.

With any luck, scrapping the corrupted images will have solved the problem. Just re-import the art and you're back in business.

Force justify those titles

Both QuarkXPress and PageMaker include a text alignment option called *force justify,* which stretches a line of text the full width of the column — even if it contains just one word.

Generally, this isn't very useful or desirable. But we've found one way to use force justification very effectively — to create titles and headlines. Type a one-word title, apply forced justification, then hit Return. The letters of the word are instantly re-positioned, so that the text is evenly stretched across the entire text box, just as a headline should be.

If your title contains more than one word, however, this approach doesn't work. You'll simply end up with words with normal letter spacing — and huge, ugly white gaps between each word, as shown in the top half of Figure 18-17.

Contest Winner The way to get around this, as suggested by free book winner Paul McGrane, is to insert a space in between *every* letter in the title (and *two* spaces between each word). Because every letter is now treated as a word, you end up with a perfectly spaced headline (see Figure 18-17).

PORTLAND   GALLERY

PORTLAND GALLERY

Figure 18-17: Force-justifying a multi-word line of text in Quark or PageMaker produces ugly word spacing, as the top example shows. But if you add a space between every letter, the result is an evenly spaced title or headline.

Page Design and the World Wide Web

Programs such as QuarkXPress and PageMaker are primarily designed to create documents that eventually get printed on paper — newsletters, magazines, books, and so on. In recent years, however, the growing popularity of the Internet has given rise to a whole new kind of publishing — online publishing. Log onto the Internet and you'll find hundreds of online journals, magazines, and newsletters published exclusively on the World Wide Web (see Chapters 25 and 28). And many traditional print publications (such as *Time*, *Sports Illustrated*, and *Macworld*) now have Web-based counterparts as well.

Of course, designing and laying out pages for a printed magazine is quite different from designing Web pages, which must be transmitted over telephone lines and viewed on a computer screen. While page-layout

programs provide a relatively simple WYSIWYG interface for designing pages, Web publications must be encoded using *HTML* (Hypertext Markup Language), the standard language of the Web. (For more on using HTML and the Web, see Chapters 25 and 28.)

The good news for users of PageMaker and QuarkXPress is that the market is crawling with tools that convert existing PageMaker and Quark documents into HTML documents, ready for publishing on the Web. PageMaker 6.5 includes commands that let you export formatted text as HTML. In the Quark world, Xtension programs such as BeyondPress (Extensis) and HexWeb XT (HexMac) let you turn Quark pages into Web pages without having to reformat every bit of text from scratch. These programs preserve much of the styling in your original documents and even convert the EPS and TIFF graphics in your layouts into GIF and JPEG files — the graphics formats most commonly encountered on the Web.

As Web publishing grows more popular, expect to see even better plug-ins that allow you to convert traditional layouts into Web pages.

<div align="center">

Chapter 19

Number and Data Crunching

</div>

By this chapter title, we mean two things: spreadsheets and databases. More specifically, we pretty much mean Excel, FileMaker, and the AppleWorks/ClarisWorks equivalents thereof.

Excel isn't just the best-selling stand-alone spreadsheet — it's practically the only one left for the Mac. As for databases, FileMaker is not only the best-seller, but it's one we, frankly, can understand. For information on programmable relational databases such as Fourth Dimension, Helix, and Omnis, we merrily refer you back to your bookstore's Mac book section.

Spreadsheet Basics

Mac Basics

We won't waste pages showing you the basics of setting up a spreadsheet. We assume you already know that you let the program do the math for you. Click in any cell in the spreadsheet; type either a number or a formula that adds up numbers in other cells.

You probably already know the value of the Sum button in Excel, which saves hours of picky typing. Adding a column or a row of numbers is as easy as one click, as shown in Figure 19-1.

We're going to trust that you already know that when you copy and paste selected cells, Excel does a weird thing. Even after you paste, the shimmering outline *still* runs around the selected cells. It can be a little unnerving if you're used to Mac programs in which selected material gets *deselected* as soon as you click elsewhere. The point is, we suppose, to indicate that you can paste this same material again elsewhere. But, as you probably know, you can't get *rid* of that shimmering selection outline until you press ⌘-period (or make another selection, for example).
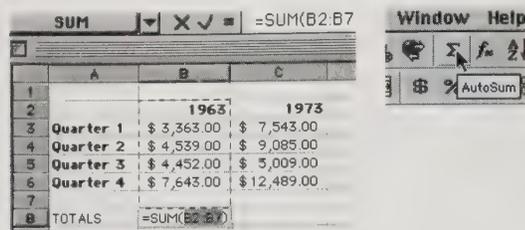
Figure 19-1: You no longer need to add up figures by typing = SUM(); Excel does this for you. Click the cell at the bottom of a column and click the Sum button (left). Excel proposes adding up the entire column (middle). If it inadvertently selects the column head, drag through the numbers you *do* want added, and then press Enter.

Naturally, you know how to create a chart: Highlight some cells; then click the Chart Wizard button and choose the type of chart you want to create from the Chart Wizard dialog box. (If you're running Excel 5 instead of Excel 98, you'll have to drag diagonally across the spreadsheet first, to indicate where you want the new chart to appear, and *then* the Chart Wizard dialog box will appear.) If you want to customize the chart, keep clicking the Next button in the resulting dialog box and choose any of the formatting options presented. If you need something quick-and-dirty, and don't need to fuss with all the options, click the Finish button (or, in Excel 5, the > button). Excel fast-forwards through all those options and plops the finished chart into your spreadsheet.

The last thing we're sure that you already know is how to enter a batch of numbers into specific cells in an efficient manner. Highlight the cells *first.* Then, after you enter each number, press Enter, and Excel will select the next cell in the selection for editing, whether it's to the right of or below the first one. (If you don't preselect the cells, then pressing Enter leaves the first cell selected instead of advancing to the next.)

By the way, if you don't want to hassle with selecting the cells first, try this method: Don't use the Enter key at all. After you enter each number, press the Return key instead. Excel will enter the number *and* move to the next cell down automatically. Finally, you can enter numbers by pressing any of the arrow keys. If you type in a number, then press an arrow key, Excel will enter the number and jump to the next cell, in whatever direction you've specified.

Excel Secrets (and ClarisWorks)

By the way: When Apple retook custody of ClarisWorks in 1998, it renamed the program AppleWorks. We have no way of knowing which name your version has; for now, we trust you'll figure out what we mean when we say "ClarisWorks" or "AppleWorks/ClarisWorks."

Instant completion of a row or column

Excel is exceptionally bright about doing your typing for you. If you have *any* kind of sequence — Jan, Feb, Mar; 1960, 1965, 1970; 1, 3, 5, 7, 9 — you only need to put in the first two and let the program do the rest.

Here's how it works. First, type the beginning entry of the series (Jan, for example), as shown in Figure 19-2.
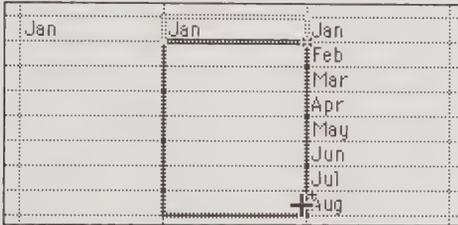
Figure 19-2: Type the beginning one or two entries in the series (left) and then click the cell. Grab the little square at the lower-right corner of the highlighting rectangle, and drag it down or across (middle). When you let go, Excel automatically generates the next items in the list.

Select these one or two cells. Then grab the tiny square handle at the lower-right corner of the selection rectangle. Drag it downward or rightward into new empty cells. Excel automatically fills in the logical next values!

If you enter 1:00 p.m. and 1:30 p.m., Excel will generate 2:00 p.m., 2:30 p.m., 3:00 p.m., and so on. If you enter 1st Street and 2nd Street, Excel will fill in 3rd Street, 4th Street, and so on. Type in Apartment 3 and Apartment 6, and you'll get Apartment 9, Apartment 12, and Apartment 15. This is one *smart* program.
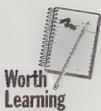
For even more options when dragging out a series, try holding down the Control key while dragging the Fill handle, as described previously. Excel will present a pop-up menu of options that provide even greater control over how the cells are filled. For example, if you type *Mon* and *Tues* in the first few cells and then Control-drag downward, the pop-up menu that appears will let you choose between filling the remaining cells with all the days of the week or just weekdays, without Saturday and Sunday!

(ClarisWorks' Calculate menu offers a *somewhat* similar feature: the Fill Special command. Take a look — you'll see what we mean.)

Instant completion II: Make up your own rules

Excel's ability to automatically complete a row or column, as described in the previous secret, is cool — but it gets even cooler when you realize you can have Excel fill in cells with more than the names of months or the days of the week. Actually, it can automatically fill rows and columns with *any* list of values that you want — cities, product lists, names of personnel, whatever.

For example, suppose you have a company with offices in Portland, New York, Duluth, Los Angeles, Dallas, and Chicago. Whenever you do sales reports in Excel, you probably find yourself filling in cells with the names of each city — over and over again. Wouldn't it be nice to turn those cities into a custom list, so that Excel will fill them in for you?

To set this up, first type all such entries somewhere in a spreadsheet. Choose Tools ⇨ Preferences ⇨ Custom Lists tab; then click the small button just to right of the "Import list from cells" field (see Figure 19-3). The Preferences window collapses and you jump back into your spreadsheet.

Now select the cells containing the list data you want, and then click the button again to return to the Preferences window. Finally, click the Import button.

That's it. Excel has now memorized your list. From now on, all you have to do is type *Portland* into one cell, grab the little square at the lower-right corner of the cell's rectangle (exactly as described in the previous secret), and drag down or across into the adjacent cells. Excel fills the cells with the other items in your list.
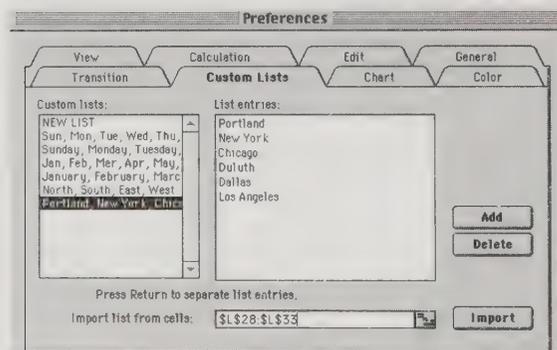
Figure 19-3: Teach Excel to fill in cells with lists of your own choosing.

The two personalities of the arrow keys

Spreadsheet-software designers have always faced a tough decision. When you press a left-arrow or right-arrow key, what should happen? Should the insertion point walk from character to character *within* a cell? Or should it leap from cell to cell?

In AppleWorks/ClarisWorks, you specify which behavior you want in the Preferences dialog box. Excel, on the other hand, gives it to you both ways. It starts up in the latter mode (Enter mode), where the arrow keys move from cell to cell. If you press ⌘-U, however, you're in Edit mode. In this mode, the arrow keys move the cursor from side to side within *one* cell.

Keep in mind, though, that you don't *stay* in Edit mode; as soon as you edit another cell, you're back in Enter mode again.

TRUE FACT

Introducing Mr. Spreadsheet

Ever wonder why Excel appears in the Application menu as *Microsoft* Excel?

It's the law, that's why.

Back in 1985, Microsoft personnel were strongly divided over what to call the new Macintosh spreadsheet program they had under development. The working name was Odyssey. But several other names were also under consideration, including Microsoft Plansheet, Number Buddy, and—believe it or not—Mr. Spreadsheet.

When the program was finally rolled out in May 1985 (at a press conference in Central Park's Tavern on the Green), it bore an altogether different name, one dreamed up by a Microsoft district manager: Excel.

This almost immediately resulted in a lawsuit. Manufacturers Hanover Trust operated an automated banking service also called Excel. Microsoft was accused of stealing the name. The outcome of the case: The program's official name had to be changed from Excel to Microsoft Excel.

And so, in harmony with that decision, the Application menu lists the program by its full name: Microsoft Excel.

In fact, here's another tip: When you're in Edit mode (where the arrow keys move the cursor one character at a time within a cell), press ⌘-arrow to make the insertion point jump one *word* per keypress, instead of one letter.

Several lines of type in one cell

Here's something we bet you didn't know that you could do: Type multiple lines of text into one cell (see Figure 19-4).

	Citibank CD (matures 2/96)	Citizen stock purchase, 12/90	Dad's pension plan benefits
13	2123	100	0
14	2145	102	0
15	2166	103	0

Figure 19-4: Excel lets you wrap text within a single cell!

Here's the secret. In Excel, select the cells where you'll want text to wrap. Choose Format ➪ Cells ➪ Alignment tab. A dialog box appears. Select Wrap Text and click OK. Now you can type into those cells; when you press Enter, the row height will change to accommodate the new text as necessary. (If you want to force a line break, press ⌘-Option-Return.)

In ClarisWorks, select the cells and choose Format ➪ Alignment ➪ Wrap.

There's one caveat, both in Excel and ClarisWorks: If you change the type style, the row height won't increase or decrease to accommodate the different font or size. You must cue it to do so by double-clicking the line below the row heading, as shown in Figure 19-5.

Figure 19-5: If you change the size of text in Excel 5 or ClarisWorks, the row height won't change. To fix the situation, place the cursor on the line below the row heading (at left, just below row 12) and double-click. The row height changes as needed (right).

The hidden Revert command

If you examine Excel's File menu, you may be disappointed to find that it has no Revert command, for use when you've made a mess of a file and want to restore the last saved version. Ah, but there *is* a Revert command — it's just hidden.

Simply use the Open command in the File menu and reopen the very same document that's already on the screen. You'll get a little alert box asking if you want to revert to the last saved version; you know what to do.

A word about curly quotes

Our advice on curly quotes: Don't use 'em in a spreadsheet. Even super-advanced spreadsheets such as Excel aren't smart enough to recognize typographically correct "smart quotes" in formulas. If you use quotes in a cell (to designate a text entry instead of numbers, for example), Excel will choke on them.

If you have a program like QuicKeys that's set to convert regular uses of the quote key into curly quotes, define two QuicKeys within Excel's own keyset that *reverse* the effects of the Universal keyset. (Use an Alias-type QuicKey. Define a single quote to *type* a single quote.) See Figure 19-6.
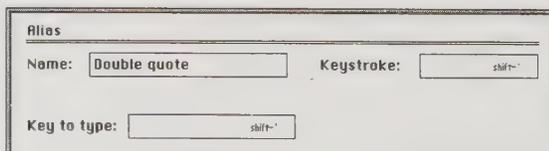
Figure 19-6: This is the QuicKeys window where you define a QuicKeys Alias. It looks pretty silly here — you're asking it to type just what you've typed — but it's the right way to prevent curly quotes within a single program.

Or don't use QuicKeys at all; use SmartKeys, included on the CD-ROM with this book, instead. Just click the control panel's application button to exclude Excel from the "quotification" feature.

Auto-size columns (ClarisWorks, too)
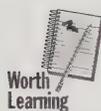
This is a great feature of both Excel and AppleWorks/ClarisWorks, but it's hidden. If you double-click a column header line at the top of the window, the column neatly snaps to the exact size to contain the longest entry in the column (see Figure 19-7).
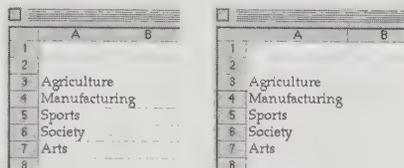
Figure 19-7: A double-click on the right-hand column header line (left) automatically resizes the column so that it just fits the text in it (right).

If you've selected *multiple* columns, double-click any *one* of their header lines. Excel/ClarisWorks will resize *all* the columns to exactly contain their contents.

How to see where the page will be cut off

Under normal circumstances, you can't see where your spreadsheet's page breaks will be in Excel. You may be the victim of a rude surprise when you print out a large sheet and find that the last column didn't fit onto page one.

But there are a couple of quick solutions. In Excel 98, you can choose Tools ⇨ Preferences ⇨ View tab ⇨ Page Breaks ⇨ OK. (In previous versions of Excel, choose the Options command to find the Automatic Page Breaks checkbox under View options.) The page breaks will appear as dotted lines right on the spreadsheet.
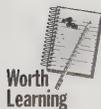
Of course, this tip only allows you to *see* the page breaks — not adjust them. But in Excel 98, you can also switch to the wild new Page Break Preview mode (choose it from the View menu), where you can actually drag page breaks (the thick blue lines) into new positions — *and* edit the content of the spreadsheet, all in the same window. In Page Break Preview, the page breaks. Drag a page-break line, and you'll immediately see how the changes will affect the pagination of your data.

Paste only the values (ClarisWorks, too)

Here's an old chestnut that bears repeating. Normally, when you copy and paste cells, you simply create a new copy of the originals — formulas and all. It's often handy to ditch the formulas and just keep the results.

To divorce the two, copy the cells and click where you want to paste them. Instead of choosing Paste from the Edit menu, choose Paste Special. In the resulting dialog box, click Values and click OK.

Instantly convert to values

Instead of using the Paste technique in the previous secret, you can also instantly convert Excel cells so that they contain only the *result* of the formulas they contain (thus wiping out the formula).

Select the cells, and then click in the formula bar (or press ⌘-U). Then press on your F9 key (if you have an extended keyboard) or ⌘-equal sign (=).

Select nonadjacent cells

You may already know that you can press the ⌘ key to select physically separate (noncontiguous) cells in Excel. This technique is great when you want to format a bunch of different columns at once — make them all bold, for example (see Figure 19-8).

Figure 19-8: Select nonadjacent cells.

The real secret, though, is that you can use this feature to create *charts* that only use certain lines of data. Remember, the Chart Wizard only bothers to plot the points whose cells you have selected.

Selecting multiple worksheets

Everyone knows how to select multiple cell ranges in an Excel document, but did you know you can select multiple *worksheets* by Shift-clicking the worksheet tabs at the bottom of the screen? (Shift-click to select adjacent worksheet tabs and ⌘-click to select non-contiguous tabs.)

Speed Tip

By selecting multiple sheets this way, you can delete a whole set of worksheets simultaneously. Or you can turn off gridlines in an entire workbook instead of on a sheet-by-sheet basis. And you can perform searches and spell checks on a whole workbook at once. (Normally, Excel restricts Find and Replace operations and spelling checks to the active worksheet.)

Prevent Excel from turning 3-12 into March 12

Excel, in an effort to be helpful, automatically turns anything you type into a cell that can possibly be construed as a date *as* a date. If you type 3-12 into a cell, as soon as you press Enter, Excel displays *12-Mar*. That's all fine, until the day comes when you really *want* the cell to say 3-12.

The solution is quick and simple: Enter it as a *text string*. To do so, all you have to do is prefix the entry with an apostrophe (in other words, *'3-12*). The apostrophe doesn't actually appear in the cell — it does its magic behind the scenes.

Excel and fractions: Some nontrivial trivia

Here's an extension of the previous secret. If you type 2/3 into a cell, Excel immediately reformats it as 3-Feb; it thinks you intended to type a date. Unless, of course, what you type *can't* be a date, such as 18/3; in that case, Excel leaves 18/3 in the cell as a text string.

But if you type a *zero* and a space in front (for example, **0 2/3**), then Excel realizes that you really mean a fraction. If you type **0 18/3**, therefore, Excel puts a 6 in the cell.

Excel's toolbar/palette continuum

Excel 98 has 13 toolbars. Opening them all can make you feel downright claustrophobic. Fortunately, as in any Office 98 program, you can turn any one of those toolbars into a floating palette by double-clicking it. Drag any of the palettes to the edges of the screen and they become toolbars, anchored to the top, bottom, or sides of your monitor. (Excel 5 toolbars work the same way.)

You can also press Control while clicking any Excel toolbar or palette to open a hidden Toolbar menu, which lets you selectively open and close the toolbars you need — or jump directly to the Customize dialog box to create your own toolbars.

Instant access to invisible menu bars

Excel is riddled with contextual pop-up menus. (In fact, Excel had them long before Apple decided to make them a standard part of Mac OS 8.) If you press the Control key (in Excel 98 or 5.0) and click a cell or selected region or a chart, you get a powerful, handy, pop-up menu springing out of your cursor (see Figure 19-9). Depending on what you click (a chart, a line, and so on), a different magical menu appears, listing appropriate editing commands. (In Excel 4, click with ⌘ and Option held down instead.)

We *prefer* these hidden menus to the actual menu-bar menus. First, one of these menus can appear anywhere you click, which is a godsend when you're editing a huge spreadsheet and you're miles from the top of the screen. Second, this menu's commands are tailored to the spot you clicked; it gathers from several different menus all the most useful commands in one handy place.
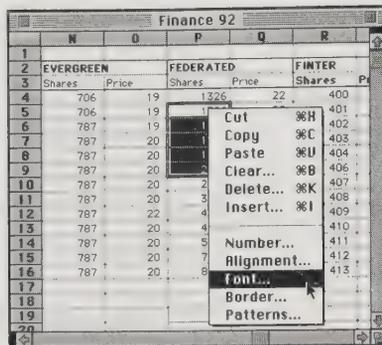
Figure 19-9: The Edit menu that springs out of nowhere.

Save time: Don't bother finishing the parentheses!

Speed Tip

Excel automatically adds a closing parentheses if you've typed an open parentheses as part of a formula. All you have to do is press Enter; Excel does the rest.

Actually, Excel 98 goes much farther. It watches for many other typical formula-entry mistakes: entering X instead of *, extra spaces, mismatched quotes, transposed cell names (such as 1A), and so on. It doesn't, however, make such corrections on the fly; instead, it asks you for confirmation first. In activities as critical as number-crunching, Microsoft evidently thinks you can't be too careful.

Use the F8 key for selecting regions

By F8, we mean "function-key 8" at the top of an extended Mac keyboard. (If you have a keyboard without function keys, such as the one on an older PowerBook, you'll have to skip these shortcuts.)

When you press F8, you see the word EXT appear in the right half of the Excel status bar. This means you're in Extend mode. Wherever you click the mouse or however you use the arrow keys (or navigation keys such as Home or End), Excel will behave as though you're pressing the Shift key. What *that* means is that you're now selecting everything between the originally selected cell and the cell to which you're moving.

If you press *Shift*-F8, on the other hand, the word ADD appears in the status bar. Then you can drag across various regions of your spreadsheet. With each drag, you add new, noncontiguous regions to the selection, exactly as though you were pressing the ⌘ key.

You can also use Shift-F8 to make non-contiguous selections from the keyboard — without using the mouse at all. First, hold down Shift and use the arrow keys to make a selection, then press Shift-F8. Next, use the arrows keys alone (without the Shift key) or the Page Up, Page Down, Home or End keys to move to

another part of the spreadsheet, and then repeat the process: First, make your selection using Shift along with the arrow keys, then press Shift-F8. Excel will keep all the non-contiguous cells selected.

Page-numbering tricks

Excel's method of setting up custom page-numbering has never been a model of intuitiveness. To get started, choose File ⇨ Page Setup ⇨ Header/Footer tab. If you want to use one of Excel's pre-set page numbering options, the rest is easy — just choose the style you like from the Header (or Footer) pop-up menu.

But if you want to set up a custom numbering scheme — starting with a specific number, for example — it's more work. Click the Custom Header button (or the Custom button in version 5) and then click in the right, center, or left text box. (In version 4, you don't have to click the Custom button; you'll see the text boxes right away.) Next, click the page-number icon (with the # symbol on it). The notation *&[Page]* appears in the text box (or, in previous versions of Excel, *&p*). This represents the page number.

If you add a plus or minus symbol and an additional number (such as *+2* in Figure 19-10), then you can create a *page number offset*. That means you can force Excel to start numbering the pages with a number other than 1. (That's handy if you need to print out an insert for an existing report, for example.)

Whichever number you type here gets added to 1. So to start numbering with page 5, you put **&[Page]+4** in this box. To start numbering with zero, use **&[Page]-1**.
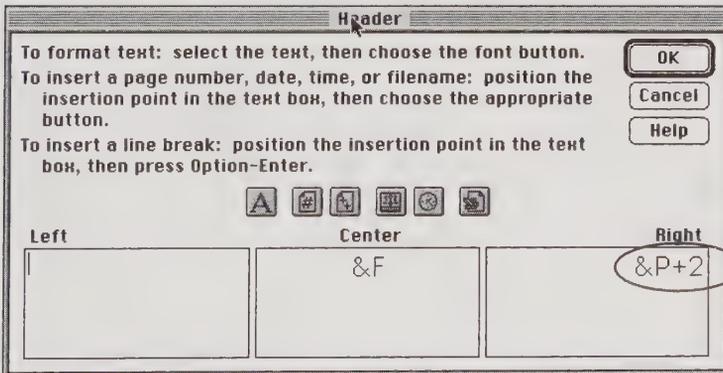
Figure 19-10: The circled notation means: "Start numbering my pages with the number 3, even though it's the first page."

Show the formula in the cell

After you've typed a formula into an Excel cell and pressed Enter, you normally see only the result in the cell. If you'd rather have your entire spreadsheet display the formulas themselves, press ⌘-tilde (~). In a blink, every cell shows the actual formula instead of the result (see Figure 19-11).
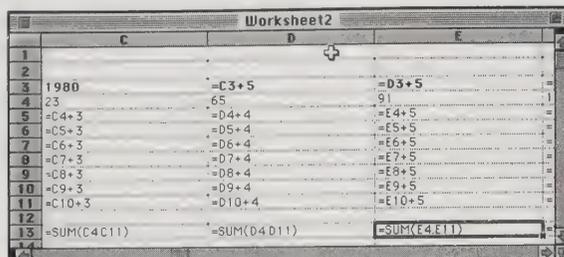
Figure 19-11: With one keystroke, you can make your spreadsheet show the formulas in their cells instead of the results.

Don't be alarmed: Excel widens the columns substantially to make room for viewing the longer formulas. Press the same keystroke again to restore your spreadsheet to its usual state.

Insert rows and columns

You may already know the Option-key trick for adding a row or a column: Just Option-click the Excel row or column *header* to introduce a new blank row or column (see Figure 19-12). In Excel 98, this action is accompanied by a gorgeously smooth animation (of your existing rows or columns moving apart) and a really cool sound effect (unless you've turned off sound effects).
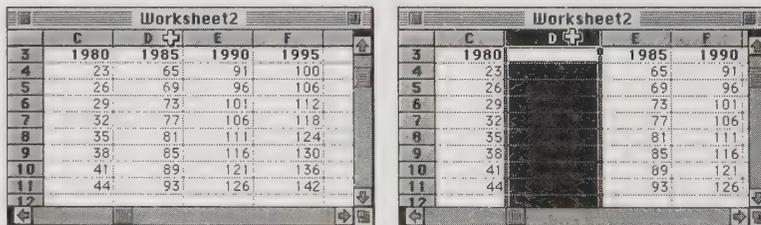
Figure 19-12: If you Option-click the header of column D, you insert a new blank column. All existing columns get shoved off to the right.

Speed Tip

You can extrapolate this trick to perform some very useful stunts. Excel will insert a blank region identical to *any* group of selected cells. To insert a square of four cells, *select* a square of four cells while pressing Option. The four you select will be pushed to the right to accommodate the four new ones.

Select in Microsoft dialog boxes

Microsoft dialog boxes are especially handy because you don't have to use the mouse to trigger commands in them. You can usually type the letter—you don't even have to use the ⌘ key—that begins the choice you want. In Excel 98, it's

easy to figure out which key triggers each command — just hold down the ⌘ key for a moment when the dialog box opens. The "trigger" key for each command is underlined, Windows-style (see Figure 19-13).
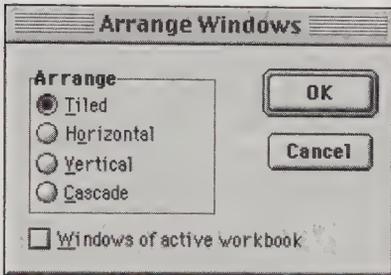
Figure 19-13: Type one letter of a button or box to activate it.

In the dialog box pictured in Figure 19-13, for example, you can see why T activates Tiled. But why is O the trigger for Horizontal? Because H is tied up by the Help button, of course!

A corollary: In dialog boxes that have fields where you can type in information (such as the Print dialog box), you can't just type unshifted letters to trigger dialog box options. In those dialog boxes, you have to add ⌘ (⌘-O for Options, ⌘-C for Cancel, and so on).

Stop Excel from stopping leading zeros

If you type a number that begins with a zero, Excel automatically lops it off. Type in ZIP code 06520 (New Haven, Connecticut), and Excel stubbornly displays it as 6,520.

Here's the solution. Select the row or column containing these numbers. Choose Format ⇨ Cells ⇨ Number tab. In the Category field click Custom; in the Type field (or version 5's Code field), type **00000** (all zeros) and click OK. You've just forced Excel to display a minimum of five digits for every number in the selected row or column.

Or just format those cells as text!

These tips are irrelevant in Excel 98, by the way; its Cells dialog box offers a Zip Code — or even Zip Code +4 — option in the Special category. And while we're looking at the Special category — note the automatic Phone Number and Social Security formats. Make a mental note; there will come a time, we know it, when you're required to type in hundreds of phone numbers. Do it in Excel 98, and you won't have to type any dashes, parentheses, or spaces as formatting.

Use the formula bar from the keyboard

As all power users know, the less you have to use the mouse, the more efficient you can be. In Excel's case, you almost never have to use the mouse.

One seemingly prominent exception: To edit a formula, you have to click the formula bar, right?

Nope. Use the handy shortcut ⌘-U to jump up there. Then use the arrow keys to tiptoe through individual characters, or use the ⌘-arrow key to jump through words or cell names. Press Shift as you use the arrow keys to highlight text, and then press Enter when you're finished editing. (This works in Excel 98, but the insertion point continues to flash in the cell itself—where you do the editing—rather than in the formula bar.)

Turn Excel into Excel for Windows

Strange But True

We think this is one of the wildest Excel Secrets of all time: Press the slash key (/) or F10 with an Excel spreadsheet open and suddenly, without warning, you're catapulted into—Windows!

More precisely, the program switches to emulating Lotus 1-2-3, the ancient but popular DOS spreadsheet. You get menus and dialog boxes with keyboard shortcuts indicated by a single underlined letter in the name of each menu and command. Instead of using the mouse, you can open a menu by typing the appropriate one-letter shortcut, à la Windows. Each command on each menu also has a one-letter shortcut (see Figure 19-14). The 1-2-3 emulation disappears as soon as you actually perform a command.
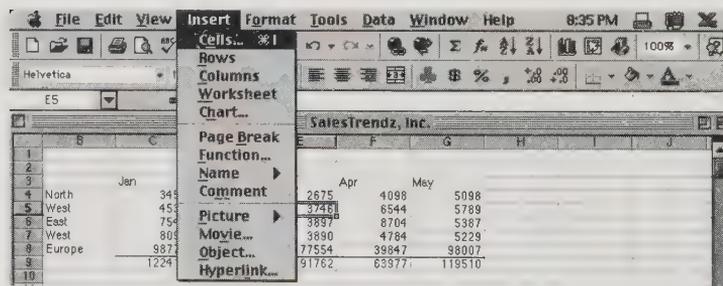
Figure 19-14: What's this? Excel for Windows? No. It's Excel after you've popped it into Alternate Menu mode.

By the way, you don't have to use the slash key to jump into this Windows mode. The slash is Excel's default setting, but you can change it. Just choose Options ⇨ Workspace and, in the resulting dialog box, type a new key into the Alternate Menu Key field.

How to make those cool picture charts

You can use Excel to make charts that use icons as the bars of a graph, just like the pictographs you see in *USA Today* (see Figure 19-15).
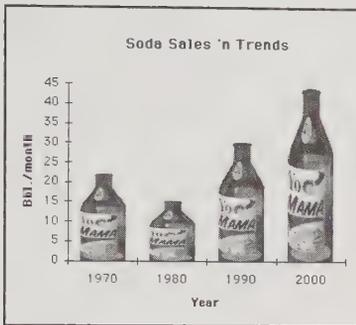
Figure 19-15: Dress up your charts — just find a good graphic, select a bar, and paste away.

All you have to do is copy your chosen bar-graph picture; double-click your Excel chart; select the column you want (which, in version 4, requires a ⌘-click); and paste! Who knew?

For additional pictograph options, double-click one of the columns (and in Excel 98, then click the Fill Effects button). This opens a window where you'll find options to specify whether you want each picture to be *stretched* or repeated inside each bar.

Drag more data into a chart

So you've completed a slick-looking chart for a presentation — and then realize you have another series of data you need to include in the chart. You don't have to start over. With Excel 5 and 98, you can add a new data series to an existing chart by selecting the cells containing the series and dragging them *onto* the chart. (Use the border of the selected cells as a handle.) The new data gets plugged into your chart automatically.

Better 3D chart previews

If you think Excel's 3D chart styles are cool, wait'll you try this: Hold down the ⌘ key when you rotate a chart (by dragging its corner handle). Instead of the bare wire frame view you normally get, you'll be able to see all the bars, cylinders, or cones that appear within the chart as you rotate it (see Figure 19-16). This way, you can preview the effects of the rotation *before* you release the mouse button.
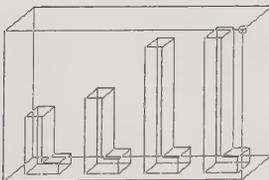
Figure 19-16: Pressing the ⌘-key while rotating a chart gives you a better preview of how your 3D bars and cylinders will look.

Lock out unused cells

When you think about it, you usually use only a fraction of the cells that appear in a spreadsheet. You may have extra rows placed under the title of a chart, or extra columns between groups of data. So why not lock out all the unused cells? This way, you can use the Tab key to move between only those cells that are actually used in your document.

To do this, select the cells you want to keep editable. Choose Format ⇨ Cells ⇨ Protection tab, and deselect the Locked check box. Then, choose Tools ⇨ Protection ⇨ Protect Sheet to lock out all the *other* cells. When you return to your worksheet, the Tab key will take you only to the cells you left unlocked.

MACINTOSH SECRETS

Excel's amazing one-button custom charting
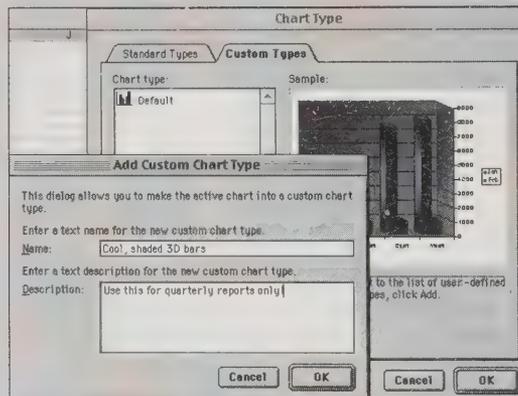
This secret can revolutionize your Excel chart-making career.

Think of the time you spend fiddling with charts — switching fonts, dragging the legend into the right spot, changing the colors, and so on. Instead of repeatedly tweaking Excel's built-in chart formats to suit your taste, why not create and save your *own* custom ready-to-use chart styles?

To do this in Excel 98, create a chart and change its attributes — colors, styles, fonts, whatever — so that it looks exactly the way you want. Then, with the chart selected, choose Chart ⇨ Chart Type ⇨ Custom Types tab; you'll see your chart displayed in the little preview window. Click the User-defined radio button, then click Add. Type in a name and description and click OK.

Finally, if you want your custom chart to become Excel's default, click the Set as Default Chart button in the Chart Types window. From now on, your chart style is the one that Excel will use to build every new chart.

(If you're running Excel 5, the setup for this is a little different: Choose Tools ⇨ Options ⇨ Chart tab ⇨ Use Current Chart, and then give your chart style a name.)

Once you've followed the steps above, you're finally ready for this most glorious of Excel secrets: One-key instant charting. Select the data you want to chart, then press F11 — watch in awe as Excel automatically switches to a new worksheet and creates a new chart according to your exact specifications. No Charting Wizard. No dialog boxes.

The miraculous Forms command

If you use Excel to manage database-style lists, organized by columns, you can save yourself hours of scrolling by editing data using the Form command. When you choose Tools ⇨ Form, all the fields in your database appear in a single dialog box, making it much easier to enter data. You can use this dialog box to search your data, too. Click the Criteria button, type the item you're looking for into one of the fields in the dialog box, and click Find Next.

(You can add a password when you activate protection, if you want.)

Two great AppleWorks/ClarisWorks spreadsheet shortcuts

No, the ClarisWorks spreadsheet isn't Excel — but then, it doesn't require 11MB of RAM and 70MB of hard drive space, either. And it certainly has charms of its own. For example, ClarisWorks offers a couple of neat navigation/cell management shortcuts:

Once you've highlighted some cells, Option-drag to duplicate them (or drag normally to move them). In other words, Macintosh Drag-and-Drop works great. (This same trick works in Excel 98.)

After highlighting some cells, ⌘-Option-click anywhere else on the spreadsheet. The highlighted cells move — instantly — to the new click location. This trick (which works in the ClarisWorks word processor, too) is actually better than Drag-and-Drop because you don't have to keep the starting and ending locations close together. You can scroll for miles before ⌘-Option-clicking, and the highlighted material (wherever it is now) will jump dutifully to your cursor.

Excel and the Numbers control panel

Ever since the days of System 7.1, the Mac's system software has included the Numbers control panel, which lets you set the standard numerical and currency formats used by your system. Set the Number Format pop-up menu in the control panel to U.S., for example, and you see a $ in the Currency Symbol field. Change it to British, and you get £ instead.

Very nice, but we couldn't for the life of us think of anywhere that these currency settings actually showed up — until reader Richard Evans pointed out that these settings control how Excel formats numbers. When you apply the "Currency" number format to cells in Excel, the program uses whatever currency format (and decimal and thousands-punctuation) is established by the Numbers control panel. So *that* explains it!

Quicken

We'll make no bones about it: We *love* Quicken. This is one of the fastest, slickest, best-designed programs we've ever seen — and it's dirt cheap.

It's a checkbook/finance program whose supercharged report facilities are critical at tax time. With one command, you get an exportable or printable list of every expenditure you made in any particular category (home repair, auto expenses, and so on). When your monthly statement comes from the bank, you're one cool cucumber: Type in the new balance, click off the checks you see reported, and Quicken practically reconciles your checkbook for you. You do absolutely no math.

Quicken Secrets

Make your own keyboard shortcuts

Is there a Quicken command that doesn't have a keyboard shortcut? While pressing the ⌘ key, choose that command from its menu. You get a little dialog box in which you can specify a keyboard shortcut of your own choosing.

You can use the same trick to *change* the keyboard equivalent for a command that *does* have one preassigned, or even delete the keyboard equivalent altogether!

Scrollbar indicator

Speed Tip

When you're hunting for a transaction by its date, don't waste time scrolling through all your transactions and scanning the date blank. Instead, drag the box in the vertical scrollbar at the right side of the window. You'll see a little pop-out date indicator that rapidly changes as you slide up the scroll bar. It's a much quicker way to home in on a certain date (see Figure 19-17).

Figure 19-17: As you drag the scroll box, a handy counter sprouts out of nowhere. It shows where you'll be when you let go of the mouse.

Smaller, faster files
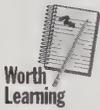
Every few months, use Quicken's "Save a Copy as" command (in the File menu). The resulting copy of your file will be much smaller, faster to open, and less prone to corruption.

Worth Learning

Type to select

The various Quicken lists work just like lists of files in the Finder. That is, if you type the first letter or letters of the items you're looking for, the window scrolls directly to it. Try it, for example, in the Category, Memorized Transaction, or Account lists.

Speed Tip

Let Quicken finish your transfer typing

To indicate a transfer of funds from one account to another, you're supposed to put the name of the other account in the first one's Category blank in [brackets].

If you have only two different accounts (or not very many, anyway), you can get by with just one *left* bracket and the first letter or two of the other account's name.

If you're transferring $100 from Savings into the Checking account that's open on the screen, for example, put 100 in the Deposit blank. Then, in the Category blank, just type **[s** and Quicken will expand it to the full *[Savings]*.

Speed Tip

Fast incrementing

Here's the feature that shows how much the Quicken programmers pay attention to detail. When you click in a field to type the date or the check number, press the + or − key (either on your numeric keypad or the regular keyboard) to increase or decrease the number that's already there. If you *hold* down the + or − key, the number starts to increase or decrease more rapidly the longer you hold the key. When you learn how naturally and conveniently Quicken increases the speed of number changing, you should be able to home in on a date that's several months away in only a few seconds.

Date-entry shortcuts

Quicken has some of the cleverest date-entry shortcuts we've ever seen. To enter the current date in any date field, you can type **T** (for Today). To enter the first or last day of a month, type **M** or **H** (MontH, get it?). Years work the same way—pressing **Y** enters the first day of the year, and **R** enters the last day of the year. Using these shortcuts, the appropriate dates are filled in instantly; you don't even have to press Return or Tab.

The beauty of online payment

One of our least-favorite aspects of adulthood is paying bills. As it turns out, one of our favorite aspects of the Mac is paying bills *automatically*—using Quicken in conjunction with your bank. For this service, you usually pay $10 per month or so—unless you choose a bank, such as Citibank, that doesn't charge at all.

In return, you gain a remarkable feature: When you enter a check in your Quicken registry, it's automatically a reality! Quicken, at the end of your session, dials a phone number, transmits your check information, and instructs the bank to issue a check to the payee (or, if you're paying a company, it'll make an electronic transfer), without any further effort on your part.

There are no envelopes, no stamps, and much less record-keeping. The real point here, though, is this: If you're not doing your banking electronically, you're wasting money. Stay with us here: when do you pay your bills?

If you pay the bill the day it arrives in the mail, it's off your desk, but whoever you're paying gets your money *today,* even though it's not technically due for several weeks. That money could have been sitting in your bank account, earning interest for you, instead of in their bank account, earning interest for them.

But if you wait until just before the due date to mail the check, sure, you keep your money as long as possible. But timing becomes critical; if your check arrives late, you're charged penalties, interest, late fees.

If you use electronic bill-paying, though, you can input the payment whenever you want, but the check doesn't get *sent* (by your bank) until the date you specify. Suppose your credit-card, mortgage, utilities, phone bill, cable TV, car payments, and Internet account bills total about $3,500 a month. If that money earns 5% interest in the bank, then in the three weeks between a bill's arrival and the due date, it could have racked up $10.02 in interest! Yes, $120.24 a year is what you *give away* to those money-grubbing corporations if you pay promptly. Do it electronically, and that's $120 a year in cold, hard cash you save.

Neat stuff to type into the Check Number blank

When your cursor is in the Check Number field for a particular transaction, you can type the letter **N** to automatically input the next higher check number. Or type an asterisk (*) to fill in the blank with the word PRINT (meaning that the check has yet to be printed). You can also type the letter **P**; that, too, enters the word PRINT, but only if the QuickFill feature is on.

Oops — wrong account!

It happens to everyone sooner or later: You enter some richly detailed transaction into Quicken—complete with 24 lines of Splits, an elaborate Memo and Description, and so on—only to find out that you just input it into Quicken's Savings register instead of Checking. And, of course, you can't copy or paste entire transactions. Nor can you drag-and-drop. Grrrrrr!

Fortunately, you don't have to re-input the whole thing — if you know the secret. Open Quicken's Calendar. There you'll see your transaction on the appropriate date. Double-click the calendar square; double-click the problem transaction; and, using the pop-up menu at the top of the resulting window, you can reassign it to a different account.

Your savings: Eight minutes of redundant data entry.

FileMaker and ClarisWorks

Now we move on to *data* crunching. FileMaker is the leading Mac database program. It strikes the ultimate balance between flexibility and simplicity. Its built-in, MacDraw-like mode lets you design elaborate graphic front ends for your data screens. Its lookup feature lets one file consult another file (one that's not even open) to retrieve a piece of information; versions 3 and later even let you set up live ("relational") two-way links to other files. You can share a file among computers on a network, even if some are Macs and some are PCs, and with version 4 you can publish a database on the Internet without even having to export the data from FileMaker.

The classic, magnificent aspect of FileMaker, however, is its layouts. You can rearrange the same information into as many different graphic arrangements as you want. Figure 19-18, for example, shows three different ways to organize the same set of mailing information — yet the list was typed in only once. And you can flip instantly among any of the three views.

Name	Joni Fleischman
Address	156 Carroll Ave.
Street	Bronx, NY 11023
Phone	(718) 932-9499

Hello! My name is:

Joni Fleischman

Dear **Joni Fleischman**

Hope all's well at your lovely home
on **156 Carroll Ave**.

Figure 19-18: Multiple views, same data.

Here are our favorite FileMaker secrets. We trust you know that a *field* is one blank for information (such as First Name) and that a *record* is a complete "card" of information (such as the entire mailing address).

Oh, and by the way, if you've ever used ClarisWorks, you know that its database mode is modeled very much on FileMaker. (Same original company, same interface ... no wonder!) Therefore, plenty of these tips apply equally well to both FileMaker and AppleWorks/ClarisWorks, as indicated.

FileMaker/ClarisWorks Secrets ——————————————

Record switching from the keyboard

Speed Tip

You wouldn't believe how often we get asked this question: is there any way to move from record to record without having to use the mouse to click on the flipbook?

And you wouldn't believe how many times we give the same answer: yes. Press Control-up arrow and Control-down arrow. (Pressing ⌘-Tab or ⌘-Shift-Tab works equally well.)

Keep records permanently sorted (ClarisWorks, too)

Strange But True

One frustrating aspect of FileMaker has remained through infinite incarnations of the program, right down to its present-day FileMaker Pro form: its maddening refusal to keep records sorted!

You can sort records in a number of ways. But if you reopen a file, or you return to a layout, chances are good that the records have all sprung back into their original out-of-order order. You can use the Sort command over again, but that's time-consuming.

Here's how to freeze your records into their sorted order. First, sort the file. Choose "Save a Copy as" from the File menu. Choose "clone (no records)" from the pop-up menu at the bottom of the Save File dialog box. Name the new, empty file something — Sorted List, for example.

Next, open that empty file you just created. From the File menu, choose Import/Export; from the submenu, choose Import Records. Select the original file. A dialog box appears, listing all the field names; just click OK.

You end up with an identical file, in which the fields are finally sorted for good. As you add new records, of course, they'll get out of order again (unless you read the pertinent secret that follows). But this cloning business is so quick that you can afford to repeat it every so often to keep things in shape. Furthermore, once you get familiar with FileMaker's built-in scripting, you can easily put together a little script that sorts your records, creates the clone file, and imports the data for you, automating the whole process.

How to make records go into sorted position

Of course, another way to keep records in sorted order is to *add* them in sorted order. The following technique only works on a freshly sorted database.

Suppose that you have three records called Cat, Dog, and Frog. If you want to insert a record called Elephant, click the *Dog* record to select it. Then choose New Record. On a sorted database, the New Record command always inserts the new blank record immediately *below* the currently *selected* record.

How to prevent a field from being left blank (ClarisWorks, too)

Choose Define Fields from the File menu (or, in ClarisWorks, the Layout menu) and double-click the field's name. Choose Validation from the pop-up menu, and then select the "not empty" checkbox, as shown in Figure 19-19). (In ClarisWorks it's called "Cannot be empty.") Click OK and then click Done.
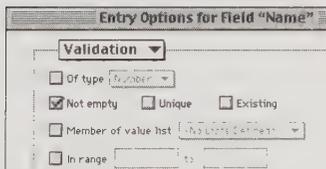
Figure 19-19: FileMaker will insist that every field be filled if you click this checkbox.

How to find completely empty records

Choose Find from the Select menu. Type an equal sign into every field. (You're searching for a match in which every field is equal to *nothing.*) Click Find. Only completely empty records will appear. If this is something you have to do periodically, you can easily write a script using FileMaker's built-in ScriptMaker that would make this a one-keystroke (or even an automated) task.

The amazing instant import trick

This jaw-dropping shortcut is found in FileMaker Pro 3 and later: You can turn a tab-delimited text file — or any other file in a format that FileMaker can understand — into a new FileMaker database without defining a single field or importing the data into an existing file.

To pull this trick off, launch FileMaker and choose File ➪ Open. Then open a file that's in any format FileMaker supports for import: tab or comma-delimited text, SYLK, DIF, ClarisWorks, and so on. When you open the file, FileMaker automatically creates a new database, imports all the records, and defines a new field to hold each piece of data. The new fields are named f1, f2, f3, and so on. Sure, you'll

still have to format the fields, and you'll probably want to rename them once the data has all been imported. But with virtually no setup time, you've moved your data into FileMaker format, ready to sort and search.

If your goal is to turn an Excel spreadsheet into a FileMaker database, it's even easier: FileMaker 4 can actually read and import native Excel spreadsheets, too, without conversion.

Sort a value list (ClarisWorks, too)

FileMaker and ClarisWorks help speed data entry along by letting you set up a *value list* for a particular field: a list of possible entries. For a state field, for example, the value list might show all 50 states, so a double-click enters the state name and no typing is required.

Worth Learning

Neither program gives you a way to sort the entries in a value list, however. In ClarisWorks, in the Modify box (within the Define Fields box) for the field in question, you can drag the entries up or down the list. In FileMaker, you'll have to copy them into a word processor that has a Sort command, such as Microsoft Word. Sort them and then paste them back into the Value List (FileMaker 3 and 4) or the Define Fields dialog box's Options box (FileMaker 2).

Self-creating value lists

As mentioned in the previous secret, using value lists can certainly speed up data entry, but setting up the lists takes time. You have to type in the values, sort them into the order you want, and then manually edit the list if you want to add or delete choices.

Or you can save yourself all that trouble by having FileMaker 3 (or later) do all the work for you, generating and maintaining its own value lists.

Here's how it works: When you're defining a field that you want to have a value list, click Options in the Define Fields dialog box, change the pop-up menu to Validation, click the "Members of a value list" checkbox, and then choose the Define Value Lists from the pop-up menu. (If you're working with an existing database, you can also get to this point by going to Layout mode; clicking the field in question; choosing Format ⇨ Field Format; clicking the lower radio button; and choosing Define Value Lists from the pop-up menu.)

In the Define Value Lists window, make up a name for the list and click the Create button. Here's where the process differs from the usual value-list procedure: Click the "Use values from a field" radio button, click the Specify Field button and then pick a field — *the same field that you're currently defining* (see Figure 19-20). Finish up by clicking, successively, Save, Done, OK, and Done.

From now on, that field will build its own value list as you work. Every new value you type into the field will automatically get added to the list — in alphabetical

order, too. You will have to type each value in *once*, the first time it appears. But after that, you'll always each entry available as a ready-to-use choice for future records.
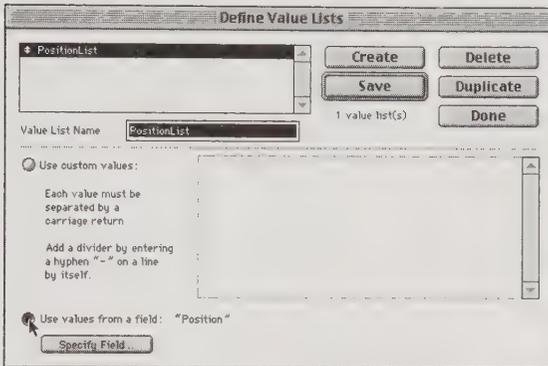
Figure 19-20: Teaching a FileMaker field to build its own value list.

Multiple-item selections in pop-up menus

When a FileMaker field is formatted as a pop-up menu, a menu of choices appears on your layout instead of a standard text field. You can enter data by simply choosing an entry from the pop-up menu.

But here's the secret: If you hold down the Shift key when making a selection from the pop-up menu, you can choose more than one item from the menu. Each time you hold down the Shift key and choose an item from the pop-up menu, your selection is added to your previous entries. When the pop-up menu is open, you'll see your multiple entries marked by bullets. When the menu isn't open (which is most of the time), FileMaker will only display the most recent item selected.

Pop-up menu vs. pop-up list

Even once you know the previous delightful secret, you may still occasionally get confused — sometimes the multiple-selection trick simply doesn't work.

That's because you, like thousands before you, are confusing a pop-up *list* (another one of the FileMaker field-format options) with a pop-up *menu*. Figure 19-21 shows the difference: a pop-up *list* drops down automatically when you "tab into" that field; lets you select an item from the list by typing a couple letters of its name; and shows only a few choices (because it has a limited height). A pop-up *menu,* on the other hand, drops down only when clicked; drops down to full height, showing as many choices as your screen has room for; and permits multiple selections, as described in the previous secret.
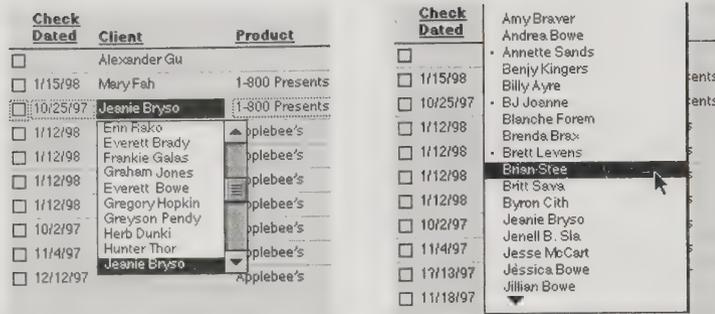
Figure 19-21: Keeping your FileMaker pop-ups straight will serve you well. A list (left) has a fixed height, but pops up automatically; a menu (right) must be clicked with the mouse, but permits multiple selections.

Escaping from pop-up lists

What happens when you tab into a field that displays a pop-up list, but you don't want to use one of the entries in the list? Either click in the field — or press either ⌘-period or Esc. You go right into typing mode, collapsing the list, without having to click.

And if you decide you *do* want to choose an entry from the pop-up list after making it disappear, pressing Esc again makes it pop right back up.

Index tips

FileMaker's speed is primarily because of its indexing system. Internally, the program keeps a high-speed list of the contents of each field: an index.

To see the index for a certain field, select it in Browse mode and press ⌘-I. A list window appears, showing every value you ever entered for this field (see Figure 19-22). In FileMaker 2, the index was composed of only the *first* word (in this field) in every record; in a list of city names, you'll see New instead of New York, and so on. In version 3 and later, though, the index entries include *all* the words in the field. And if you want to index each word in a field individually, you can do that too, by clicking the "Show individual words" checkbox, which breaks entries down to their component words.

Figure 19-22: The index for a field. You can slap any one of these items into the current field by double-clicking it or selecting it and then clicking Paste.

Avoid the "Are you sure?" message (ClarisWorks, too)

Here's a handy trick that works in most Claris products (FileMaker, ClarisWorks, and so on).

Whenever you do something that throws away data — such as deleting some records — FileMaker displays a warning message. You have to physically click OK (you can't just press Return or Enter) before proceeding. But if you're deleting dozens of records from a file, one by one, those warning messages can get plenty annoying.

Speed Tip

The trick: Press *Option* as you choose the Delete command (or in addition to the keyboard equivalent of Delete). You'll get no confirmation message.

Remember, though, that FileMaker is one of the Mac universe's few *auto-saving* programs. It has no Save command at all. If you delete a record, therefore, *nothing* will bring it back. Undo doesn't work after you delete records, and you can't revert to an unsaved version of the file, as you can with most other programs.

Turn an entire record into a graphic

Strange But True

This is so weird: You can copy/paste an entire FileMaker record in one fell swoop. Just go to Preview mode and choose Copy from the Edit menu. You can now paste that record into a word processor, page-layout program, whatever. You'll get a huge graphic object with everything intact: your fonts, field labels, the works. When ungrouped, this graphic is editable — sort of; each line of text will be in its own little text block.

Paste an entire record's text (ClarisWorks, too)

Using the previous secret, you can copy the contents of a record into another program as a *graphic*. But here's an even more practical maneuver: You can copy a whole record into another program as tab-delimited, editable *text*.

ANSWER MAN

Divider lines in the Scripts menu

Q: How do the pros make those cool divider lines between commands in FileMaker's Scripts menu?

A: They create an empty script whose name is simply a hyphen.

Q: Hey, we're on a roll here! OK, I'll bite: How can I copy a script into another FileMaker file?

A: You can't.

In FileMaker, go to the record you want to copy in Browse mode. Deselect all the fields (by clicking in an empty part of the layout) and choose the Copy command. (In ClarisWorks, just click any empty part of the layout to make the entire record black before you copy.)

When you paste what you've copied into another program, you end up with a tab-separated chunk of text containing all the data displayed in the current layout for that particular record. This is an easy way to transfer the contents of an entire record to another program without having to use the Export command — or copy information one field at a time.

Copy/paste an entire database (ClarisWorks, too)

Worth Learning
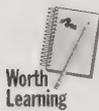
This is unquestionably one of the most mind-blowing FileMaker secrets around: You can copy the data from an entire database into another program — with one command.

The secret is to hold down the Option key while choosing the Copy command (or press ⌘-Option-C). This copies the data not just from the one record (as described in the previous secret), but from *all* the records currently selected in FileMaker. Just paste what you copy into a word processor; the result is a tab-delimited text version of your entire database! Paste what you copy into Excel, for example, and you've instantly turned your FileMaker database into a spreadsheet.

(Once again, the trick works in ClarisWorks, but isn't as complicated. Just click a blank part of your layout, then choose Select All from the Edit menu to highlight all visible records — then copy.)

Extra screen space (ClarisWorks, too)

If you're working on a small-screen Mac, or if you're making large layouts, screen space is at a premium. Get into the habit of hiding the entire panel at the left side of the screen (see Figure 19-23).
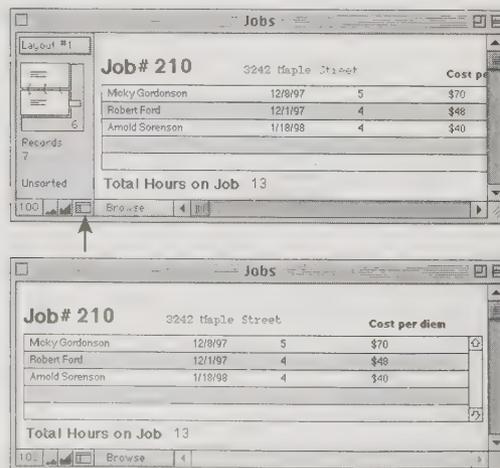
Figure 19-23: Click the icon indicated by the arrow (top) to hide the entire control panel (bottom).

The control for hiding and revealing FileMaker/ClarisWorks's left-side panel is the tiny icon at the bottom-left of the window (to the right of the zoom controls). Click once to hide the panel. Click again to make it reappear.

Make files smaller

As your database gets huge, consider taking a moment to save it as a *compressed* form. You can sometimes shave a sizable percentage off the file's size on disk using this procedure.

Just choose Save a Copy As from the File menu. From the pop-up menu at the bottom of the Save File dialog box, choose "compressed copy (smaller)." Give the compressed version of your file a new name and then click Save.

This process can take time, but you can bring a different program to the front and let FileMaker run in the background. The result is a copy of your file that's often much smaller.

Better drag-selecting

Speed Tip

To select a group of objects on a FileMaker layout, you normally have to drag-enclose them; only objects completely enclosed by your dragging rectangle get selected. But here is a simple and wondrous shortcut: If you hold down the ⌘ key while dragging, you can select objects by dragging over *any part* of them.

Better object deleting

To delete an object on a layout, you must (a) select it, and (b) either press the Delete key or use the Cut or Clear commands. Not a problem — unless you have to delete a number of different objects spread across the layout, and you find yourself jumping back and forth between tools and commands.

Contest Winner

Free book winner Lubomir Stroetmann reminded us of a much better way to do this: Hold down the Delete key *first*, and keep it down. Then start clicking on objects. Each item gets obliterated with a single click. (Lubomir is — get this — a 13-year-old Danish citizen studying in Germany. Never doubt the galactic reach of *Mac Secrets!*)

Better text deleting

Speed Tip

Normally, to delete the contents of an entire field, you have to *select* the contents first — which involves either dragging through the text or pressing ⌘-A to highlight the entire contents of the field — and *then* hit the Delete key.

But there's a quicker, cleaner, one-keystroke way to delete all contents of a field, again pointed out by reader Stroetmann: Just click on or tab into a field and press the Clear key on the numeric keypad.

Instant, on-demand format menus

FileMaker provides two express routes to the program's key-formatting commands. In Layout mode, Control-click any object; a contextual pop-up menu containing all the appropriate formatting commands pops up right under your mouse.

You can also Option-double-click any object on a layout to go directly to the text, date, number, or graphic formatting dialog boxes (depending on the type of object you've double-clicked).

Selective Selecting

When you're working in FileMaker's layout mode, choosing the Select All command normally selects every object on the layout. But suppose you want to select *only* the text labels or *only* the horizontal rules you inserted between fields?

The secret is to click first on the tool that corresponds to the type of object you want to grab — and *then* choose Select All. If you want to change the font of your field labels, for example, click on the text tool before choosing Select All. Instead of selecting all the objects in the layout, FileMaker will select only the text items. The same technique works with portals, lines, shapes, and text objects.

Alternatively, try this: simply highlight one example of the object you want to select — one field label, for example. Now press ⌘-Option-A to highlight all similar objects on the layout. That's a fantastic time-saver when you want to change the font all at once for your fields, for example, or your field labels.

Change a field's identity without disturbing its format

When you're designing a layout, you may find it tedious to repeatedly use the font, size, and style submenus to customize the formatting for each field. You can cut down on the amount of field formatting if you keep the following three tricks in mind.
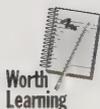
First, format *one* field to the hilt. Then ⌘-click it. From now on, any new fields you place on the layout will share the formatting of the first.

Second, remember that you can Option-drag a field that's already been formatted. When you release the mouse, a list box appears in which you can choose a new field identity for the formatted copy you created.

Finally, if you double-click an *existing* field, the same little list box appears; from it you can select a field to replace the one you clicked. The replacement field remains exactly where the old one was, and it retains exactly the same formatting; only its identity changes.

TRUE FACT

FileMaker's very new math

Serial	3456789999
Serial	-838177296
Serial	-838177297
Serial	-838177298

Here's one of the odder bugs we've spotted in a major best-selling program. If you set up a serial number for your records, keep it under ten digits. Here's what FileMaker does if you establish a ten-digit serial number and tell it to increase the number by 1 with each new field:

In fact, any number over 21111111111 or so will come out garbled when FileMaker tries to increment it automatically.

Then again, by the time your company's mailing list hits 2 billion names, it's time for a more powerful database anyway.

Ignore the grid

In an earlier chapter, we pointed out that you can drag icons in the Finder so that they snap to an invisible grid if you press the ⌘ key while dragging (if the grid, in the Views control panel, is *not* turned on). If the grid *is* on, then ⌘-dragging has the opposite effect — it lets your icon dragging ignore the grid.

In FileMaker's Layout window, it's the same story. Press ⌘ as you drag an object or a field; you can position it freely, without being affected by the grid or the T-square lines.

Online chatter over the network

A FileMaker file can be shared over a network. You can use this feature to clever advantage by setting up an on-screen two-way (or more-way) CB radio.

Create a new FileMaker file. Create one field, called something like "Two-Way." Make sure that the file is shared on the network.

That's all there is to it! Type a message to your coworkers into this field and press Enter. Instantly, the message appears on all their screens. They can respond either by deleting what you typed there — or adding to it (see Figure 19-24).


```
                        CB
2-Way  I don't know what you're talking about! Kimberlee is obviously the
       only one around here who has any idea what's going on.

       Browse
```
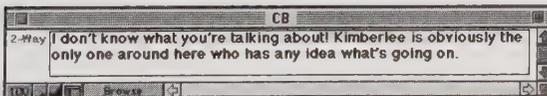
Figure 19-24: The instant CB network in your office. Type back and forth; the messages are updated in real time!

Get rid of a part

In the Layout view, you can get rid of a Part completely. (How often do you really use the Footer Part?) Simply click the tab displaying the name of the part and press the Delete key.

See the fonts without their faces (ClarisWorks, too)

When FileMaker Pro shows you its font menu, each font is displayed in its own typeface. That's usually useful — except when you're trying to distinguish among more than one all-symbol font, such as Zapf Dingbats or Symbol.

To see the font list in good old Charcoal 12-point, press Option as you pull down the menu.

Define a default font and style

If you consider the order of events in creating a FileMaker database, it may appear that there's no way to establish a default font for the fields as you create them. After all, you first go to the Define Fields dialog box, where you type their names, and then click Done. Only then are you allowed to go to the Layout mode, where the Font commands are located. But by then it's too late; FileMaker has already assigned them a default font.

Here's the trick: When the Define Fields dialog box first appears, click *Cancel*. Then go to the Layout view. Of course, it's completely empty. Use the Format menu to choose a type size and style — with nothing selected.

Then after you choose Define Fields from the Select menu, create your fields and click Done. Your new fields will be born with your favorite typeface, all ready to go to work for you.

One-click shaded backgrounds

To create a neat-looking shaded background — the kind you often see in professional FileMaker layouts — you don't have to draw an enormous rectangle object, shade it, and send it to the back. Instead, just click the Part tab in your layout, such as Body — and then choose a new color from the Fill pop-up menu!

Avoiding and eliminating duplicate names

Using FileMaker's calculation powers, you can set up your mailing-list database with the same duplicate-avoidance scheme used by magazines and mail-order companies worldwide.

Set up a *match code* field. Define it to be a calculation field. The calculation looks like this:

```
Match Code = Left(Last Name,3) & Left(Street,3) & Zipcode
```

Specify that you want a Text Result. The match code produced for an address such as Alison Panico, Box 2234, Chesterton, NY 10299 would be *Panbox10299*. The chances of there being another address that produces this exact match code are infinitesimal.

When the day comes that you want to ferret out duplicate names, use the Find command and type a **!** into the Match Code field. FileMaker immediately displays all duplicated records. Sort them and start weeding out the ones that you don't want. (If you set up FileMaker to auto-enter each record's date of creation, by the way, figuring out which address version to keep is easier.)

Incidentally, match codes aren't foolproof. You can certainly tell that by the fact that, despite them, you *do* get duplicate junk mail. Still, they're a great way to get a running start on controlling duplicate records.

Locking and toggling tools (ClarisWorks, too)

If you've ever had to draw a series of objects on a form in Layout view, you know how irritating it can be that your tool selection keeps defaulting back to the arrow tool after you draw each object. If you want to draw a series of boxes, for example, you have to keep reselecting the rectangle tool after you draw each box.

Worth Learning

There's an easy way to avoid this: *Double-click* the tool when you select it. That tool will stay selected (and turn black) until you click another tool. What's especially great is that one press of the Enter key switches you back to the Arrow tool; a second press returns to the drawing tool you originally double-clicked.

ANSWER MAN

Sorting by last name from a first+last field

Q: Oh, great. I typed 15,345 names in my Full Name blank (in the form "John Sculley") in ClarisWorks. But now I want to sort my list alphabetically by last name! What do I do?

A: Oh, boy, *now* you've done it.

ClarisWorks/FileMaker can't sort by the *second* word in a field. You should have set up *two* fields, First Name and Last Name, to begin with, so that you could now sort by last name.

In your situation, you'll have to cleverly split your Full Name field into two pieces. Create two new fields, First Name and Last Name. Create them as Calculation fields (but formatted to display a Text result) that refer to your Full Name field as follows:

First Name = LEFT('Full Name', FIND(" ",'Full Name',1)-1)

Last Name = RIGHT('Full Name', LEN('Full Name')-FIND(" ", 'Full Name',1))

(There's a single space between each pair of double quotes above.)

Once you've created these calculation fields, clicked Done, and double-checked to see if everything looks good, you can change the calculation fields into Text fields and delete the original Full Name field. Then. . . sort away!

In FileMaker only, there's a more permanent, alternative solution. Choose Preferences from the File menu and select the "Always lock layout tools" option. (That great Enter-key stuff still applies.)

Escaping from the Define Fields dialog box

When you're setting up fields in the Define Fields dialog box, it may seem natural to select the Enter key to dismiss the dialog box when you're finished — but that doesn't work. Instead of closing the window (as it does in the dialog boxes for setting up entry options, values lists, and lookups), the Enter key opens the Options dialog box. There is, however, a keyboard shortcut that will dismiss the Define Fields dialog box — press the Esc key.

<center>

Chapter 20

Graphics and 3D

</center>

In This Chapter

▶ Formats demystified: PICT, TIFF, EPS, GIF, and others

▶ Painting, drawing, and PostScript-graphics tricks

▶ Insights on ClarisWorks, Photoshop, MacDraw, and Canvas

▶ Tricks for FreeHand and Illustrator

▶ QuickDraw 3D

Macintosh graphics — that's almost redundant. Yes, Macintosh *is* graphics. Images put the Mac on the map. An amazing amount of the artwork that you see around you — ads, posters, album covers, product packages in the grocery store, book covers (including ours), World Wide Web pages — is designed on the Macintosh. Furthermore, with the recent explosion of cheap color printers, more and more homemade art looks professional.

File Formats

If everyone in the world understood the different *file formats* that computer graphics come in, the volume of our e-mail would drop by half. Fortunately, there *is* some logic to the existence and purpose of each format.

In the Mac universe, the most common graphics formats are TIFF, PICT, GIF, JPEG, and EPS. If you're looking for quick answers, here's the executive summary; read on for more detailed discussions.

Mac Basics

- **PICT files** aren't used in the professional world at all, but PICT is the Mac's own Clipboard format.

- **TIFF files** come from scanners. They're a leading file format in the publishing world. All the photos and screenshots in this book are TIFF files.

- **JPEG files** are used for photographs on the World Wide Web. Digital cameras, described later in this chapter, often produce them.

- **GIF files** are used for solid-colored objects (cartoons, logos, starbursts) on the World Wide Web.

■ **EPS files** are used for original, high-quality, high-precision artwork in newspapers, magazines, ads, and album covers.

Fortunately, most graphics programs can open and save more than one kind of graphics format.

PICT files

Although you may not be aware of it, the PICT file is the one you're most accustomed to using. Mac file icons are little PICT files; so are the snapshots of the screen you take by pressing ⌘-Shift–3 (see Chapter 2). In the days of yore, PICT was also the native format for most *drawing programs* (see "Drawing Programs" later in this chapter), because a PICT file stores all the relationships between grouped objects. Open a ClarisWorks-saved PICT file in Canvas, for example, and you can ungroup it and continue to work on the art without missing a beat.

There are two significant problems with PICT files. First, their precision isn't great. A PICT file may know that a line is supposed to be very thin, for example. But it will round that line off to its nearest approximation of its original width value — half a point, for instance. As a result, you may find slight misalignments and changed line thicknesses when you transfer a PICT file to another program.

Alas, PICT is the *Clipboard's* natural graphics mode. If you draw a nice precise diagram in Canvas and then copy it, your fine hairlines and careful alignments are already gone before they're even pasted into the Scrapbook.

TRUE FACT

Mac Creations

If you have any doubt that the Macintosh is the 800-pound gorilla in the graphic arts, consider the list below, compiled by Jim Henderson. You might be surprised to find out exactly which artwork was created on Macs. . .

■ The Windows 95 logo (created with FreeHand)

■ IBM's Aptiva point-of-purchase materials and the boxes they ship in

■ Intel's "Flying Pentium" ads

■ The graphics for Microsoft Network

■ The newspaper and magazine ads for IBM, Gateway, Dell — and Microsoft

■ Outdoor advertising for Microsoft Magazine

■ Windows 95 packaging

■ PC Magazine, PC World magazine, Windows Magazine, Windows Sources magazine, Computer Shopper magazine, and Next magazine

■ The weekly internal Microsoft newsletter MicroNews

■ Many IBM and Microsoft TV ads (edited with Mac-based Avid systems)

The second major problem with PICT files, at least in professional work, is that they have constant quarrels with professional publishing equipment (imagesetters). Your service bureau operators are likely to groan if they spot PICT graphics in your page, because the potential for printer errors, graphic glitches, and other problems is much greater. Whenever possible, save your artwork as EPS or TIFF files instead.

Mac OS X, Apple's 1999 system-software overhaul, will finally mark the end of the PICT file as the standard Mac file format; see "PDF (Acrobat) files," later in this chapter.

TIFF files

The TIFF file format, originally developed by Microsoft and Aldus, is a very high-density *bitmap* — a painting, as described later in this chapter. In other words, the Mac memorizes the color of every single dot in the file. (TIFF stands for *tagged-image file format;* the "tags" are encoded "hints" that accompany the graphic data to enhance its appearance.)

Most TIFF files start out life as the product of a scanner (see Figure 20-1). Like any bitmap, a TIFF file takes up a lot of disk space. And, like a bitmap, you enlarge such a graphic at your own risk; in doing so, you spread out the dots that make it up, running the risk of producing a bitmapped-looking graphic.

Figure 20-1: If it looks like a photo, it probably entered the computer in the form of a TIFF file from a scanner. But if it looks really good, and you found it online, it's probably been converted to a JPEG image to save space.

As we mentioned earlier, TIFF files are the common currency in the publishing world. Scans, screenshots, and other book- or magazine-bound publications are often saved as TIFF files. (Among other reasons, TIFF files are equally welcome on both Macintosh and Windows.)

CD

So how do you convert and open all of these formats? Easy. Use Photoshop. Or Picture Viewer, Apple's free all-purpose graphics opener (part of the QuickTime 3.0 software suite, as described in Chapter 22). Or use GraphicConverter, which is included on the CD-ROM with this book.

JPEG files

Graphics files get pretty big. One letter-sized, full-color image can take many megabytes of disk space.

A bunch of computer-graphics experts, calling themselves the Joint Photographic Experts Group, sat around a few years ago and tried to come up with some formula for compressing graphics files so they took less disk space. (The files would also take less time to send over the modem, which was probably the more pressing concern for these Experts at the Photographic Joint, whose job it probably was to send photos back to *Time* magazine via modem.)

Mac Basics

They came up with a scheme that succeeded impressively at reducing the size of graphics files. They named it *JPEG compression*. When a computer stores one of your files this way, it actually discards much of the color information (that's what makes the file smaller). If it throws away *too* much, you get a crummy-looking, computery-looking picture when you open the file back up. Even so, it turns out you can throw out more than *half* of the color information from a typical photo and, upon reopening it, not notice that anything is different.

MACINTOSH SECRET

Cross-platform basics

As we've noted, many common Macintosh graphics formats are now usable on other kinds of computers, such as Windows. TIFF, EPS, GIF, and JPEG files, for example, are all common in Windows-land today.

But taking a Macintosh graphics file to Windows isn't simply a matter of dragging it to a PC-formatted floppy, as described in Chapter 16. First, you must remember to add the geeky DOS code to the end of the file's name. Worse, the suffix codes have a maximum of three letters. As a result, TIFF becomes TIF, JPEG becomes JPG, and so on. A Macintosh JPEG file called Flowers, for example, becomes a Windows file called Flowers.JPG.

Moreover, some formats actually *aren't* identical on the two platforms. A Macintosh TIFF file, for example, must be saved as a *PC* TIFF file if you hope to open it under Windows (and vice versa). (When you save such a file out of Photoshop, you're offered the choice of Mac or IBM-compatible formats.) If you receive a .TIF file from a Windows-using friend, on the other hand, here's a sneaky trick to make it Mac-openable: change its *type code* (see Chapter 15) from *.TIF* to *TIFF.*

Just as the Macintosh has its own private format — PICT — so does Windows. BMP and PTG, for example, are its equivalents of our own home-turf file formats.

The JPEG compression format is different from any other Mac file format because of this information-discarding aspect. They call this *lossy* compression because there's some data loss; thus you can't run a file through a JPEG compressor more than once. Other compression schemes — such as those used by DiskDoubler and StuffIt, for example — are *lossless,* because when you decompress a file, it's an exact, data-full duplicate of the original.

(We think the computer world, so good at coming up with terminology, really wimped out on this one. *Lossy?* We suppose this word was someone's attempt to come up with a cute antonym to *lossless.* But that's like saying the opposite of clueless is *cluey,* or that the opposite of hopeless is *hopi.*)

Anyway, JPEG files are a hot format, thanks to the World Wide Web. On the Web, JPEG files are used for displaying photos or other high-quality artwork. You'll also see JPEG files by the hundred on America Online and elsewhere online, ready for downloading and enjoying at very high quality.

EPS files

The *Encapsulated PostScript* file format, developed by Adobe, is so called because it contains PostScript-language image-description codes. PostScript is the language your Mac speaks to PostScript laser printers (and high-end Linotronic printers).

In other words, when your Mac prints an EPS file, it's speaking your printer's language. The program containing the EPS file doesn't say to the printer: "Pixel number 1 is dark. Pixel number 2 is white." Instead, it sends a stream of mathematical descriptions: "Draw a 0.33-inch-thick line starting halfway across the page" and so on. EPS printouts, therefore, are among the highest quality the Mac can produce (see Figure 20-2).

Figure 20-2: EPS files are generally created by programs like Illustrator and FreeHand. As a general rule, they are composed of extremely precise-looking, smooth, sharp lines.

Because printing EPS files involves this transmission of computer code, the potential for foul-ups is much greater. Documents that contain EPS files are among the most likely to give you printing problems. As we noted earlier, an EPS file may contain references to fonts that are no longer in the Mac. An EPS

file's instructions may fill up (and overwhelm) the printer's memory. See Chapter 30 for more about printing. In the meantime, remember that EPS files look great when printed — *if* they print.

One more note about EPS files: They come in two parts. The critical part, actually, is invisible to you. It's a stream of PostScript instructions (see Chapter 30 for a primer on PostScript language codes). These are for the printer's benefit.

For *your* benefit, most EPS files include a second component: our friend, the PICT file. This is the on-screen stand-in for the printer instructions. (It's this PICT-file image that differentiates an *EPS* file from a regular *PostScript file,* which you can't see as a graphic image on the screen at all.)

Where things get odd is that the PICT-file portion of an EPS file is *optional.* In the course of your computing days, you may run across an EPS file that's represented on-screen simply by a big X in a box — but that prints out beautifully. (That's why, when you save an Illustrator file as an EPS, you're given the option of including a PICT Preview.)

On the other hand, many a QuarkXPress-based publisher is zapped by the old "missing PostScript" file. That's when the *PICT* representation of the graphic looks fine in the onscreen layout, but prints as a jagged image because the actual EPS file (containing the PostScript printer instructions) has been moved or lost.

GIF files

GIF stands for *graphics interchange format.* This format began on CompuServe, as a means of making graphics available to users of any computer model. Indeed, today, GIF files are used almost exclusively on the Web (and elsewhere online). Unfortunately, its "any-computer-can-open-me" quality means that GIF files must be the lowest common technical denominator; a GIF file can have a maximum of 256 colors, which is not even close to the photorealism of, say, JPEG (see Figure 20-3).

DIALOGUE

The GIF of the Magi

DP: Good thing this is a book.

JS: What?

DP: Instead of a radio show or something.

JS: What are you talking about?

DP: I'm just glad we don't have to *pronounce* these things out loud. We can just *type* them.

JS: What's wrong with pronouncing graphic formats?!

DP: Well, I mean, we say PICT like "picked," and TIFF like "tiff," but what about the others?

JS: What's so difficult? EPS, you spell out the letters. JPEG, you say "*Jay* peg."

DP: Yeah, but. . . .

JS: Come on, what's really on your mind?

DP: I just don't want to say that other one.

JS: What other one?

DP: Every time I say it, somebody says I'm pronouncing it wrong.
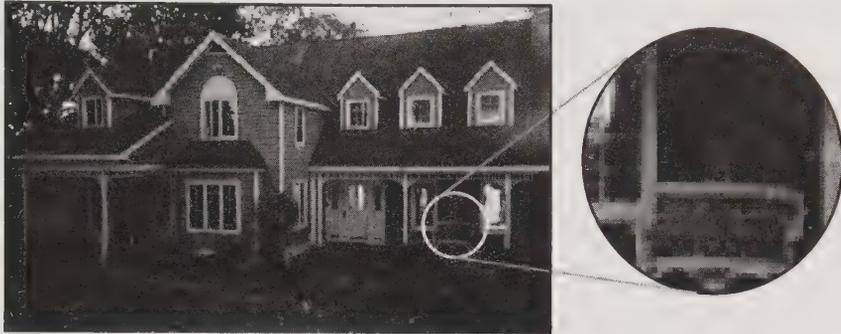
Figure 20-3: You can spot a GIF file fairly easily in your online wandering: you'll see a photo or other graphic that isn't really photo-realistic. You can see the individual pixels that compose the image, and they're limited to a palette of 256 colors.

CD

Thanks to the recent popularity of GIF files online, a whole raft of programs can open them, such as the shareware Graphic Converter (on this book's CD-ROM), GIFConverter, and GIF Watcher. Any browser can open them (Netscape Navigator, Microsoft Internet Explorer, America Online), and so can normal graphics programs (such as Photoshop, Color It, and ClarisWorks).

Startup screens

A startup screen is essentially a PICT file that's been doctored using ResEdit, or saved out of graphics programs such as Photoshop or Color It. (Reader Justin Crompton notes that to save one using Photoshop, you save your graphic using the PICT Resource format; in the "ID" dialog box, type a zero.) As long as the file is in the System folder and its name is *startupscreen,* the Mac displays this graphic when it starts up, in place of the usual "Welcome to Macintosh" message. We've included a few startup screens with this book. For instructions on making your own, see Chapter 21.

JS: Pronouncing *what* wrong?

DP: No, I don't think —

JS: Just *say* it!

DP: GIF.

JS: Oh, that.

DP: Satisfied?

JS: By the way, you pronounced it wrong.

DP: Oi!

JS: You pronounced it like *Jif*, the peanut butter.

DP: Doesn't everyone?

JS: No, it's *GIF*, with a hard G. Because it stands for *Graphic* Interchange Format. Get it?

DP: Well, the last time I said it *your* way, some user-group guy corrected me.

JS: Well, at least you're not as bad as this woman at my office . . .

DP: Yeah? Why? How does she say it?

JS: She keeps referring to them as *gift* files.

DP: Stick with me, kid.

PDF (Acrobat) files

Coming soon to a project near you: *PDF* (portable digital file) files. These page-shaped files are remarkable in a number of useful ways:

■ They can contain both text and graphics in complete layouts. Unlike text in TIFF or GIF files, text in PDF files remains real text — it can be searched, printed, or copied. They can even contain "hotlinks," exactly like Web pages — click a certain word to jump elsewhere in the document.

■ Even if you don't have the original fonts, the type looks pretty much the way it did on the designer's computer.

■ PDF files are cross-platform (openable by both Mac and Windows).

PDF files have a couple of *dis*advantages, too, however. First, you have to buy Adobe Acrobat if you want to *create* PDF files. Second, your recipients must have a program called Acrobat Reader (which is, mercifully, free) to *read* PDF files. (The Reader installer puts a special version of the Adobe Type Manager control panel into your System folder. That's what lets you see the PDF file's fonts the way they're supposed to look.)

Those disadvantages may fade away with the advent of Mac OS X, Apple's upcoming OS rewrite. In OS X, Acrobat files become the new standard file format (replacing PICT). We can only assume that, as a result, the software needed to save and open PDF files will be built into the system software.

Meanwhile, enjoy the features of Acrobat; you can start by reading the electronic *Macworld Mac Secrets, 4ᵗʰ Edition*. It's on this book's CD-ROM — in Acrobat form.

CD

Types of Graphics Programs

The three most popular kinds of Macintosh graphics tools are *painting, drawing,* and *PostScript* tools. In the olden days, each graphics program was designed to create exactly one of these types of art. Today, graphics programs often steal from each other's territory: FreeHand, a PostScript drawing program, now has some painting tools; Fractal's Expressionist uses PostScript tools to create paint-like images; Canvas handles all three kinds of graphics; and so on.

But you won't stand a chance of understanding these modern hybrid graphics programs unless you first understand the three graphics modes from which they're descended.

Painting

The three different art types have to do with how the *computer* thinks of your art. In the case of painting programs, the Mac thinks in one-dot units. To display a zebra in Photoshop, the Mac memorizes the exact status — black

or white — of each of 484,704 pixels (screen dots). That's how many are in an 8½-by-11 painting at a screen resolution of 72 dots per inch.

Mac Basics

In other words, the Mac stores what amounts to a map of your screen. It remembers the precise locations of all the colored dots. Painting programs, it's therefore said, generate *bitmapped* graphics.

When you lay down some "paint," you turn white pixels some other color. You can erase them, but you can't change the original shape you painted — a circle, say, or a letter of the alphabet — because the Mac no longer thinks of them as a circle or a letter of the alphabet. On the other hand, you have control over each individual dot. You also have special pixel-manipulation tools such as the Spray Can and the Lasso (see Figure 20-4).

Figure 20-4: Here are two graphics that can be created in a painting program. First, the crack in the left figure is drawn with a pencil tool, which turns individual pixels black. On the right, a chunk of the painting is being pulled away after having been selected by the Lasso tool. Drawing programs, by contrast, don't have Lasso tools.

CD

The original painting programs all had the word *paint* in the title — MacPaint, SuperPaint, UltraPaint, and so on. HyperCard's art tools are also painting tools. ClarisWorks has a painting window. Believe it or not, the most expensive and powerful graphics program of all, Adobe Photoshop, is a painting program, too — a very, very, very sophisticated version of MacPaint. Color It, included on the CD-ROM with this book, is also very powerful — it's just not nearly as expensive.

Painting pointers

Mac Basics

Paint programs have been around for so long, and they're essentially so simple, that few unpublicized features remain. But here, for reference, are key paint-program tips, in case you don't know them. These work in any program whose name ends with "Paint," in HyperCard, in the bitmapped modes of Canvas and ClarisWorks, and in Photoshop and Color It.

- Option-drag a selected region to peel off a copy.

- If your Paint-bucket Tool unexpectedly fills in the entire screen with your selected pattern, immediately choose Undo. Zoom in on the outline of what you're trying to fill in, find the gap in the outline (through which the "paint" is spilling), and close it up before trying again (see Figure 20-5).

- Choose a pattern, color, and line thickness (from the corresponding palettes or menus) *before* you paint a new shape. You can't change your mind after drawing the new element.
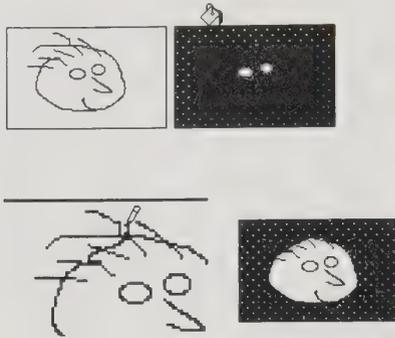
Figure 20-5: If you try to fill in the background of the first drawing (top left), your paint will spill through the open outline of the face (top right). Undo it. Then zoom in (bottom left) and, with the pencil tool, close up the gap. Now the paint will stay where it belongs (bottom right).

■ Press the Shift key as you drag across the painting area to constrain your mouse movement to a perfect horizontal or vertical line. (In Photoshop, press the Shift key just *after* the first click. In most other programs, press Shift *before* you click.)

■ In most paint programs, you can double-click the Paintbrush tool icon to access a palette of brush shapes.

■ Look for a built-in shortcut to enlarge the entire painting window: either double-click the Pencil tool (ClarisWorks, for example) or, with the Pencil selected, ⌘-click the artwork (MacPaint, for example). In Photoshop and Color It, ⌘-plus and ⌘-minus enlarge or reduce the artwork.

   For detail work, you *must* enlarge the painting. Every painting program on earth has keystrokes for zooming in or out.

■ If you're painting using a pressure-sensitive digitizing tablet (such as a Wacom pad), how hard you bear down on the stylus generally determines the thickness (or sometimes the opacity) of the line you're drawing.

Editing high-resolution bitmaps

In the olden days, paintings had low resolution — the same 72 dpi of the screen. But today's paint programs (such as ClarisWorks, Canvas, Color It, and Photoshop) aren't confined to the usual 72 dots-per-inch resolution. You can change the painting to any resolution. If you set your painting to 300 or 600 dpi, for example, you can actually edit *every dot* a standard laser printer is capable of putting on the page.

Of course, since the screen's resolution can't be changed to that degree, you face a tradeoff: In order to view or edit every pixel (screen dot) of a

high-resolution painting, you must blow up the image so much that it becomes many times larger than the window you're working in. That's why another critical tool in today's painting programs is the hand grabber tool, which lets you shift the hugely enlarged image within the comparatively small window. (Usually you can change your cursor into the grabber tool by pressing a key — the spacebar or Option key, for example — which makes image-shifting more natural when you're working with a large or high-resolution painting.)

Another warning: High-resolution paintings, such as scans, take up many megabytes of memory and disk space. (Remember, a bitmap is nothing more than a database of the pixels on the page and a record of the color of each. The more dots the Mac must track, the larger the memory requirement.) For example, to edit a six-inch, 256-color, 300 dpi ClarisWorks painting, you have to bump the program's memory allotment up to *13MB*.

General Painting Secrets

Instant Eyedropper selection

The Eyedropper tool is used for color matching. If you've already used a color in a painting, and you want to use it again, click the painted color with the Eyedropper. The fill-color palette changes to match the color you click.

Speed Tip

Since you use this tool often in color painting work, each painting program generally offers a keyboard shortcut. In ClarisWorks, press Tab. (Press it again to switch back to your previous tool.) In Photoshop, it's Option. In Color It, it's Control.

Multiple magnifications at once

Use the New View or New Window command to open a duplicate window of your work. You can zoom in or out in this new window independently of your original window, making it easy to do detail work (at 400 percent, say) and keeping your eye on the piece as a whole at the same time.

Secret powers of the ClarisWorks Lasso

ClarisWorks includes a pretty decent paint program. It handles color, grays, and resolutions up to 360 dpi. With that much power, it could almost be called a cousin of photo-retouching powerhouses such as Photoshop.

If you either double-click the Lasso or ⌘–double-click the selection rectangle tool (Marquee) on the tool palette, you select all dark areas of your painting at once.

ClarisWorks can use Photoshop plug-ins!

You're forgiven for doing a double-take at the title of this secret. But it's true: beginning with ClarisWorks 5, you can use Photoshop plug-ins (add-on special-effect filters) with ClarisWorks's painting module!

Contest Winner

Free book winner Rodney Furmanski points out that all you have to do is put your favorite Photoshop plug-ins into a folder called ClarisWorks Plug-Ins. And put *that* folder into your ClarisWorks folder.

Now, when you open a ClarisWorks painting document (or a painting frame in any other kind of document), the Transform menu contains a new menu item: Plug-In Effects. After selecting a part of your painting with the Lasso or Marquee tool in ClarisWorks, choose the Plug-In Effects command.

You're shown an Open File dialog box. Use it to navigate to your Plug-Ins folder and select the plug-in you want (which often involves making some settings in a dialog box). Former Claris employee Furmanski also told us why this feature isn't written anywhere — because it's still buggy. But hey — works for us.

Adobe Photoshop (and Color It)

Photoshop is a huge, expensive ($900), professional-level masterpiece of a color paint program. It's a fantastic accompaniment to a scanner or digital camera; it lets you retouch a photo, combine elements of *different* photos, or forget about photos and simply create electronic illustrations.

With all of its heavy-duty image-processing capabilities, Photoshop can make tremendous demands on the Mac. Even on a faster Macintosh, applying some of the program's image processing filters can mean lots of waiting. In fact, Photoshop's horsepower demands account for the sales of Mac models that would seem hopelessly over-the-top for the average person. If you're a graphic designer trying to work with a 600-dpi movie poster that occupies a few gigabytes of disk space, the concept of speed takes on a whole new importance.

Mastering the interface

Because Photoshop is an image-editing program, palettes, dialog boxes, and other interface elements can only take away from the space that could be displaying your picture. Therefore, Photoshop's designers spend an unusual amount of energy on making those onscreen elements flexible and shrinkable. A huge number of features are concealed, accessible only to those who know what keys to hold down or which palette to Shift-click.

Here, for reference, is as complete a list of interface shortcuts as we can come up with. (Most of it applies to any Photoshop version, but some tricks — especially those involving the selection and moving tools — are unique to

Photoshop 4 and 5.) Read the whole thing; there are almost certainly a few that you could be using. They're listed in what we consider order of importance:

- **Hit Tab** to hide or show all onscreen palettes and windows, leaving nothing on the screen but your artwork. (Or press **Shift-Tab** to hide all palettes except the Tools.) This is one of the most important keystrokes in Photoshop, especially if your monitor isn't immense.

- **Press letter keys** to switch tools on the tool palette — even if the palette *isn't visible.* Here's another great way to focus your work on your image instead of on your software. See Figure 20-6 for a list of the tool keystrokes.

  Caution: In Photoshop 4, don't press the same letter key twice in a row unless you intend to cycle among that tool's personalities. For example, pressing E repeatedly makes the eraser switch from normal (paintbrush) mode to pencil mode, airbrush, and so on. (This annoyance was removed in Photoshop 5.)

- **⌘-plus and ⌘-minus** zoom in and out, respectively. Far better than using the magnifier tool — this method also enlarges the *window,* so that you actually see more.

- **Press F** to toggle among the various window-display modes. For example, press F once to eliminate the artwork window's scroll bars, title bar, and so on — your image now fills the entire screen, which gives you the glorious feeling that you've just bought a much bigger monitor. Press F again to eliminate even more of the screen — now your menu bar itself is hidden — and once more to return to the "in-a-window" mode.

  Bonus F-press: If you have more than one document open, keep pressing F to begin cycling through the different open windows.

- **Press Return** to open an Options window for whatever tool is currently selected. (Not all tools have associated Options palettes, however.)

- **Drag while holding down the Space bar** to scroll your artwork window in any direction (a shortcut for the Hand tool).

- **Press Caps Lock** to turn the cursor into a crosshair shape for more precise painting. And if, in the Preferences dialog box, you opt for the crosshair cursor *all* the time, Caps Lock turns it *back* into the default cursor shape.

- When using any painting tool (Airbrush, Brush, Pencil, Eraser, Rubber Stamp, Smudge, Blur, Line, and so on), **Shift-click** to paint straight lines between your clicks, or **Shift-drag** to draw perfectly horizontal, vertical, or diagonal lines.

- When using any tool that actually applies color (Airbrush, Brush, Pencil, Line, Paint Bucket, and so on), hold down the **Option** key to switch, temporarily, to the Eyedropper tool, so that you can "pick up" a different color for painting.

Photoshop, tool by tool

Are there any Photoshop secrets? By the truckload. But ask a grizzled Photoshop vet to name a few favorites, and they inevitably name some fully documented, but often overlooked, shortcuts and features of the standard

Photoshop tool palette. We ourselves often long for a complete list of keys to hold down and places to click; here they are at last. (Figure 20-6 illustrates these tools.)
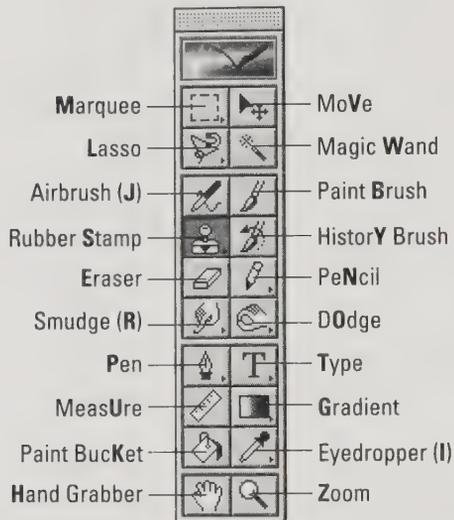
Figure 20-6: Press the capitalized letter to choose the corresponding tool without having to use the mouse.

Note, by the way, that many of these tools offer *pop-out icon menus* — that is, if you hold the mouse button down as you click the tool icon, a fold-out set of additional icons, reflecting that tool's different personalities, pops out. That's how Adobe made the Blur and Sharpen tools fit on the same icon; the rectangular and elliptical Marquee tools fit on a single tile; and so on. Most of the tools also offer floating palettes that let you change their settings. To open this palette, double-click the tool icon — or just press Return whenever the tool is selected.

■ The **Marquee** (press M) selects rectangular or oval areas of your artwork. If nothing is selected, **Option-drag** to draw from the center of your rectangle or oval, or **Shift-drag** to draw a perfect square or circle. If part of your graphic *is* already selected, **Option-drag** to de-select selected areas, and **Shift-drag** to highlight additional areas. Press the **spacebar** in the middle of a drag to move the *marquee* as you draw it (but not what's inside it).

■ The **Lasso** (press L) also selects regions — but this time, you can enclose irregular shapes. **Shift-drag** to add to, or **Option-drag** to take away from, a selected area. You can also **Option-click** to create the corners of a straight-sided selection (press **Delete** if you add a corner by accident); **Control,** while held down, switches to the Magic Wand tool.

- The **Magic Wand** (press W) selects all contiguous pixels that match the color of the one you click. (The Tolerance control on the Magic Wand's options palette lets you define how *closely* the colors must match the spot where you clicked.) Hold down **Shift** while clicking to select additional areas, and **Option** to de-select the next section you click.

- The **Move Tool** (press V, or ⌘-drag at any time) moves the selected portion of the artwork to another position in the document. Press the **arrow keys** to shift the selection a pixel at a time; **Shift-arrow keys** to make the selection jump *ten* pixels at a time; **Option-drag** to duplicate what you're moving; and **Shift-drag** to force the movement along perfect horizontal, vertical, or diagonal lines.

- The **Airbrush** (press A) paints a soft "spray" of the currently selected color; the **Paintbrush** (B) paints a less airy line; and the **Pencil** (Y in Photoshop 4, N in Photoshop 5) creates a hard-edged line as you drag. All three tools draw a swath as thick as the shape you click on the Brushes palette.

- The **Eraser** (press E) might startle former users of older paint programs. It doesn't necessarily turn the area you touch with it *white;* instead, it changes it to whatever is the currently selected *background color*. If you **Option-drag,** you reveal whatever was in that spot in the artwork the *last time you saved* — a sensational mistake-fixing possibility, something like a selective Revert-to-Saved command. Another frequently overlooked opportunity: you can type a **number key** from 0 to 9 as you drag to control the eraser's opacity — in other words, you can make what you're erasing semi-transparent instead of erasing it completely.

- The **Rubber Stamp** (press S) is beloved by photo retouchers. It lets you paint over one area of a photograph with what's in another area. **Option-click** to indicate the spot you'd like copied; then release the key and the mouse button, move to the target area, and begin painting.

- In Photoshop 5, the **Smudge Tool** has been incorporated as a pop-out icon choice of the Blur Tool; in previous versions, press U to select this finger-painting icon. It smudges what you drag over. Add **Option** to enter finger-painting mode, in which dragging not only smears the *existing* "paint" but adds the currently selected foreground color as you go.

- The **Blur** tool (press R) is also the Sharpen tool: it blurs or sharpens whatever you drag over (a handy thing for photo editors), depending on whether the teardrop (blur) or triangle shape (sharpen) is selected in the pop-out icon menu. **Option-drag** to switch to blur mode when you're sharpening, or vice-versa.

- You won't understand the names of the **Burn and Dodge** tools (press O) unless you've ever developed your own photos. *Burning* darkens an area of the photo, and *dodging* lightens it up; use the pop-out icon menu to choose which mode you want. (The other pop-out menu option: the **Sponge,** which desaturates [makes less intense] the colors you drag over.) **Option-drag** to switch to dodge mode when you're burning, or vice-versa.

- And you won't understand the **Pen** (press P) unless you've used a PostScript drawing program, such as FreeHand or Illustrator (described later in this chapter). This tool gives you another way to draw selections directly onto the artwork using Bézier curve controls, as in FreeHand or Illustrator. All the usual conventions apply: Click to create a corner point; drag to create a curve; Option-click an existing point create a cusp point. You can also press ⌘ when you want to select a point you've drawn, **⌘-Option-click** to select the entire path you've just drawn, **⌘-Option-drag** to duplicate the path, **Control-click** or **Control-drag** a path to introduce a new corner or curve point, respectively; **Control-click** a point to delete it; **Option-click** a curve point to make it a corner point; and **Control-Option-click** a corner point to make it a curve point. Good luck!

- The **Text Tool** (press T) befuddles many a first-time Photoshop 4 user. Select it, then click the screen, to open a dialog box where you can type (and format) some text. When you click OK, the text is there, floating on its own Photoshop layer — as a graphic that's no longer editable. If you made a typo, you must delete the entire phrase and start over. (Fixed in Version 5.) Shortcut-wise, there's not much: **Click and hold** on the artwork to see an L-shaped cursor that shows where the text will begin. Or **Shift-click** the tool icon itself to rebuild your font menu, forcing Photoshop to acknowledge new fonts you've added since launching the program.

- The **Line** disappeared into the Pencil tool's pop-out icon in Photoshop 5. In previous versions, N was its keyboard trigger; it draws straight lines (with arrowheads at the ends, if you wish).

- To use the **Gradient** tool (press G), specify a starting and ending color (the Foreground and Background colors). Then drag across whatever area you'd like to fill with a smooth blend between those two colors.

- The **Paint Bucket** (press K) fills all adjacent pixels of the same color with the current Foreground color. (You can adjust its sensitivity in "matching" the colors of the pixel you click.) This one can make a real mess of things, if you're not careful — one little "bridge" of same-colored pixels between the area you click and the rest of the painting can lead to an accidental "paint spill" over your entire document.

- You can choose a new foreground color by example using the **Eydropper** (press I) and clicking somewhere in your document. Add **Option** to change the background color instead.

- The **Hand Tool** (press H, or Spacebar-drag) is a shortcut for using the scroll bars in a large document. It lets you scroll your image within its window. When this tool is selected, holding down the ⌘ and **Option** keys summons the magnifying-glass tool to zoom in and out, respectively. Quick shortcut: **Double-click** the Hand tool itself to make the artwork fill your screen.

- The Zoom Tool (press Z) magnifies or reduces your view of the document (without actually affecting the document). (But as noted earlier, you're

better off getting used to using the ⌘-plus and ⌘-minus keystrokes.) You can also press ⌘-**Option-plus** and ⌘-**Option-minus** to enlarge or reduce the image to Photoshop's maximum (16 times larger or smaller than actual size). Other buried shortcuts: **Double-click** the tool to return to actual, non-magnified size. **Option-click** to zoom out instead of in. Press ⌘ to switch, while the key is down, to the Move tool.

■ New to Photoshop 5, the **History Brush** acts as a powerful selective Undo. It lets you — well, how shall we put this? — erase backward through time, down to the way your painting was at a certain moment you select.

■ The **Measure Tool** (press U) is also a Photoshop 5 addition; just drag across your painting to measure distances. (The readout appears in a separate palette.)

For a great online instruction book about Photoshop, visit the Photoshop Web Reference pages at `www.duke.edu/~ac10/photoshop`.)

Photoshop Secrets

CD Color It, included on the CD-ROM with this book, offers most of Photoshop's features, needs half the RAM, has multiple Undos, and even the latest version costs about one-sixth of what Photoshop does. We'll indicate which of our Photoshop secrets below work equally well in Color It.

MACINTOSH SECRET

Escaping Photoshop Layer Hell

In Photoshop 4 and 5, practically everything you do seems to generate another transparent *layer.* (Open the Layers palette — choose its name from the Window menu — to see the complete list.) On one hand, that's a terrific feature. It means you edit each element of your artwork (the background, the type, and so on) independently, without disturbing what's underneath. You can even create layers that contain color-correction settings — one that adjusts the brightness, one that takes out some greenish tinge, and so on. (Choose New Adjustment Layer from the Layers palette's pop-up menu to create one of these layers.) At any time later, you can change one of the color-correction settings by double-clicking the appropriate layer's name.

On the other hand, layers frequently trip up Photoshop fans. Since the layers are perfectly transparent, the only indication of which layer you're currently editing — or even that you *have* layers — is the Layers palette itself. If you enclose an area with the Lasso, for example, and press Delete, and nothing happens, you're probably trying to edit the wrong layer.

Furthermore, only Photoshop's proprietary file format understands layers. You can't save your work as TIFF, EPS, GIF, JPEG, or any other standard document type until you've first eliminated the layers. To do so, once the graphic looks the way you want it, use the Flatten Image command (in the Layer menu). Only now are those standard file-format options available to you (in the Save As dialog box).

Palette management for the big-screen impaired

As Photoshop matures, its quota of floating palettes seems continually to grow. All the better, then, to use the following tricks for managing screen space. For starters, learn the keystrokes for summoning the most commonly used palettes: F5, F6, F7, F8, and F9 summon the Brushes, Color, Layers, Info, and Actions palettes, respectively.

Worth Learning
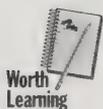
Or try this awesome idea: Option-click the tiny zoom box in the upper-right corner of a palette's little title bar to collapse it, Windowshade-like, hiding everything but the title bar itself. Drag multiple palettes that you've collapsed in this way to the bottom edge of your screen, and you've got yourself the Photoshop equivalent of Mac OS 8's pop-up windows (see Chapter 1). Click a tab to pop up the window; double-click a tab to re-collapse it.

Shift-clicking a palette's title bar makes the palette leap to the edge of your monitor — a good way to get the thing out of your way as you work on the image in the center of the screen. And remember to drag palettes next to each other for cleanliness; they stick, as though magnetic, when placed next to each other.

Most useful (and invisible) of all: You can build your *own* darned palettes, containing only the information you use a lot. To do so, open up the palettes that contain the settings you like. Then drag a *tab* from one palette to another, as shown in Figure 20-7. The result is your own private palette, tabbed the way you like it.
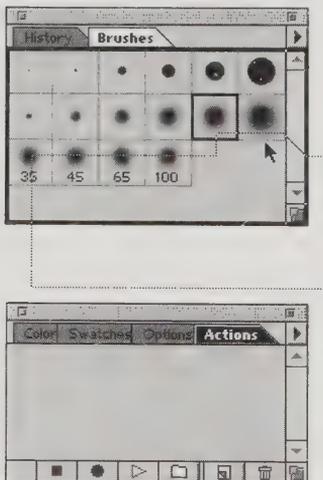
Figure 20-7: You can combine tabs from multiple palettes to reduce screen clutter. Just drag.

Press arrows, don't type numbers

Much of your work in Photoshop involves typing numbers into little dialog box blanks; for example, when creating a new document, there are fields where you're supposed to specify the size of the document in pixels, points, inches, and so on. Instead of typing numbers, consider this discovery.

When the number is highlighted, pressing the up-arrow or down-arrow keys increase the value in appropriate increments. For example, if the number already in the box is displayed in inches, pressing the up-arrow key repeatedly changes the number in thousandth-of-an-inch increments. If you press Shift as you tap those arrow keys, you increase the increments by a factor of 10 (increasing a number by tenths of an inch instead of hundredths, for example).

Selection Secrets

To an extent, Photoshop's Lasso and Rectangular-selection tools work as they do in any other painting program, but you can do much more with these. After you select something, for example, you can ⌘-drag inside the selection to *deselect* a portion of it.

If you Shift-drag, you can *add* more selected material, even if it's in a different part of the window.

Photoshop 4: After you select a region (or several), drag inside the selected region to move the region. But if you ⌘-Option–drag, you can move just the selection outline (the shimmering border) and *not* disturb the artwork. Photoshop 5: Drag while pressing ⌘ to move the selection, or without pressing ⌘ to move only the outline selection.

Change opacity while painting

This secret's title says it all. After the Brush tool is selected, you can change its degree of opacity without having to use the Brushes palette — just press a number key on your keyboard, from 0 (solid black) to 1 (barely perceivable — 10 percent black).

Remembering the last values

Speed Tip

It may disappoint you to discover that each time you open a color-correction dialog box — Brightness, Levels, Curves, and so on — Photoshop appears to have forgotten the settings you used the last time you accessed the command. But if you press Option while choosing the menu command (or pressing its equivalent keystroke), the dialog box will appear with your last set of settings intact.

Faster filling (Color It, too)

Speed Tip

Much of the time, you use the Edit menu's Fill command simply to fill in the selected region with the foreground color. Instead of using the menu for this purpose — including OK'ing a dialog box — just press Option-Delete. That fills the selected region with 100 percent of the foreground color. (Delete alone fills the selection with the *background* color.)

Contextual menus

As reader W. B. Johnston discovered, Control-clicking your artwork in Photoshop unleashes a contextual pop-up menu of useful commands, exactly as in the Mac OS 8 Finder. For example, these commands let you change brushes or paint modes while using any painting tool. You can also select all or duplicate a layer when using any selection tool. The pop-up menu for the magnifying-glass tool is especially useful: its commands include Fit in Screen, Print Size, Zoom In, and Zoom Out.

Photoshop 4's secret debugger

Contest Winner

Talk about undocumented! Free book winner Josh Bernstein discovered a secret — and useful — Photoshop debugger window. In Photoshop 4, press Control-Option-zero to open this secret display (shown in Figure 20-8).

```
                         Debug
>?
clear   - Clears the window
docs    - Lists open documents
windows - Displays all the window titles and refCon's
mem     - Memory stats
bn      - BottleNecks that have been replaced

>mem
FreeMem      6764272
FreeMemSys     643840
MaxBlock     6732816
MaxBlockSys    604112
PurgeSpace
  total      6824672
  contig     6784080
StackSpace    518896
```

Figure 20-8: The secret Photoshop debugger window lets you peer into the internal workings of this complex software.

At this point, type a question mark (?) to make the debugger show you a list of available commands. One shows a complete list of open windows; another displays your current memory situation; and so on.

The legacy of classy Easter eggs

Regardless of the version, Photoshop is the reigning king of Easter eggs (buried credits screens). Consider:

Version 3.x: Adobe may *think* it owns Photoshop. But if you press Option while choosing About Photoshop from the menu, you'll find out what the programmers really think. Furthermore, if (in Version 2.5 or 3) you press ⌘ while choosing About Photoshop, you get to see the *double*-secret About box.

OK, now try this: Choose About Photoshop from the menu and wait patiently. After a moment, credits begin to scroll up the screen. (Press the Option key to make them go by faster.) They get funnier as the list goes on; at the very end of the list, *your* name appears, and you get thanked for being "one of our favorite customers."

When the credits end, click the Adobe logo, and watch the space just below it. You'll see a virtual stand-up routine typed out, joke after joke — a total of 130 hilarious Generation X pop-culture one-liners. There are references to David Letterman ("Hey, everybody! I'm not wearing pants!"), *The Simpsons* ("'A tense work environment is a productive work environment' — M. Burns"), the movie *Spaceballs* ("Ensign — pursue that vessel at Ludicrous Speed!"), and much more.

Version 4: Photoshop 4 offers just about the gnarliest secret About box of any program. While pressing ⌘, choose About Photoshop from the menu.

The Big Electric Cat appears — but you're not done yet! Now ⌘-click his nose. Mr. Cat's little mouth drops open, and he treats you to a resonating, gurgly audio burp. *Gross!*

Here's another way to open the About box, by the way: click the abstract graphic at the top of the tool palette!

Contest Winner

Once you're in the About box, by the way, try this trick suggested by free book winner Stephen McCabe: Click the Adobe logo in the upper-left corner of the About box. Your Web browser launches, of all things, and shows you a page of links to Adobe online resources. You're not actually on the Web, however — that Web page is a file stored on your hard drive. But if you *Option*-click the Adobe logo instead, you'll suddenly find your Web browser launching, your modem dialing, and the Photoshop "what's new" Web site arriving on your screen! (All of this works in PageMaker, too.)

Believe it or not, we're still not done. Even Photoshop's Help program has Easter eggs. Choose Help Contents from the Help menu; while pressing Option, choose About QuickHelp from the menu. You'll be treated to some most whimsical credits (unearthed by reader W. B. Johnston).

Version 5: Press ⌘ while choosing About Photoshop from the menu. Once again, Adobe hasn't abandoned its faithful Easter egg fans. We'll let you take it from here.

TRUE FACT

The greatest paint program of all?

Kid Pix? Yes. This cheapo kids' color paint program from Broderbund is one of the most inspired and perfectly executed Mac programs ever written. Each painting tool makes a sound—once when you click it, and continuously while you paint with it. The Kid Pix canvas fills your screen, so you can't accidentally lurch back into the Finder because of a wayward click outside the document window. Even the menu commands have little icons to indicate their functions. Did we mention the Tree Tool? One click and you have a fabulous fractal-generated tree—different every time.

Ask any grizzled, tanned Mac veteran to name the five greatest Mac programs of them all. One of the five is bound to be . . . Kid Pix.

Drawing

Mac Basics

Painting programs create bitmapped graphics. Drawing programs, on the other hand, create what are called *object-oriented* graphics (sometimes called *vector* drawings). When you draw a circle in one of *these* programs, the Mac doesn't store it as a map of black dots. It remembers that you drew a *circle* of a fixed shading and size. That means that you can never speckle it, and you can certainly never erase (or remove) a chunk of it.

Drawing program advantages

But there are two powerful advantages to drawing programs. First, objects remain objects. After you draw a circle, you can return to it later and move it by dragging it. You can overlap another object on top of it — and later change your mind. You can change a circle's shading long after you drew it. Or, as shown in Figure 20-9, you can tug a shape's handles to stretch it.

The other gigantic advantage of drawing programs over painting programs is the printouts. As you probably know, the resolution (number of dots per inch, and, therefore, clarity) of every Mac printer sold today is *greater* than what you see on the screen. So every printout looks smoother and sharper than its on-screen counterpart.

Figure 20-9: In an object-oriented (drawing) program, objects remain distinct after you draw them. You can bring one object in front of another (note how the circle has been sent behind the rectangle in the second figure), and you can reshape or resize objects.

Every one, that is, except bitmapped artwork. A printout from a painting program looks every bit as jagged on paper as it did on the screen. But when the Mac prints from a drawing program, it doesn't tell the printer "three black dots, then a white one...." Instead it says, "A square, one inch tall." The printer can now put on the page a square, one inch tall, at its (the printer's) much higher image quality. Figure 20-10 shows identical artwork. One piece was drawn in ClarisWorks' painting window, and the other was done in its drawing window.
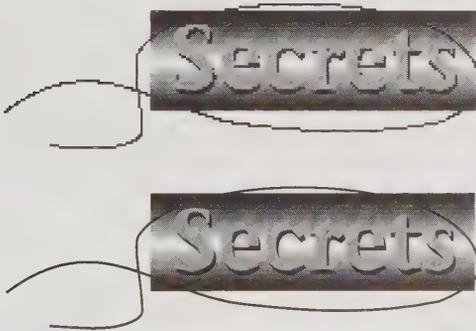
Figure 20-10: The identical graphic, done as a bitmap (top) and as object-oriented art (bottom).

Selecting and grouping multiple objects

In the Finder, after you click one icon, you can select additional icons by Shift-clicking them. It works the same way in drawing programs: click to select one object, Shift-click to select others.

After you have selected several objects, you can *group* them — combine them into a single new object — using the Group command. You can even group groups. Of course, you can *un*group a group, or even ungroup a grouped

group of groups. Drawing programs ungroup objects in the reverse order in which they were grouped.

Another advantage of groups is that when you stretch the handles of a grouped object, the entire thing stretches together (except for text, in most programs).

Universal Drawing Program Secrets ─────────────■

Publish and subscribe to yourself

Don't scoff at this title; we're mighty proud of this trick.

Speed Tip

We refer, of course, to using the Publish-and-Subscribe feature (see Chapter 15) to create intelligently linked copies within the same document. A classic case is the business card. Design one in the upper-left corner of your document. Then publish it, and subscribe to it 11 times, enough to fill a letter-sized page. Then, if you have to make a change, you just change the first one, and all the copies change, too. Try it with tickets, invitations, houses in a development, and so on.

ClarisDraw, ClarisWorks, Canvas, and most other modern drawing programs have Publish-and-Subscribe features. (Unfortunately, the native format of Publish and Subscribe is the PICT file, described earlier in this chapter. Proof your final printout carefully to make sure the translation to PICT didn't wipe out any subtle nuances in your graphic.)

What the Shift and Option keys do

Press the Shift key when you drag something to keep your mouse movements confined to perfectly horizontal, vertical, or (sometimes) diagonal lines. That's handy when you draw a line (keep it flat), make a copy of something (keep it aligned with the original), or draw a geometrical figure (keep it perfectly square or circular).

We noticed one inconsistency among drawing programs. In some, you must press Shift *before* you begin the mouse movement. In others, you must press Shift *after* clicking, but before starting to move.

Then there's the Option key: In most (non-Claris) drawing programs, pressing the Option key as you draw a circle, square, or regular polygon draws it from the center instead of the edge (see Figure 20-11).

Figure 20-11: Normally, you create an enclosed geometrical figure by dragging from diagonal corner to corner (left). But with the Option key pressed (right), you start drawing from the center and the shape billows outward from there.

Add an arrowhead to anything

Here's a classic cheat. Some drawing programs have an option that lets you finish any straight line you draw with an arrowhead.

Unfortunately, you can't add an arrowhead to a line that's not straight. Our workaround is shown in Figure 20-12.
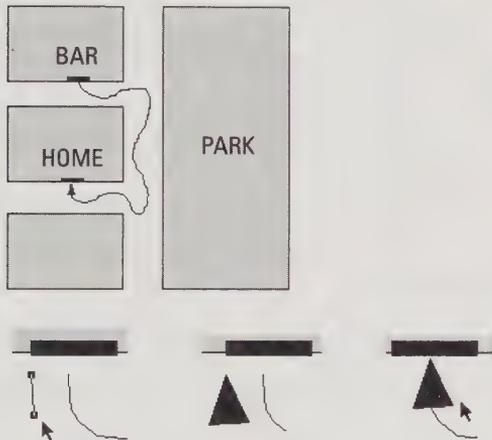
Figure 20-12: Suppose you want to add an arrowhead to a curvy line, as shown at top. First, zoom way in; blow the detail up to, say, 800 percent. Draw a very short straight line (bottom left). Tell the drawing to put an arrowhead on the line (bottom middle). Then drag the arrowhead onto the end of the curved line and group them together (bottom right).

Stretchy text

All those wild, super-skinny and super-fat text effects you see in Macintosh magazine ads are easy to do — if you know the secret. Type up the text in a drawing program. Copy the text block and paste it into your word processor or page-layout program. Then you can grab its handles and stretch it in any direction (see Figure 20-13).

Figure 20-13: Pop a text block into your word processor and it becomes like putty in your hands.

Selecting tiny objects

Here's an oldie but goodie: When you're trying, with no success, to move some tiny object in your drawing, draw a nice fat line. Select both it and the small object, and use the line as a handle to move the smaller one. Deselect and delete the line after the move is over.

PostScript Drawing Programs

PostScript drawing programs (such as FreeHand and Illustrator) are high-end, expensive, and tough to learn. But their astonishing output shows some of the most striking work the Mac can do. This is the kind of work you see in package designs, line art, album covers, and technical drawings.

Paths and wireframes

In these programs, you work with lines on the screen called *paths* (see Figure 20-14). As in object-oriented drawing programs, you manipulate objects in a PostScript drawing program after they are drawn. But unlike in an object-oriented drawing program, you do most of your work in a *wireframe* mode, where none of your objects are opaque and lines have neither thickness nor color. You see only their outlines. An editable Preview mode (available in both FreeHand and Illustrator) shows you what your objects and text will look like when printed — with opacity and color — but it's slower than working in wireframe mode.
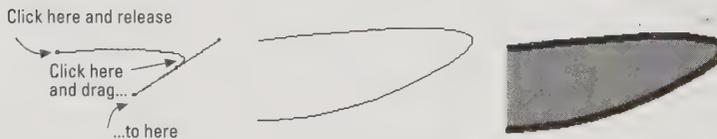
Figure 20-14: Drawing in a PostScript program is a tad tricky. Click to plant a starting point. Release the mouse. To create a curve, click elsewhere and drag, shaping the curve as you go (middle). When you switch to Preview mode, you see what you have actually drawn, depending on your Fill and Stroke settings (right).

Because PostScript line drawings of this type are so gorgeous when printed on laser printers and (in particular) professional publishing equipment, other kinds of graphics programs have begun adopting features from PostScript programs. For example, ClarisWorks, Canvas, and other drawing programs now include a "freehand tool" of some kind (in other words, one that works like the pen tool in FreeHand or Illustrator).

Faster, more reliable printing

Delays, out-of-memory messages, and PostScript errors are almost inevitable when you print complex PostScript documents. Here are some tricks for not overwhelming your printer (both the machine and the person):

Speed Tip

Where possible, use blends instead of graduated fills. The effect is similar: a smooth, gradual change in shading from one side of an object to another. Graduated fills tax a printer much more than a blend (which is actually a series of adjacent copies of the object, each a different shade). As an added bonus, blends also give you more control over the rate of shading change and look better on the screen.

■ Don't make your page size any larger than it has to be. Even if the extra space is blank, it still uses up printer memory.

■ Every line (path) you draw has an associated *flatness,* a PostScript accuracy setting. You can edit this setting; in FreeHand, for example, you select the path and open the Element Info dialog box (⌘-I). By setting this PostScript variable to, say, 3 instead of 0, you can speed up printing by up to four times and save precious printer memory, without sacrificing image quality, even on very high-dpi printers. (Just don't set it higher than 4 or so, or you'll start seeing some strange shapes.)

■ Eliminate superfluous points from your paths. Especially troublesome are complex paths that result from autotracing images; when the number of points defining a path approaches 100, it's time to simplify the path or split it.

■ Be aware that imported EPS files drastically increase the printing time of a FreeHand or Illustrator document.

Universal PostScript Drawing Secrets ────────■

Better-behaved EPS files
in page-layout programs

If you import an EPS file that contains *type* into a page-layout program, you're practically asking for trouble printing. EPS files that contain downloadable-font information can give PageMaker or Quark fits.

We suggest converting the text into outlines (see the next secret). That step eliminates downloadable fonts from the file altogether, resulting in faster and smoother printing.

Convert text to outlines

FreeHand and Illustrator let you convert type into editable outlines. In FreeHand, for example, you select the text block and choose Convert to Paths from the Type menu (see Figure 20-15); in Illustrator, choose Create Outlines from the Text menu. Then, in FreeHand, Option-click the outlines to make the individual paths editable. In Illustrator, use the hollow-arrow tool.

Label Secrets PRO

Iabel Secrets PRO

Figure 20-15: If you convert your type (top) to outlines (bottom), you can twist it like taffy — and print faster, too.

There are some incredible advantages to converting your type to outlines, by the way, even if you have no intention of twisting it like taffy. For example, you can send the resultant file to anybody (or any printer) without worrying whether or not they have the proper fonts. Furthermore, your graphic will print much faster, since it has no fonts to download to the printer!

Text on a path

There are two ways in which FreeHand's and Illustrator's capability to bind text to a path are useful. First, it's handy to be able to do it at all (see Figure 20-16).

LIFE IS FUNNY. BUT NO L VERY.   M.K E NICHOLS

Figure 20-16: Binding text to a path gives you a few unique possibilities.

Second, you can create interesting borders this way. Use a symbol font such as Zapf Dingbats to create the type. When you bind that type around, say, a rectangle, you have a decorative border that looks like it took much more effort than it did!

In FreeHand, to bind text to a path, select both the text and the path and then choose Join Elements (from the Element menu) or Attach to Path (from the Text menu), depending on your version. In Illustrator, draw the path first. Then choose the Path Type icon from the Text tool's pop-out palette (see Figure 20-17). Finally, click the path you drew and start typing!
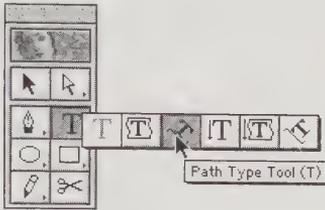
Figure 20-17: To type text on an Illustrator path, select the proper variant of the text tool.

MACINTOSH SECRET

That cool embossed look

Darkest type: at back, and leftmost

Background type: front layer, but centered side-to-side

Light type: sandwiched (layer wise), but rightmost

This clever secret works in *any* kind of graphics program — painting, drawing, or PostScript.

Create the text block. Make two copies, so that there are three in all: one dark, one light, and one the color the background will ultimately be.

The tricky part is positioning these three blocks of text in three dimensions simultaneously. The blocks are staggered diagonally from left to right — but they're *not* stacked back-to-front as you may think. Instead, the center text (the background color) is in *front* of the others, even though it's not the rightmost block. The following figure, we hope, clarifies the situation.

The background-colored type should overlap the others — it's on top — but it's not the lower-rightmost text block.

After you figure out this situation, drag them closer and closer to each other until they're separated by only a pixel or two.

When the three text blocks are nearly superimposed, group them, and then put them against the colored background (which matches the center text), and you're finished.

When you put this text sandwich on top of a background color that matches the center (frontmost) text, you have that embossed look that makes the lettering seem to pop right out of the screen.

One more note: In FreeHand, you must *group* the text to its path if you want the text to get resized when you resize the path.

Receding hairlines

Strange But True

In almost every PostScript and MacDraw-style drawing program, you have complete freedom over the thickness of the lines you draw. Be careful with the Hairline option, though — it's treacherous. What that setting tells your Mac is, "draw the *thinnest possible* line." On the *screen,* and on an ordinary 300 dpi laser printer, a hairline looks satisfyingly fine and crisp. But if you print that illustration on a professional printer, such as a 2400 dpi imagesetter, you'll get a line that's 1/2400th inch thick — for all practical purposes, invisible. (You'll find this vanishing-hairline syndrome even in expensive, professional clip art, too!) For best results, specify a line thickness of, say, 0.5 points, instead.

FreeHand/Illustrator default file

You can customize your FreeHand or Illustrator working environment and avoid having to re-establish all your favorite settings each time you start a new document.

Begin with a new document. Make all your menu settings, choices of line weights, fills, shades, measurement unit selections, and so on. (In Illustrator, add the fonts to the menu and *format one character* in each font, or the font-menu changes won't "take.")

Then save the document. If it's FreeHand, call it *FreeHand Defaults* and save it into your FreeHand folder. If it's Illustrator, call it *Adobe Illustrator Startup.* From now on, each new document will adopt these settings.

FreeHand Secrets

Selecting through overlapping objects

If you're trying to select an object that's lying behind something else, remember that pressing the Control key while you click lets you select right through whatever's on top. A similar trick: If you group a bunch of objects, you don't have to ungroup them just to change or move one part. Just Option-click to select something without removing it from its group. (By the way, you can combine these techniques: Control-Option–click selects one item in a group that's hidden by other objects.)

The unknown cropping tool

You can crop imported TIFF files (or any other graphics) just as easily as you can in PageMaker after you know how to access FreeHand's secret cropping tool. Draw an enclosed shape (rectangle, ellipse, text outlines, and so on). Select the TIFF image and cut it to the Clipboard. Now, select the outline shape and choose Paste Inside from the Edit menu. To adjust the cropping, drag the handles of the enclosed shape (see Figure 20-18).

Figure 20-18: You can fill an outline with a TIFF graphic using the Paste Inside command.

Use Option for greater precision

When you want to scale, rotate, or skew an object, most people are in the habit of using the mouse and making the adjustment by eye.

If you prefer making the change with more precision, Option-click the object. A dialog box appears in which you can specify the exact amount by which you want to skew, rotate, or scale the object you clicked.

Power keys

Speed Tip

You can change tools on the palette by pressing the number keys on your keyboard. They are numbered numerically from 1 to 0, starting with (1) the rectangle tool, (2) the rounded-rectangle tool, and so on.

What's handy, especially on small-screen Macs, is that these shortcuts work even if you hide the tool palette to reclaim more screen space.

Easter eggs ahead

In FreeHand versions 4 through 7, surprises lurk when you choose About FreeHand from the menu and then begin clicking in different spots on the screen. Eeeek! Worrrrms!

Illustrator Secrets ─────────────────────────────── ■

Adjustable nudge keys

As in most graphics programs, you can nudge a selected Illustrator object a small distance (one point) at a time by pressing the arrow keys on your keyboard.

Unlike most programs, though, you can change the effect an arrow key has on the object's movement: make it move 2 points, for example, or 10. Make the change in the Keyboard Increments Preferences dialog box.

Zooming shortcuts

Speed Tip

Double-click the Zoom (magnifying glass) tool to double the magnification; Option-double-click to halve it.

Press ⌘-spacebar to activate the Zoom tool, regardless of which tool is currently selected. (Press Option-⌘–spacebar to activate "zoom out" mode.)

Photoshop fans will recognize these additional shortcuts: Double-click the Hand-grabber tool to resize the entire document so that it fits on your monitor. Option–double-click the same tool to zoom to actual size.

50 ways to leave your palettes

Worth Learning

Illustrator offers dozens of ways to move, reshape, link, and combine its floating palettes. Actually, they're precisely the same shortcuts used in Photoshop (and PageMaker, for that matter). See "Palette management for the big-screen impaired" in the Photoshop Secrets earlier in this chapter.

Movable, manipulable guide lines

Guide lines in Illustrator work much like guide lines in a page-layout program: They're nonprinting rules that help you align and position objects and text columns.

To move a guide, Control-Shift–drag it. Here's a handy side effect: After the guide line is selected (albeit invisibly), you can use Illustrator's tools to rotate or skew it.

Multiple Easter eggs

In Illustrator 5.0 and later, if you click the status-line bar, you get a pop-up menu listing several practical data. But if you press Option while doing so, you get a choice of several additional, extremely hilarious displays: shopping days left to Christmas, the current national debt, Doug O's phone number, and more!

In Illustrator 6, if you choose About Adobe Illustrator from the menu, you get the About box. If you click the Adobe logo in the upper-left corner of this box, you'll be treated to an unbelievable, 15-minute, colorful animated fireworks/laser show that features dancing logos, the Cod Squad (whatever that is), and ultimately photos of the programmers themselves.

Furthermore, in versions 6 and 7, if you open the About box normally and wait for 30 seconds, the credits will begin to scroll — you can accelerate them by holding down the Option key. And finally, if you press Option while choosing About Illustrator from the menu, you get a special surprise — either a final secret credits screen ("Perpetrated by:") or, in version 7, a list of the programmer's anagrams (new words formed by scrambling their names).

3D Graphics

Until now, the world of 3D graphics has been a relatively rarefied one. Creating three-dimensional scenes on a two-dimensional screen requires a serious commitment of time, training, and money that only people such as architects, industrial designers, and movie makers are willing to make.

When you create a 3D graphic, you use a program like StrataVision or Infini-D. You work with wireframe graphics on the screen, shaping and combining the rudimentary shapes provided by each program (spheres, cubes, cones, and so on) into the solid objects you want to depict. You can then overlay these objects with *texture maps* (flat, wrappable designs such as bricks or wood grain) or *bump maps* (to give your 3D objects some degree of real-world roughness). Using a series of dialog boxes, you also must establish the angle, reflectiveness, and transparency of the objects in your 3D scene. You then set up the "lights" in the room — their placement, color, intensity, and so on.

You do all of this work in wireframe or highly simplified views — 3D modeling is definitely not WYSIWYG. Once you've input all of the various technical parameters, the Mac creates a finished graphic — in technical terms, it *renders* the scene. Rendering is a fantastically slow, complex, computationally intensive task, taking hours or days for a single file. That fact easily explains why there are people happy to pay $5,000 for the very latest, fastest Power Mac when it comes out. (You can also now understand why a movie like *Toy Story,* whose every frame was created as an individually rendered 3D computer graphic, took several years to create.)

QuickDraw 3D

Fortunately, the cost of enjoying the 3D graphics world — measured in time, money, and technical expertise — is dropped dramatically with the release of Apple's QuickDraw 3D, a technology that creates a standard, easy-to-use interface and file format (3-D Metafile, or 3DMF). QuickDraw 3D adds 3D graphics capabilities to the standard Mac operating system in exactly the way that QuickTime added digital movies. Exactly as with QuickTime, the suite of

tools includes a system extension, a new Scrapbook (see Figure 20-19), a new version of SimpleText, and tools for software companies to write programs that take advantage of the new technology. These software components come pre-installed on most new Macs, or can be downloaded from the Web (www.apple.com).
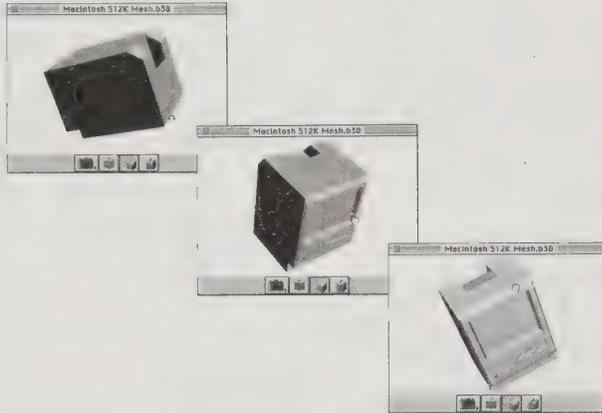
Figure 20-19: The Scrapbook of things to come. By clicking and dragging, you can rotate this Scrapbook item (a QuickDraw 3D object) in any dimension; zoom in or out; move it across the screen; or apply a texture map to it.

Once you've installed QuickDraw 3D, you can, for example, drag and drop a 3D object file between SimpleText and the Scrapbook. Once in the Scrapbook, you just drag your mouse around inside the picture window to rotate or tumble the object you're looking at. Better still, you can drag a 2D (regular) graphics file on top of such an object — instantly, that object is plastered with the graphic image. In other words, drag a scanned photo of bricks onto a QuickDraw 3D model of a car, and suddenly you've got a brick car.

QuickDraw 3D isn't *quite* the hit that QuickTime was — partly because 3D modeling isn't as popular as moviemaking, and partly because 3D requires serious computing horsepower: a Power Mac, mucho megs of RAM, and, preferably, a 24-bit color monitor.

Interested? Your next step is to equip yourself with a program that uses QuickDraw 3D technology: Tilt for After Effects, Microspot 3D World , QuickSpace Bridges 2D & 3D (a Photoshop plug-in), Thinkfish LiveStyles, Vertigo 3D HotTEXT, Lightworks Plug-ins, Adrenaline Charts SE, VIDI Presenter 3D, and so on. You can also buy QuickDraw 3D accelerator cards that speed up the Mac's display of 3D objects, such as those from Radius and XClaim.

If QuickDraw 3D ever catches on, it could be the cornerstone of a computerized 3D explosion: cheaper, easier modeling programs; more realistic games; and even "virtual worlds" that you can visit on the World Wide Web. For more information (and a list of QuickDraw 3D software), visit www.apple.com/quicktime/qd3d.

Chapter 21

The ResEdit Chapter

This book could not live up to its name without a chapter on ResEdit. ResEdit isn't just another application; it's the key that unlocks some of the Mac's strangest and most elusive secrets.

And we're talking *real* secrets here — not just undocumented features, obscure key combinations, or cute hidden messages. We're talking about the nuts-and-bolts stuff of which programs are made — stuff that's completely invisible to the average user.

ResEdit lets you poke into any application's *resources*, or most basic components, and rebuild them the way you want. If you don't like the name of a menu command, you can change it. If you're running short on hard drive space, you can rip unneeded sounds and pictures right out of your applications. You can totally redesign menus, dialog boxes, icons — all without knowing the first thing about programming.

We would have loved to include ResEdit on the CD with this book. Unfortunately, Apple, in its inconsistent wisdom, would have required enormous payments — even though it makes ResEdit available for free from its own Web site. Visit www.apple.com/.

What Is ResEdit?

Every recognizable Mac element of a program — icons, menus, dialog boxes, cursors, background patterns, sounds, graphics — are called *resources*. ResEdit stands for *resource editor,* and that's just what ResEdit is: Apple's own utility for changing a file's resources. Apple created ResEdit early in the Mac's history so that programmers could easily manipulate the basic elements of the Macintosh

ANSWER MAN

A hex on both your houses

Q: Not so fast there, Answer Man. You're not going to lob a term like hexadecimal *at us without defining it, are you?*

A: No.

Because it's a binary machine, the Mac has 16 "fingers" to count on instead of 10, like humans. Therefore, it has to count beyond 15 before advancing into two-digit numbers.

As a consequence, we humans have invented a bizarre numbering system called hexadecimal, in which you can count all the way up to 15 with a single digit. You count in hex like this: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F. The next number, in our notation, would be 16. In hex, the next number is written 10!

Here are some basic equations in hexadecimal notation: $2 + 2 = 4$. Next, we have $4 + 4 = 8$. But $8 + 7 = F$. And $F + 1$, as we've said, is 10 (in hex).

Get it? (We admit that this sort of plays with your head.)

interface. Over the years, successive versions of ResEdit have become safer and more user-friendly. Today, it's accessible enough for even a relative beginner to use.

ResEdit lets you edit many different kinds of resources. Mac OS 8.x's System file alone contains 192 different types. Some are easier to edit than others. To work with icons, for example, ResEdit provides basic painting tools. There are tools for changing the color, size, and arrangement of window element and dialog boxes; these tools closely resemble those you might find in a drawing program.

Other types of resources aren't quite so easy to handle. If you try to edit a resource for which ResEdit has no special editing tools, the program opens the resource in a *hex editor*. A hex editor is a window that displays the resource's code in raw hexadecimal form.

The first time you open a hex editor (see Figure 21-1), you may momentarily think you're working with something very foreign and incomprehensible — like DOS.

Nonetheless, you *can* edit a resource using a hex editor; you just have to know which part of the code to change. Several of the secrets described in this section require you to work with a hex editor. But don't worry; we'll tell you precisely which part of the code to select and how to change it.
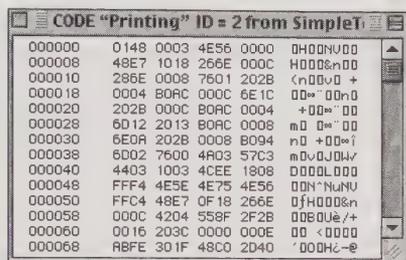
Figure 21-1: The unfriendly-looking hex editor displays a resource's code in hexadecimal form.

In some cases, you can also get around having to edit hex code directly by using a ResEdit *template*. Templates are separate plug-ins for ResEdit that add editing environments for specific types of resources. With a template, you can type data into a text field, or use a set of basic painting tools to alter resources, instead of having to type straight hex code. So even if ResEdit itself doesn't provide editing tools for a certain resource, you may be able to find a template that does, saving you the hassle of having to type in hex code. We've included some ResEdit templates on the CD-ROM that came with this book — and many more are available on the Internet.

How to Use ResEdit

Editing a resource is simple: Drop the icon of the file you want to examine or edit onto the ResEdit icon. (Actually, drop a *copy* of that file, for safety; more on this topic later.)

Or, you can use the Open File dialog box that appears when you launch ResEdit to open the file you want to change.

You can open any kind of file: applications, control panels, system extensions, or any other file. (Most *documents* don't have resources, however.) No matter what file you open, you'll see a window filled with icons representing all the different types of resources used in the file, as shown in Figure 21-2.

As you can see, each resource type is identified not only by an icon, but by a four-character code, such as FOND, DLOG, or STR#. (Some resource names like "snd" or "STR" appear to be only three characters long, but they actually consist of three characters and one space.) These codes often hint at their contents. The ICON resource is where you can change the shape of your icons (the *real* icons, not the kind you can paste into the Get Info box in System 7); the DLOG is how you change a dialog box; and CURS is where the cursor shape lives.

Figure 21-2: SimpleText, as seen through the eyes of ResEdit. Each resource type is represented by an icon.

Look for the type of resource you want to edit. Then open its icon by double-clicking. This introduces a new window that lists all the individual resources of that particular type (for example, all the sounds in a program). Each resource is tagged with an ID number. Double-click the resource you want to modify and the appropriate editing window will open. (We'll walk you through all this, step by step, in the following secrets.)

Occasionally, when you try to open resources in the System file, you'll encounter a dialog box warning you that the resource is compressed and asking if you want to edit it anyway. Click Yes and the resource will automatically be decompressed.

That's really all you need to know to pull off any of the tricks listed in this section. But before you go hacking away at your System file, we need to discuss the Peril Factor.

ANSWER MAN

It don't work!

Q: I tried one of your ResEdit hacks, and it didn't work!

A: Hey. We tried. We tested every trick on almost every System version we could find, but there are some incarnations of the Mac's System software we simply couldn't get our hands on. We *are* sorry if something doesn't work on your system, or with your particular set of extensions. But frankly, this is hacking; you do your deed and then see if it flies.

If you operate only on a *backup* of the target file, you've lost nothing by trying.

The Peril Factor

Articles and books on ResEdit are generally introduced with a morose warning about how perilous this program can be. We've heard people describe ResEdit as if it were some kind of poisonous snake — difficult to handle and potentially hazardous.

Actually, ResEdit is neither intimidating nor dangerous. In fact, we're confident that using it will never result in any kind of fatal computing disaster if you follow these sensible guidelines:

■ Make sure you have a backup, somewhere, of whichever file you try to edit with ResEdit. (You *can't* edit the active Finder — only a copy of it.) The procedures here are all tried and tested. But if, through some slip-up, you end up with a System file that behaves oddly, the backups make it easy to recover.

■ To make a quick backup of your System file, Option-drag it out of your System Folder to, say, the Desktop. Make your ResEdit changes to this copy. After saving your changes to this copy, put your *original,* untouched System file (until now, still in the System Folder) into a safe, otherwise empty folder of its own. Finally, put the edited copy — sitting out on the Desktop — into the System Folder. You've just swapped them. Now restart the Mac. (Keep your still-virginal copy around for easy access in case you need to restore it.)

■ Nothing you do in ResEdit "takes" until you save your changes using the Save command. You can fiddle around with a file in ResEdit all you want with virtually no danger of ruining it — just don't save your changes before quitting.

■ After you've made one change to a program with ResEdit, save your work, quit, and examine the results before making the next change. This way, if something *does* go wrong, it'll be much easier to hunt down the problem.

A primer in customizing menus

ResEdit is the Mac's premiere menu-customizing tool. Not only can you use it to add a ⌘-key equivalent to any command on any menu in any program, you can also *rename* menus and the items on them. You can even change the *color* and *style* of menu items, which enables you, for example, to make your most frequently used commands stand out in bright red italics. You can assign a color to the menu background and to each of the separator lines that appear between menu items. And perhaps wildest of all, you can add your own *icons* to any menu command!

To add a keyboard command to a menu item

OS 8

Open the application you wish to customize with ResEdit. Then, with a double-click, open its MENU resource icon (see Figure 21-3). (In Mac OS 8, the Finder has a MENU resource, but that's not where the main menu information is stored. Instead, you have to open and edit the *fmn2* resource — or, in System 7, the *fmnu* resource; we'll get to that in the next section.)
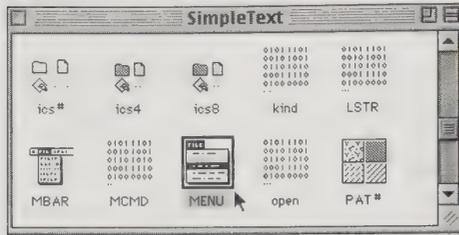
Figure 21-3: The MENU resource.

When you open the MENU resource, you see each of the program's menus displayed in a separate box within a window. For example, if you opened SimpleText's MENU resource, you'd see the window shown in Figure 21-4. Scroll to the particular menu you want to edit and double-click it to open up the menu-editing window.
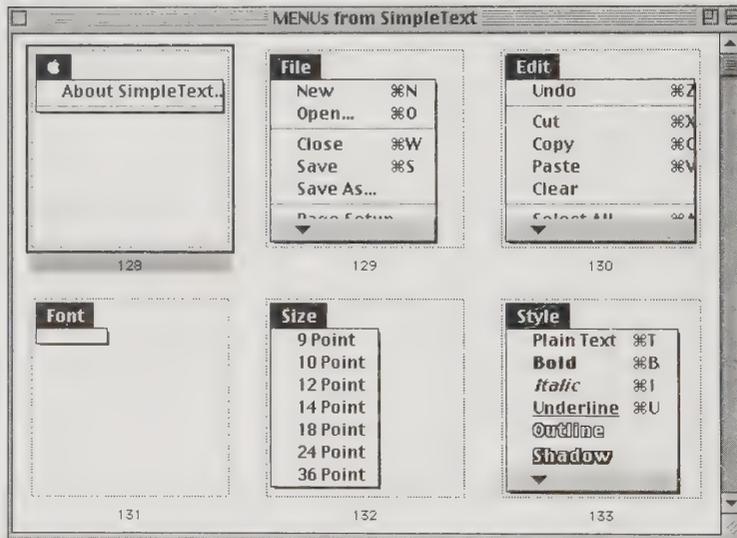
Figure 21-4: The opened MENU resource, with each menu displayed.

Suppose you want to add a keyboard equivalent for the Clear command on SimpleText's Edit menu. Just select the command (or press Return to cycle through the menu items one by one) and then press Tab twice. This selects the ⌘-key field in the lower-right portion of the window. Type in the letter you want for the command (in this example, we chose *D*), and it's automatically added to the menu, as shown in Figure 21-5. (If you give a menu command a keystroke that's already assigned to something else, it may not work.) Save the changes using the Save command before quitting ResEdit.
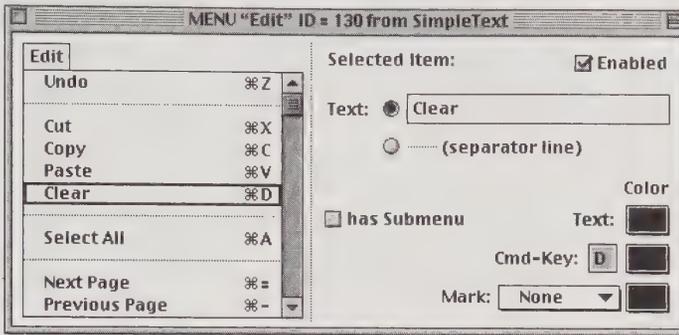
Figure 21-5: Adding a ⌘-key equivalent to a menu.

To change the names, colors, and styles of menu items

Select a menu item (or the menu title itself). Its name appears in the Text field. You can rename the command or title by pressing Tab (to select the Text field) and then typing in a new name. To change the style of the text — adding italics or underlining, for example — use the Style menu on ResEdit's menu bar. Figure 21-6 shows how the Clear command has been renamed Delete and set in italics.
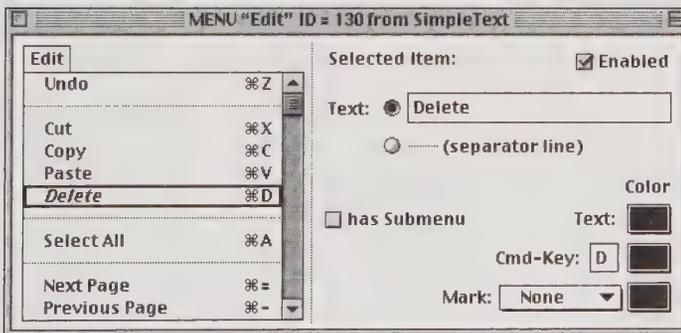
Figure 21-6: In this example, a menu item has been renamed, assigned a keyboard equivalent, and set in italics.

When the menu *title* is selected, the three color pop-up palettes allow you to pick a custom color for the title of the menu, the menu background, and the default color of all text in the menu commands. When a menu *command* is selected, the same three palettes let you choose new colors for the text of the selected command, its associated ⌘-key, and any mark or symbol selected to appear next to the command. Renaming a menu or menu item can make it easier to locate an obscure, but needed command.

Adding icons to menu commands

After opening a MENU resource, select the menu command to which you'd like to add an icon. Then choose Menu ⇨ Choose Icon (see Figure 21-7 for the Choose Icon window).
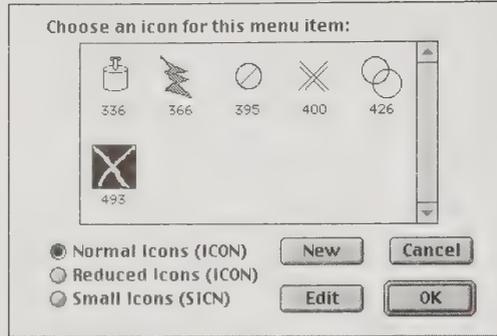
Figure 21-7: Icons in menu commands? Why not?

In the Choose Icon window, select one of the three size options: Normal, Reduced, or Small. (The smallest icon size can't be used if you've added a ⌘-key shortcut to the selected command, too.) Now click the New button. You'll see a simple icon-editing window. All you have to do is paste in a graphic from another program, or draw one from scratch. (To doctor up an existing icon, select it and click the Edit button.) When you're finished, close the editing window and double-click your new icon to apply it (see Figure 21-8).

Strange But True For a really different look, try adding custom icons, and then *deleting* the names of the commands. You'll end up with a completely graphical menu — one that contains only pictures and no words.

Figure 21-8: A SimpleText menu dressed up with a set of custom icons and one renamed menu command.

Customizing separator lines

You can select any separator line that appears in a menu and, using the pop-up color palette, change its color. To eliminate a separator completely, select it and click the Text radio button without typing *anything* in the text field.

Here's another neat variation: Select a separator line, click the Text radio button, and then type in a string of characters — dashes, bullets, asterisks, or whatever — to make a *custom* separator. By clicking the three color swatches, you can assign these characters (or the menu names themselves) colors and styles to create some interesting effects, as shown in Figure 21-9. In this example, a standard separator line was replaced with a string of tiny circular degree characters (produced by pressing Option-Shift-8). The condensed font style and a custom color were applied to give the separator its unique look. (Type a left parenthesis somewhere in the string, however, if you want to make this command unselectable.)
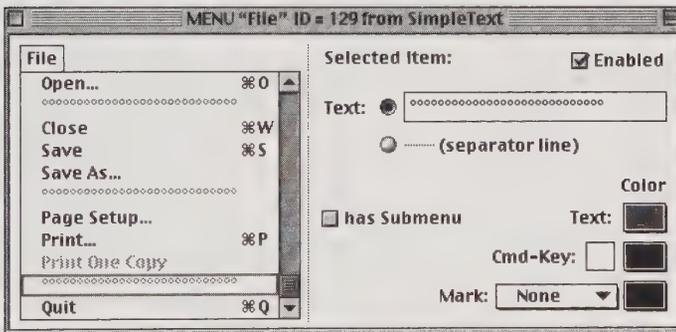
Figure 21-9: Creating custom separator lines.

Combining all these techniques, you can also create some wild-looking reversed-color menus, as shown in Figure 21-10. Choose a dark color, or black, for the background, and set the menu text to white or a light color. (To change the background color for the menu, click the menu's *name,* such as the word Edit in Figure 21-10.)
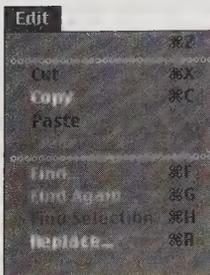
Figure 21-10: A reversed-color menu.

Adding a keyboard equivalent in Finder 7 or 8

In the Finder, information about menu items is stored in the *fmnu* resource (System 7) or the *fmn2* resource (Mac OS 8.x), both of which are a bit harder to edit than standard MENU resources. Nevertheless, you can still add keyboard commands to Finder menus. Here are some tricks worth trying.

Adding an Empty Trash keyboard equivalent

Perhaps to protect the novice, there's no keyboard equivalent for the Empty Trash command. But suppose you want one.

Open a copy of the Finder (not the one in the active System Folder) using ResEdit. Double-click the *fmn2* resource icon. You see a long list of numbered resources. Near the top of the window, the resources numbered 521 through 525 contain information about the contents of Finder menus, according to the following scheme:

Resource ID number	Finder menu (Mac OS 8)	Finder menu (Mac OS 8.5)
#520	Apple	
#521	File	Apple
#522	Edit	File
#523	View	Edit
#524	Special	View
#525		Special

If you're running System 7.x, the same information is stored in the fmnu resources, numbered 1252 though 1256. Open the resource corresponding to the menu you want to edit — for example, 524 for the Special menu in Mac OS 8. Use the Find ASCII command (⌘-G), type **Empty Trash** (capitals count), and press Return to find that text in the narrow column of text on the right side of the window. Or just scroll down until you find the words "Empty Trash" in the column (it's split over two lines).

Just *before* the phrase "Empty Trash" are four boxlike characters (which we've heard called both *hex bits* and *nybbles*). Select the second hex bit character on the line, exactly as shown in Figure 21-11, and change it to whichever letter you want to use as the ⌘-key shortcut (*T*, for Trash, is the logical choice).
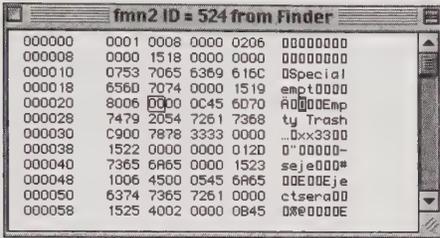
Figure 21-11: Adding an Empty Trash keyboard shortcut in fmn2 resource 524.

When you insert the *T* character as shown, choose Save, and quit ResEdit. Now swap the Finder you just modified with the active Finder in the System Folder. When you restart the Mac, you'll see that ⌘-T has been added next to the Empty Trash command on the Special menu (see Figure 21-12).

Figure 21-12: The Special menu, with an added Empty Trash keyboard shortcut.

Using this same method, you can add a keyboard equivalent to almost any Finder command that doesn't already have one. Always add the character in the *third space before* the name of the command, replacing the hex bit character that appears in that spot.

Note: If you want to add a keyboard equivalent for the Shut Down command, add the character in the third space before the words **Shut Down** (notice the capitalization) and *not* the word **shut** (lower case), which also appears in the ASCII column (see Figure 21-13).
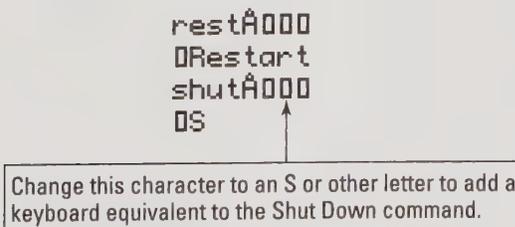
Figure 21-13: A close-up of resource 524, where you can add a keyboard equivalent to the Shut Down command.

Customizing dialog boxes

You can customize dialog and alert boxes in any program by editing the program's DLOG, ALRT, and DITL resources. Opening a DLOG or ALRT resource enables you to change the size, window type, position, and color of a dialog or alert box. The DITL resources contain the actual *contents* of the dialog boxes — buttons, text, and icons, all of which can be edited or replaced.

Suppose you want to customize the dialog box that appears when you create a new folder from within a Save File dialog box in Mac OS 8 through 8.5, as shown in Figure 21-14. This involves resizing the dialog box, as well as resizing, moving, and renaming the two buttons.
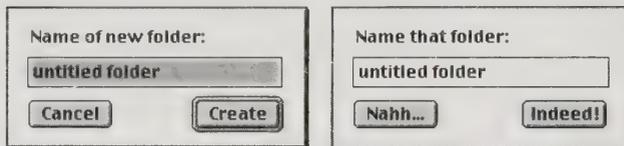
Figure 21-14: A typical dialog box, before and after ResEdit hacking.

Open a copy of the System file using ResEdit. Double-click the DLOG resource icon; then double-click resource number –6046. You see the dialog editing window (see Figure 21-15), which displays a smaller version of the "create new folder" dialog box against a mini-Mac screen.
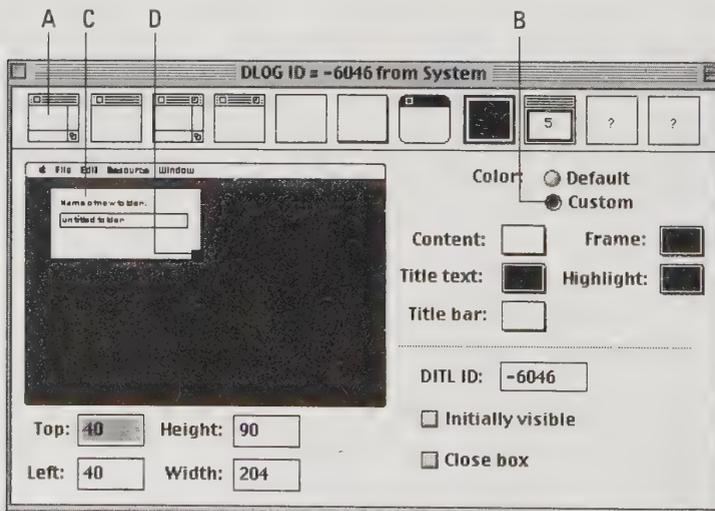
Figure 21-15: The DLOG editing window.

Here's a guide to the dialog-editing controls that appear in this window:

A. Click one of the icons across the top to change the window type. You can put the dialog box in a window with or without a zoom box, resize box, title bar, drop shadow, and so on. To preview your choice, use the Show Dialog at Full Size command from the DLOG menu.

B. To change the color of a dialog box, select the Custom radio button, and then use the pop-up color palettes to pick a new color for the title text, frame, and highlighting.

C. Drag the whole dialog box across the mini-screen to change the location where it will appear on the real screen. (You can see how the dialog will look on the actual screen by using the Show Dialog at Full Size command from the DLOG menu.) *Double-clicking* anywhere on the mini-dialog box automatically opens the corresponding DITL resource, which contains information about each button, text string, field, and icon in the dialog box.

D. Resize the dialog box as you would any window, by dragging the handle at the lower-right corner.

Editing individual dialog-box elements

After you adjust the size, color, and type of the dialog box, double-click it to open DITL resource –6046. The DITL resource allows you to edit any element *within* the dialog box.

To move a button, text string, or icon, simply drag it to a new location within the dialog box window. To resize a button, select it and then drag the handle in the lower-right corner (see Figure 21-16).
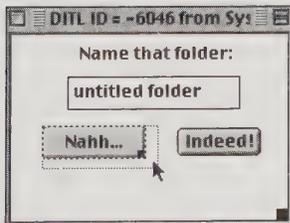
Figure 21-16: Drag the resize handle of a button to change its size.

To give the button a new name, or to change the *static* (unchanging) text that appears in the dialog box, double-click the text or button. Then type in a new name or text string in the text field that appears (see Figure 21-17).
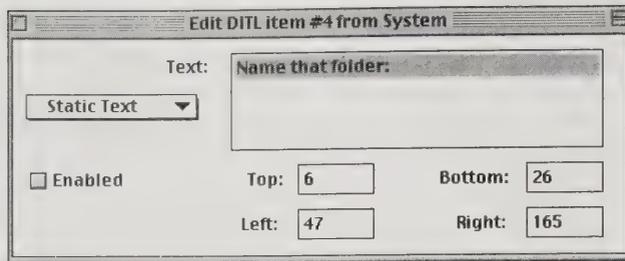
Figure 21-17: Editing text in the DITL editing window.

After you edit the DLOG and DITL resources, choose the Save command, quit ResEdit, and restart your Mac using the modified System Folder.

Now then: the secrets. We've tried all of these with ResEdit 2.1.3 and performed our surgeries with various incarnations of System 7 and Mac OS 8 — and even with a late beta of Mac OS 8.5.

ResEdit Secrets

Getting rid of the jack-in-the-box once and for all

We guarantee the first thing you'll want to do after you start using ResEdit is get rid of its irritating splash screen, which features an insipid jack-in-the-box. Fortunately, this doesn't require any hacking. Choose Preferences from ResEdit's File menu and deselect the check box next to Show Splash Screen. You'll be glad you did.

ResEdit navigation shortcuts

Speed Tip

You can use a number of keyboard shortcuts to locate resources quickly in ResEdit, rather than scrolling through lengthy windows to find a particular item. Many ResEdit hacks can be accomplished without a single mouse-click. Here's the rundown:

■ As in Finder windows, you can jump to any resource icon simply by typing its name, or just the first letter of its name. If you open the System file and want to select the *ppat* resource, for example, type **pp**.

■ Use the arrow keys to highlight any resource icon in a window.

■ Pressing the Tab key moves you to the first icon at the top of a window.

■ Instead of double-clicking a selected resource icon, you can open it by pressing Return or Enter.

- After you open a resource icon, you can navigate through the various resources listed using the up-arrow and down-arrow keys. Open a numbered resource by again pressing Return.

- Pressing ⌘-up arrow or ⌘-down arrow jumps you to the top or bottom of the window.

Quicker window picker-upper

Speed Tip

As you'll no doubt soon discover, working in ResEdit means poking through a series of windows within windows. Fortunately, you needn't spend the remainder of your adult years chasing down successive close boxes. Just close the outermost window; all windows you've opened from it close automatically.

ResEdit painting shortcuts

There's a hidden Change Color command in ResEdit's painting tools, which appear whenever you edit an icon or a pattern (such as the Desktop or scroll bar patterns).

Press ⌘ and select a color from the colors palette. Instantly, all pixels of the current foreground (or background) color change to match the color you just selected.

TRUE FACT

How we wrote this chapter

We'll be honest — we've written and revised this chapter through five editions of this book and it just about drives us crazy every time. To test all of our secrets, we have to doctor up one System or Finder file after another, swap it into the System Folder, and then restart, again and again and again.

To ease the pain, however, we start by putting copies of our pristine, non-hacked System and Finder files into separate folders on the Desktop. Then, every time we want to test another secret, we just Option-drag one of these files to the Desktop and start operating. This way, we always have a clean, ready-to-use System or Finder available, without having to repeatedly dig into the System Folder.

We also load the files that we hack most often into ResEdit's Open Special menu, which lets you open these files without having to return to the Finder or step through an Open dialog box.

Finally, we begin our testing sessions by visiting the Extensions Manager control panel and turning off all but the most essential control panels and extensions, dramatically speeding up the Mac's startup sequence. We suggest you do the same.

Eliminating the "alias" suffix

When you make an alias of a file using the Make Alias command, the Mac automatically appends the word *alias* to the end of the file's name — and most normal people promptly hack it off. You can teach the Finder to stop adding the suffix in the first place.

Worth Learning

After opening a copy of the Finder 8 with ResEdit, find the STR# resource icon. Open it, and then open resource number 8200 (in Mac OS 8 through Mac OS 8.5) or 20500 (in System 7.x). This resource window contains a series of fields filled with pieces of text (*text strings*) used by the Finder (see Figure 21-18).

```
╔═══════════════ STR# ID = 8200 from Finder ═══════════════╗
║                                                          ▲
║  NumStrings    16                                        █
║   1) *****                                               █
║   The string  ┌──────────────────────────────────────┐ █
║               │ alias                                  │ █
║               └──────────────────────────────────────┘ █
║   2) *****                                               █
║   The string  ┌──────────────────────────────────────┐ █
║               │ because *0x//*you have reached         │ ▼
║               │ the limit of the number of file        │
║               │ servers you can log on to at one       │
╚══════════════════════════════════════════════════════════╝
```
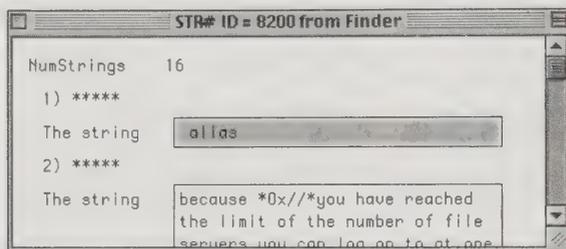
Figure 21-18: Get rid of the "alias" suffix on newly created aliases by editing the first text string in STR# resource 8200.

The first field contains the text string that gets added to alias file names: the word *alias* itself. All you have to do is replace the word *alias* with a single blank space, close the resource, save the change, and quit ResEdit.

Restart your Mac using the modified Finder. Now, when you create a new alias, only the one blank space is added to the file's name — not the word *alias*.

OS 8

(Of course, if you're running Mac OS 8 or higher, you can avoid the whole "alias" suffix problem altogether by using the Finder's built-in alias-making shortcut — just ⌘-Option drag a file to a new location. Instead of a copy, you'll get a new alias of the file — *without* the alias suffix.)

Changing the "About This Computer" picture

Remember the old days, when choosing About This Macintosh from the menu revealed the name of your exact Mac model and even displayed a little icon of the model itself . . . ?

Nowadays, of course, the About box is much more generic, displaying a picture of earth from outer space emblazoned with the words *Mac OS computer* — no matter what model you have.

You can give your Mac a more personalized look by changing that picture. Open a copy of the Finder with ResEdit and then double-click the PICT resource icon.

The two resources listed there are the two pictures that you can change—the Mac OS-in-space picture and the smaller Mac OS logo. Just copy and paste new PICT files to replace these, save, and then restart from the modified Finder to see the results of your hacking. Note: It's important that the *resource ID numbers* for each of these PICT files remain intact. The larger PICT is ID 4000, and the Mac OS logo is ID 4001. To change the ID numbers of the replacement PICT files in which you paste, click the PICT resource and press ⌘-I, then type the new number in the ID field.

Give the Finder more memory

The Finder's memory is supposed to be self-adjusting, grabbing as much RAM as it needs, at startup, to be ready for its hard day of work. Sometimes, though, it under-guesses; at some point in your work, you get a message saying, "There is not enough memory to keep this window open."

You *can't* allocate more memory using the Finder's Get Info window, as you would any normal program; its Get Info box doesn't have any memory-size boxes. However, you can give it more memory—with ResEdit.

Worth Learning

Open a copy of the Finder with ResEdit, double-click the SIZE resource icon. You'll see a resource called ID –1. Open it, and scroll down to the bottom of the window. You'll see two fields—Size and Min size. The Size field shows the amount of memory currently allocated to the Finder (in *bytes*, not kilobytes). In Mac OS 8, for example, the number is 933,888 (that is, 912K). To increase the memory allocation, just type in a higher number. (Typing in 1,500,000, for example, would give the Finder a memory allocation of 1,464K.) When you're finished, save the changes, then restart your Mac using the altered Finder.

Make a program Stationery-stupid

In Chapter 15, we mentioned that "Stationery-savvy" programs can create Stationery documents that, when double-clicked, produce a copy of the original as an untitled document on the screen.

We actually prefer the approach of non-savvy programs, whose Stationery documents prompt you for a name and folder for the document copy. Here's how to make a program that does Stationery the correct way behave as though it doesn't, so you'll always be prompted for a name and folder location when you double-click a Stationery document.

Open the application in ResEdit. Open its SIZE resource, and double-click the item labeled –1. Scroll down until you see the Stationery Aware option. If the 1 radio button is selected, the program handles Stationery "correctly" (that is, it *doesn't* ask you for a file name when you double-click a Stationery document). Just click the 0 button. The program is now Stationery "unsavvy." Save and quit. (However, you *can't* make an older program Stationery-aware by selecting 1 if the *0* button is selected when you first open it. That's up to its programmers.)

Changing the speech samples for MacinTalk voices

As we mentioned in Chapter 3, you can choose the voice you want your Mac to use when rendering text into speech by changing the settings in the Speech control panel. You can choose Fred, Victoria, Zarvox, or any other voice from the Voice pop-up menu and then click on the little speaker button to hear a sample of what the voice sounds like. Most of the sample phrases uttered by the voices in the Speech control panel are pretty funny, too.

Here's how you can create your own sample sentences for any one of these voices. Open a copy of a MacinTalk 3 or MacinTalk Pro voice file (they're located in the Voices folder, inside the Extensions folder) with ResEdit. Double-click the ttvd resource icon, then open the only ttvd resource listed. In the rightmost column (the ASCII column) of the hex code window you'll see the voice's default phrase. Simply select that text and replace it with your own (see Figure 21-19).
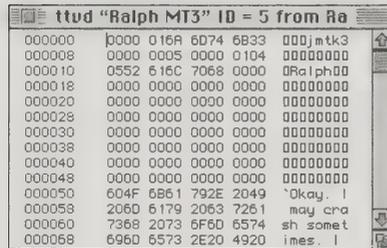
Figure 21-19: Edit the text in the rightmost column of the Ralph ttvd resource to change Ralph's sample speech.

Caution: In order for the voice to work properly, you have to replace the default phrase with text containing exactly the same number of characters. If you're off by one character, the voice won't work. Fortunately, punctuation marks and spaces count, so you can pad your sentences if needed.

After you've typed in your new phrase, save the file (do not rename it) and swap it with the original voice file in the Voices folder, then restart your Mac. (Make sure you've completely removed the original voice file from the System Folder; renaming it and leaving it in the Voices folder won't work.)

From now on, when you click the speaker button in the Speech control panel, the voice will speak using your custom phrase.

MACINTOSH SECRET

Lubomir's ResEdit secret collection

We'll take our secrets any way we can get them — even by e-mail all the way from Denmark. Free book winner Lubomir Stroetmann unloaded what must be months' worth of ResEdit secrets on us in just that way. Take it away, Lubomir!

After you choose File ➪ Verify File, Option-double-click the name of a file you want verified. During the Verify process, you get to see a secret window that displays resource verification details.

If you Option-double-click a resource for which you've got a built-in editor (such as MENU, ICON, or PICT), you're shown the contents in a list numbered by ID number (instead of the usual graphic editor).

Don't miss the File ➪ OpenSpecial ➪ Modify This Menu command. It lets you add frequently opened files (such as the System file, your copy of the Finder, and so on) to the Open Special submenu.

You can tear off the pattern and color pop-up-palletes in the Icon editors.

And now, some ResEdit Pranks:

- Edit the "vers" resource of your applications. You can create Photoshop "7.3" or FileMaker "8.0"!

- Use ResEdit's Get Info command on an application. Change its name to *Finder,* type to *FNDR,* creator to *MACS,* and select the System and United checkboxes. Put this app in your System Folder and hide the real Finder somewhere else. When you restart, your doctored program will be the only application your hapless victim can use!

- Select a symbol font (such as Zapf Dingbats) as your font for icons (in the Views or Appearance control panel). Now make the actual control panel invisible, leaving the recipient of your efforts with no way to read his own icon names in the Finder!

Changing the system's default font

(OS 8.5)

The Mac's default system font, 12-point Charcoal or Chicago, shows up just about everywhere you look in the Macintosh interface: menu titles, menu commands, title bars, dialog boxes, and so on. In Mac OS 8.5, of course, you can change this font using the Appearance control panel.

If you're using a previous system, you can change this default to any other font in the system by following these steps.

If you're using System 7.0, open a copy of the System file with ResEdit. Open the FOND resource icon. In the FOND window, you see each of the fonts listed by name, size, and resource ID number (see Figure 21-20). In System 7.1 or later, you use ResEdit to open the *suitcase* of the actual font you want to turn into the default font. Double-click the FOND resource icon to see the list of fonts.
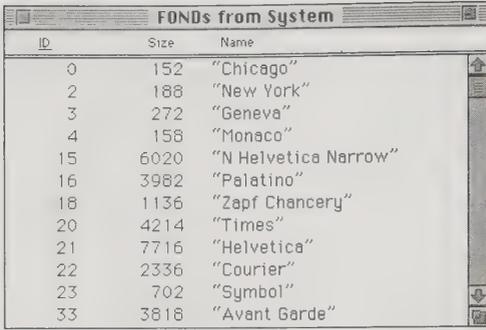
Figure 21-20: The FOND resource lists all available fonts.

Your first task is to learn the Res ID number of the font you want to designate as the new default system font. Scroll to your font of choice — let's use Palatino in this example — and open the resource. Scroll down a bit and you'll find a series of fields set off by asterisks, as shown in Figure 21-21.
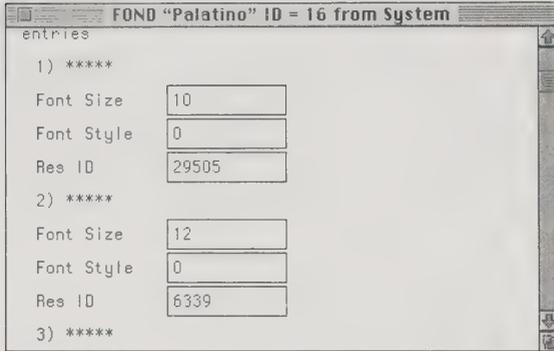
Figure 21-21: The Palatino FOND resource, showing the style and Res ID number for each font size.

These fields show the Res ID and style codes for each size of the font. In our example, we want to use 12-point Palatino, which has a Res ID number of 6339. Remember that number and close up the Palatino FOND resource.

Now open a copy of the System file with ResEdit. Double-click the FOND resource icon in the System file and open the FOND resource for Chicago from the list of fonts. Scroll down to the Font Size, Font Style, and Res ID fields, and find the Res ID number for 12-point Chicago.

As you can see in Figure 21-22, this number is 12. Simply replace that number with 6339 (Palatino's Res ID number) and you're done. (The exact Res ID numbers may vary, depending on which version of the system software you're

using. At any rate, just replace Chicago's ID number with the ID number of the font you want to make the default and this will work.) Don't change the 12 in the Font Size field, even if the font you're using is a different size. Save the changes, quit ResEdit, and restart with the modified system.
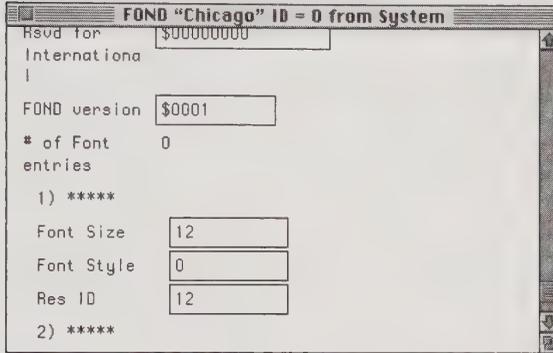
Figure 21-22: Replace the Chicago font's Res ID number with that of another font to pick a new default system font.

Your Mac may not take graciously to this kind of surgery at first. On restarting, you may be greeted with a blinking question mark or experience an immediate crash. Not to worry; just restart again and you'll find the Mac has come to accept this fundamental change to its system (see Figure 21-23).
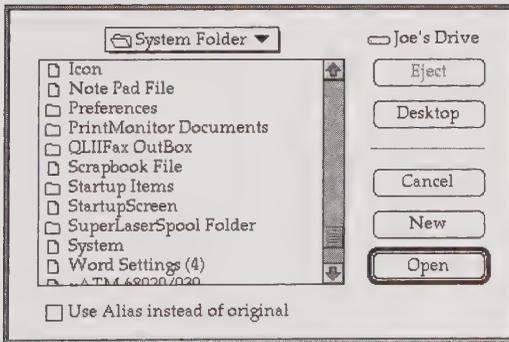
Figure 21-23: A typical dialog box, after you've changed the default system font from Chicago to Palatino.

Strange But True

One other point: If the new font you choose doesn't have a ⌘-key character in its font set, the ⌘ character will be missing next to menu items that have ⌘-key shortcuts. Don't worry, though; the shortcuts still work just fine.

Changing the Launcher's font

If you don't feel brave enough to alter the Mac's default system font, you might want to at least change the font in the Launcher; it looks much better when you replace the humdrum Geneva font (see Figure 21-24).
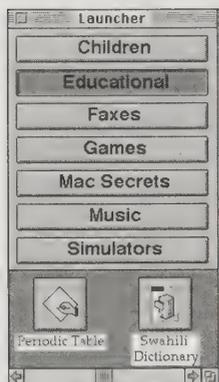
Figure 21-24: A redesigned Launcher with category labels in 16-point Helvetica and Launcher buttons in 12-point Palatino.

Open a copy of the Launcher with ResEdit, and double-click the *fnin* resource icon to open it. Open resource –4033. As you scroll through the resource, you'll see ten Font Name fields containing the name Geneva, and ten Font fields containing the number 3. The first set of fields controls the font used in topic buttons (at the top of the Launcher window; see Chapter 4). The next nine are the fonts used for Launcher buttons in various sizes, to correspond with the three different-sized Launcher buttons you can create.

Simply replace the word "Geneva" with name of the font you want to use and replace the 3 with the corresponding appropriate font number. To figure out a font's number ID, open that font's suitcase with ResEdit, open the FOND resource, and note the ID number associated with the font in the resource list. (Don't use the *Res ID* number that appears in the Res ID field when you actually open a FOND resource.) Type a point size in the Size fields to set a size for each font.

Changing Sample Font Text

By now you've probably learned you can view a sample of any TrueType font or screen font. You just double-click its icon in the System Folder or Fonts folder and examine the odd sentence in the sample window: *Cozy lummox gives smart squid who asks for job pen* or *How razorback-jumping frogs can level six piqued gymnasts.* These sentences may seem odd, but they use every letter of the alphabet — perfect for sampling a font.

(OS 8) You can change the text to anything you want. In Mac OS 8 through 8.5, open a copy of the Finder in ResEdit, open the STR# resource icon, open number 5816, and edit the text in the first field (see Figure 21-25).
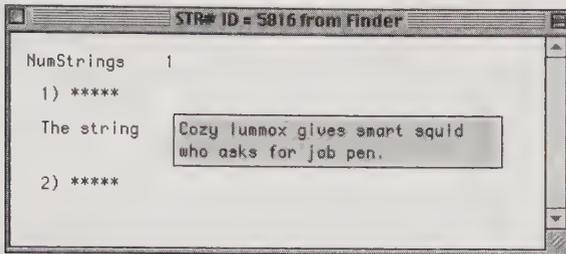
Figure 21-25: The STR# resource in which Mac OS 8's sample font string is located, and the resulting sample as seen when you double-click a font file.

In earlier System 7 versions, this sample text string is buried in a different location; it's an STR resource, with the ID number 14516 in System 7.5 and 14512 in earlier System 7 versions.

If you insist on replacing Apple's sentence with another that uses every letter of the alphabet, you'll have to come up with a fitting alternative, such as *We heard five obnoxious jet-black lizards quietly gulping milk.*

Rename the Trash

If you ever tried assigning a new name to the Trash icon on the Desktop, you probably noticed that you *can't.* You can rename the Trash, however, using ResEdit. Open a copy of the Finder; open its STR# resource icon. Under Mac OS 8 through 8.5, open resource number 4700 (or, with any earlier system, resource number 11750). In the first field in the resource window you see the word Trash (see Figure 21-26). Just replace that with a new name, save the change, and quit ResEdit.
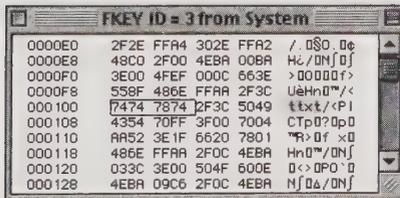
Figure 21-26: Renaming the Trash.

Change the "Copying files" message, and more

Here's an easy one. Open a copy of the Finder. Open the STR# resource. Scroll down to the one called 3500 in Mac OS 8.x (or 8750 in any version of System 7) and double-click it.

In the resulting window, you'll find a number of pieces of text that you can change, such as the various messages the Finder displays when it's copying files (Copying, Writing, Verifying, and so on). Change these to your heart's content! Then put the Finder into the System Folder and restart.

Change the boring Alert icon

All the icons displayed in the Mac's standard dialog and alert boxes are stored in the System file as ICON resources. You can edit or replace these icons to spice up run-of-the mill alert messages. For example, you can replace the plain triangular-framed exclamation point that typically adorns an alert box with something more intriguing, such as the bizarre electric mixer icon that for some unknown reason is stored in the System file (ICON resource –16561).

To make such a switch, use ResEdit to open a copy of the System file. Open its ICON resource. Select the icon you want to change and open it up to reveal the editing window. Then either doctor it up with the painting tools or paste in a graphic you copied from another program.

Adding buttons to Netscape Navigator

Contest Winner

Netscape Navigator 3.x offers a row of "single-click" buttons — but unlike Internet Explorer, Navigator doesn't let you modify them. At least not without this tip from free book winner Seth H. Hitching.

Open your copy of Navigator in ResEdit. Double-click the STR# resource; inside, item –301 contains the button names, and –4000 contains the associated Web addresses (www.macworld.com, for example).

Seth even goes so far as to edit Navigator's Directory menu, which lists a few additional Web pages. In the STR# resource, item –4020 contains the URLs for this Directory menu, which you can rename in the MENU resource (item –135).

Replace the Mac OS splash screen

Starting with System 7.5.1, the traditional "Welcome to Macintosh" message you see when you start up your Mac is immediately followed by a splash screen featuring Apple's new Picasso-esque Mac OS logo. Because this splash screen is simply a PICT graphic buried in the System file (or in the System 7.5 Update file, if you have System 7.5.1), it's easy to replace it with any other picture you like.

To swap your own graphic in for the Mac OS picture, open a copy of the System file (or System 7.5 Update file) with ResEdit. Open the PICT resource icon. You'll see that there are actually six separate PICT images of the Mac OS logo stored there — one for monitors set to show full color, one for 4-bit color, another in grayscale, and so on. The PICTs are in resources –16501 through –16506.

Strange But True

Double-click one of the resources to open it. Copy a graphic from another program, and then paste it into the opened PICT resource, replacing the Mac OS picture with your own (see Figure 21-27). If you want your picture to appear no matter what the monitor color depth, paste your picture into all six of the resources, replacing all of the original logo art. When you're finished, save your work and quit ResEdit.
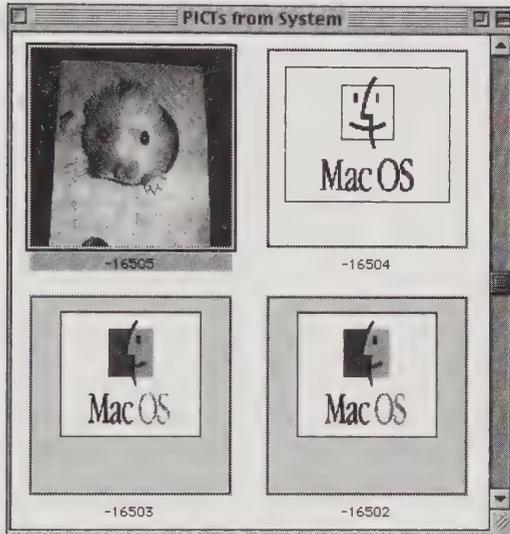
Figure 21-27: Just replace the Mac OS graphic with any other PICT file to get a custom splash screen at startup.

When you restart, just after the "Welcome to Macintosh" message, you'll see your new picture at center screen.

Opening and playing sound resources

If you use ResEdit to open any program containing digitized sounds — including the System file — you'll find the program's sound resources by opening the *snd* icon.

When you select a sound resource, a new menu appears in ResEdit's menu bar — the snd menu (see Figure 21-28). To listen to a sound, select the sound (don't actually open it) and choose the Try Sound command, or just press ⌘-T. The sound plays once. The Try Scale With Sound command lets you hear the sound played on each of the different pitches in a C major scale. The Try as HyperCard Sound command lets you hear how the sound would play if converted into HyperCard's sound format.
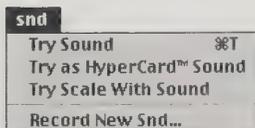
Figure 21-28: ResEdit's snd menu.

If you find a sound you like, you can select it and copy it using the Copy command. You can then paste the sound into the Sound control panel (and make it the default alert sound for your Mac), or paste it into the Scrapbook for future use.

To illustrate: The Jigsaw Puzzle desk accessory contains three digitized sounds. The one called CongratsSnd plays only when you successfully complete the puzzle. Suppose you want to grab this little xylo riff and make it your system beep. Here's what you do:

Open the Puzzle using ResEdit and open the snd resource icon. You see three sound resources, neatly named and numbered (see Figure 21-29). Click the CongratsSnd one once and then press ⌘-C or choose Edit ⇨ Copy.

Now just open your System file, open *its* snd resource window, and paste. After you save and quit, from now on, you can use that Jigsaw Puzzle sound as an alert beep — or play with it as you would any sound (see Chapter 23).
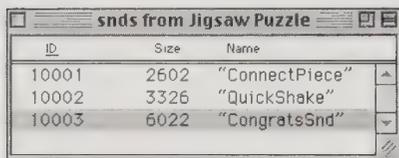
Figure 21-29: The snd resources in the Jigsaw Puzzle desk accessory.

Replacing a sound resource by pasting

Anyone who's ever logged on to America Online is familiar with the hearty "Welcome!" you hear when you connect successfully. But suppose you want to replace that "Welcome" with something a little more dramatic. You can easily alter that sound, or almost any other sound in any program, with ResEdit.

Actually, there are two ways to *replace* a sound resource in an application. You can paste in a sound from another source using standard Cut and Paste commands. Or you can record a new sound using ResEdit's built-in recording features.

Copy a sound from the Scrapbook or another application using the method described in the previous secret. Then use ResEdit to open the application containing the sound you want to replace. After opening the application's snd resource icon, choose the Paste command. Your new sound is installed into the application.

The next step is to figure out which of the application's sounds you want to replace. Use the Try Sound command to determine which sound is which. When you find the one you want to replace, make note of its ID number listed in the window. Then delete the sound by choosing the Clear command (unless you think you'll want to restore the sound someday, in which case you should copy it to the Scrapbook before deleting it).

Then select the new sound you just pasted in and choose Get Resource Info from the Resource menu (or press ⌘-I). In the ID field, type in the exact ID number of the sound you just deleted and click OK. Choose Save and quit ResEdit.

The application now plays your pasted-in sound in place of the one you deleted.

Replace a sound by recording directly into ResEdit

If your Mac has a microphone, you can record new sounds directly into an application.

Suppose you want to replace America Online's "Welcome" announcement with a digitized recording of your *own* voice, saying "I'm back!" In America Online 3, the snd is embedded in the program itself, just as you'd expect; in 2.7 and earlier, it's in the Online Sounds file, which is kept in the Online Files folder (within your America Online folder). (And if you have America Online 4, see Chapter 26 for instructions on replacing these sounds the easy way.)

Open the appropriate file (America Online or Online Sounds). Double-click its *snd* resource. You see the list of the familiar America Online sounds, such as "You've got mail!" and "Goodbye!"

Choose Record New Sound from the *snd* menu. A recording control panel appears, as shown in Figure 21-30. Record your new sound using the controls provided.
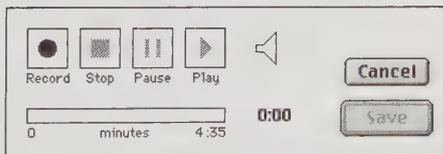
Figure 21-30: ResEdit has its own recording controls for adding new sounds to an application.

Then follow the same steps outlined in the previous secret. That is, note the ID of the sound you want to replace (the "Welcome!" message is number 256). Delete the old sound, and assign its ID number (256) to the sound you just recorded.

Now, whenever America Online has the impulse to shout "Welcome!", you'll hear your own voice instead.

Creating a mini-calculator

Strange But True

Virtually everyone we know operates the Calculator desk accessory using the numeric keypad and *not* by clicking the on-screen buttons. So, we figured, why not just *eliminate* the buttons — and the title bar and close box, for that matter — to create a tiny, but fully functional calculator that takes up much less space on your monitor?

Here's how we did it. Open the Calculator using ResEdit and open the WIND icon. This contains only one resource, number –16000. Open it and you see a window such as the one in Figure 21-31. This controls the size and type of the Calculator window and its location on the screen.

Figure 21-31: The Calculator's WIND resource.

After this window is open, you can change the appearance of the Calculator window. Change the window type by clicking one of the icons across the top of the window. In this example, we picked the plain rectangular shadowed window that lacks a close box and title bar.

Then, by dragging the handle at the bottom right of the window that appears on the miniscreen, resize the calculator window. It takes a little trial and error to size the window properly, so that the readout screen is visible but the buttons aren't. Move the entire window to the location on the screen that you want the Calculator to appear whenever you open it (see Figure 21-32).

Choose Save and close all the windows. Before quitting ResEdit, try opening the Calculator. If you sized the window properly, it should look as it does in Figure 21-32.

If you haven't framed the Calculator properly, it's no problem; ResEdit is still running. Just Quit the Calculator, open it again using ResEdit, and make whatever adjustments are necessary, saving the results each time.
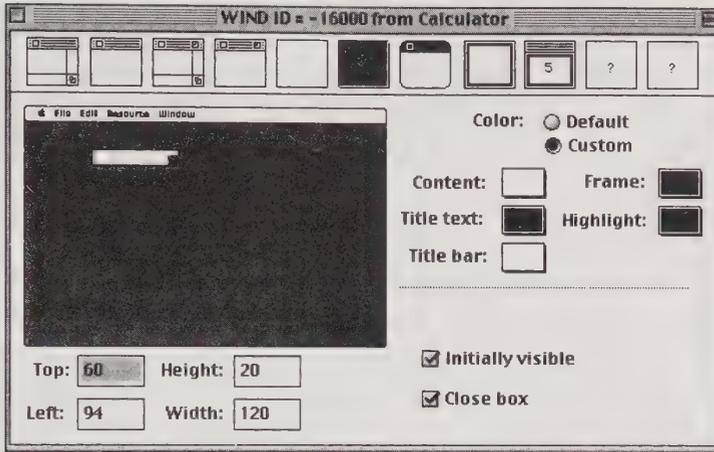
Figure 21-32: The modified Calculator resource.

Strange But True

Your new minicalculator will work just as it did at full size. You can still perform all four standard mathematical functions by pressing the /, *, +, and – keys on the numeric keypad, and you can still clear the display using the Clear or letter C key. And you can still copy and paste to and from the Calculator.

A cooler, color Calculator

If stripping down your Calculator seems a bit radical, consider just coloring it. Just open the Calculator using ResEdit and open the *ppat* icon. Open the only resource listed, number –15999. Using the basic editing tools provided, change the color and pattern that appear as the background (see Figure 21-33).
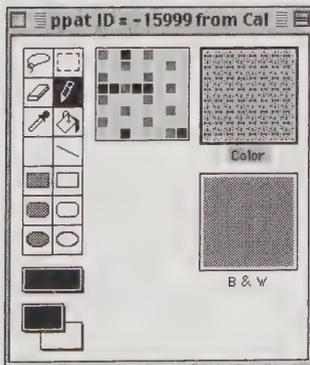
Figure 21-33: Editing the Calculator's background.

Changing the creator of system snapshots

When you take screen snapshots using Mac OS 8's ⌘-Shift-3 or ⌘-Shift-4 keystrokes, the resulting graphic files are saved on disk as SimpleText documents. If you make a practice of editing these screen shots, it gets annoying that you can't simply double-click one to edit it. (A double-click launches SimpleText.)

It's much more convenient if you teach the System to save the files automatically in the format of your graphics program instead. This way, when you double-click a Picture 0 or Picture 1 file, it opens your graphics program (Photoshop, Color It, or ClarisWorks, for example) and you're ready to edit. ResEdit makes this easy.

The first thing you must do is find out the four-letter *creator code* of your graphics program. To do this, open the graphics application file with ResEdit and choose Get Info from ResEdit's File menu. In the Creator field, note the four-letter code. In the example shown in Figure 21-34, the application is Photoshop and the code is 8BIM. (Codes are case-sensitive, by the way; you must use 8BIM and not 8bim.) To be sure you use the proper code, select the four characters in the Creator field and copy them using ⌘-C. (See Chapter 15 for details on Type and Creator codes.)
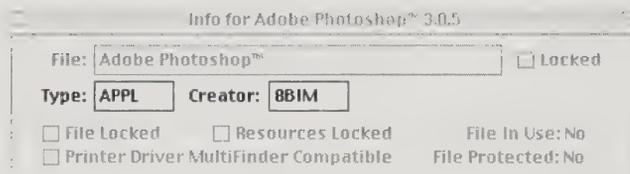
Figure 21-34: A peek into any file using ResEdit's Get Info command reveals its four-letter creator code.

Then open a copy of the System file. Open the FKEY resource icon. It contains a couple of resources, numbered 3 and 4. (As you may have guessed, 3 contains code for the ⌘-Shift-3 keystroke and 4 holds the code for the ⌘-Shift-4 keystroke.) Open resource 3. You see a dialog box informing you that this is a compressed file and asking if you want to open it anyway. Click Yes (or just type Y).

To find the string you need to edit in this window, press ⌘-G to bring up the Find ASCII window. Type *PICT* (all caps) into the text field and press Return. Then close the Find ASCII window. Just two characters before the word PICT, you see the four-letter code for SimpleText (or TeachText) — *ttxt*. Under System 7.x, the ttxt appears on the line just *below* the word PICT (which will be selected as a result of your having used the Find command).

Select these four characters and replace them with the creator code for your graphics program, either by typing the code or by pasting it in (if you copied the code from the creator field). So, in our example, *ttxt* becomes *8BIM* (see Figure 21-35).
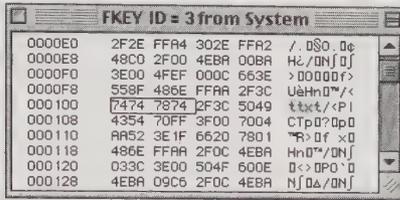
Figure 21-35: Select the four-letter code for SimpleText and replace it with the creator code of your favorite graphics program.

Close resource 3 and open the other FKEY resource, number 4. Follow exactly the same steps to change ttxt to 8BIM (or the four-letter code for your preferred graphics program). Use the Save command to save the changes and quit ResEdit. After you restart, using the modified System file, your ⌘-Shift-3 and ⌘-Shift-4 screen shots will always be saved in the format of Photoshop (in this example) — and not SimpleText documents.

Changing modification and creation dates

Here's a fascinating, though somewhat disturbing, ResEdit hack: You can easily change the creation and modification dates of any file! What's more, you can *post date* the creation of a file. That's right: You can create a Word memo and change its creation date to sometime next week.

To do this, launch ResEdit. Choose Get File/Folder Info from the File menu and select the file whose dates you want to change. In the Info window that appears, you see the creation and modification dates (see Figure 21-36). Edit the dates (and times) as you please, and then choose the Save command *before* closing the Info window. The new dates are reflected in the Finder.
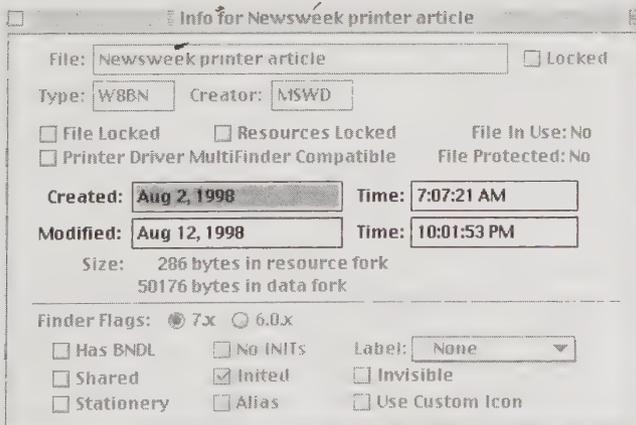
Figure 21-36: You can tamper with a file's creation and modification dates in the Get Info window.

With this knowledge, you know how to turn in a report late, but can point to the last modification date and prove that you actually *finished* the work on time. Of course, you should realize that a computer's time stamp will never hold up in court, or even in a debate. Your ability to tinker with the time/space continuum in this way is actually a bit sobering.

Meet rANdY and Maura

In the days of System 7, three of the Finder's menus had icons instead of names: the Apple menu, Help menu, and Application menu. (Under Mac OS 8.x, of course, the Help menu lost its icon and gained a plain-English name: Help.) But some of these menus actually *do* have names, as you can see by opening them in ResEdit; they're just not displayed in the Finder.

The Application menu is named Maura; the Help menu, despite its Mac OS 8 identity change, is still secretly identified as rANdY, as seen in Figure 21-37. You can see them for yourself by opening a copy of the System file with ResEdit, then double-clicking the MENU resource icon.
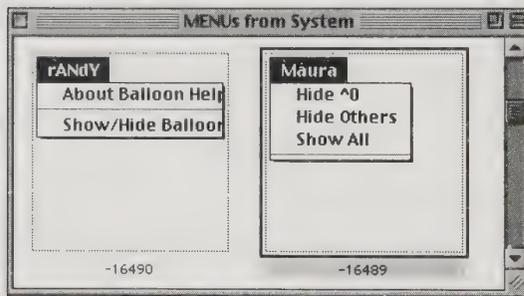
Figure 21-37: The hidden names of graphic menus.

And while we're on the subject of Maura, check out the next secret, which involves the menu bearing her name.

Hide and show programs with a keystroke

Earlier in this chapter, we showed you how to add a keyboard shortcut to any menu command. Here's a really practical application of that advice: Add keystrokes to the Application menu's Hide and Show commands. That way, when you want to hide all the applications you have running in the background, you'll be able to do it with a single keystroke.

A hidden-message treasure hunt

Mac programmers are notorious for leaving hidden messages buried inside program resources. These messages — some cryptic, some funny, some just plain bizarre — go unseen by most people. But equipped with ResEdit, you have the tools you need to hunt down these little surprises and see them for yourself. Here are a few worth tracking down:

■ Open a copy of Find File with ResEdit; double-click the DATA resource icon. Inside, you'll find just one resource, ID #0. Open it and scroll through the hexadecimal code to find the programmer's secret message in the right-hand column: "I liked vacuum tubes better."

■ In System 7.5, open the System file's STR resources. In resources −16569 and −16580, you'll find out what parts of the operating system programmer Jim Reekes refers to as the "spatula" and the "fridge."

■ Also among the System file's STR resources is ID −16579. Open it for a detailed description of the audio data converter's capabilities, which evidently include dicing and slicing.

■ Open the System file (7.5 or later) and double-click the ICON resource. Have a gander at resource numbers −16561, −16560, −16557. What is Apple's thing about kitchen appliances?!

■ Use ResEdit to open the AppleShare file in your Extensions folder. Open the STR# resource icon and double-click ID −2003. "Oh, most heinous!"

■ Open the System file's timd resource icon. Double-click ID 30 and scroll to the bottom for this intriguing tip: "Secrets lurk in ROM."

■ Open a copy of the Stickies program (it's in the Apple Menu Items folder), and check out the program's solitary WDEF resource. The programmers have left us the following mysterious message: DEAD BEEF.

■ Open any of the ntrb or nitt resources in the System file. These are in hexadecimal code, but pay heed to the first word in each string of code in the ASCII text column on the right. Apple programmers obviously love their work.

■ Using ResEdit, open Eric's Solitaire Sample, the game demo that is included in the Apple Extras folder on most Macs. Open the STR# resource icon and double-click the one with the name "really secret stuff." You'll find out what Eric really thinks of himself.

■ In the System 7.5.5 System file, open the lefT icon, if you have one. Open resource ID 0 to examine the hex code: Lefty's Magic Gibbly-Duplicating Resource.

■ Open the Memory control panel with ResEdit and double-click the vm resource icon to reveal the only resource, ID 0. Open it up to find the programmer's names listed in the rightmost column of ASCII text.

■ Here's one that requires System 7.1 or earlier: Open the System file using ResEdit and double-click the STR# resource icon. Open the resource with the ID number −16415 and you'll see that Apple's programmers really do have your best interests at heart. Sad to say, this hidden benediction is *not* a part of System 7.5 or later.

To add the commands, open a copy of the System file with ResEdit. (If you have System 7.5.1, open the System 7.5 Update file instead.) Open the MENU resource icon and open the menu resource called Maura—the secret name of the Application menu, as revealed in the previous secret. Now, following the directions given earlier in this chapter, select each item on the menu and type a character in the Cmd-Key field (see Figure 21-38). You can assign one keystroke to hide the current application (the top command), one to hide all other programs, and one to *show* all other programs. While you're at it, after you select the command you want to edit, choose Remove Icon from the Menu menu (if it's not dimmed out).
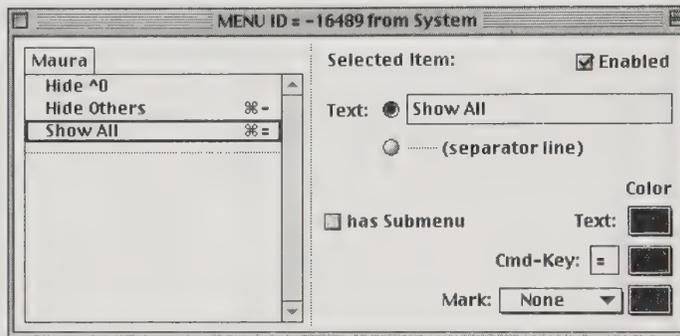
Figure 21-38: Type a character into the Cmd-Key field to assign a keyboard shortcut to each command on the Application menu.

When you're finished adding the keystrokes to the menu, save the file and restart with your doctored-up System.

Remapping your keyboard

The System's KCHR resource controls *keyboard mapping*—in other words, it determines which key on the keyboard produces which character on the screen. For the most part, you want to keep your keyboard mapped as originally programmed —so that pressing the *A* key produces an *A* on screen, pressing *B* produces a *B*, and so on.

But sometimes remapping the keys makes great sense. Here's a classic example: In its default configuration, the Mac's keyboard produces the > and < characters on screen when you press the period and comma keys with the Shift key down. This often results in typos such as *P>O>Box 1568* or *3:45 P>M>*, with the > inserted where a period was intended. (We'll pretend, for the moment, that you don't have SmartKeys, included with this book, which solves that problem much more easily.)

You can head off such problems by remapping the standard U.S. keyboard. You can make the period and comma keys produce periods and commas whether or not the Shift key is pressed.

Open a copy of the System file using ResEdit. Find the KCHR resource icon and open it. In the list of keyboard layouts, find the standard U.S. keyboard layout. Open this resource to open the full keyboard display.

The bottom portion of the keyboard display window represents the actual keyboard; press any of the modifier keys (such as Shift or Option) and you'll see the characters on the keys change accordingly. The upper portion of the window is a palette of every character that can be displayed on screen. You can map keys to characters by dragging a character from the palette on top to a key on the bottom (see Figure 21-39).

To change the > to a period, press Shift to display the > character on the keyboard display. Then drag the period character from the top portion of the window down and drop it on the > key, as shown in Figure 21-39.
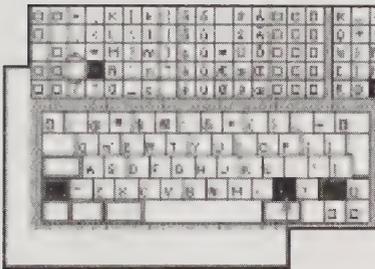
Figure 21-39: The KCHR display window. The lower portion represents the keyboard, while the upper portion provides a palette of all available characters. Drag the period character from the upper portion of the window and drop it on the > sign to replace it.

Follow the same procedure to replace the < with the comma; drag the comma character down and drop it on the < sign.

When you've replaced the characters, choose Save and quit ResEdit. You'll have to restart your Mac with the modified System file to see the results of the remapping.

Using this same method, consider remapping your little- or never-used bracket keys, [and], to create parentheses or curly quotes.

Mix-and-match icon sizes

In the Finder's icon views, you have exactly two size choices—large and small. You can switch between these options using the Views menu, of course, but you can't *combine* the two sizes in a single window—unless you know this secret.

Using ResEdit, open a file that you would like to endow with a permanent small icon. Open the file's *ics8* resources (the set of smaller-sized icons used by the program), then double-click the first *ics8* resource in the window (the one containing the icon that represents the application itself).

The small icon opens in an editing window. Press ⌘-A to select the whole picture, choose Copy, then close the resource. Next, open the file's *icl8* resources (the large icons), and again open the first icon so you can edit it. Press ⌘-A again to select the whole picture, then press Delete. Now choose Paste from the Edit menu, placing the small icon you copied from the *ics8* window into the large icon's window. Use the Selection tool to drag the small icon to the bottom of the window. Then, deselect the icon (by clicking anywhere in the white space within the window) and press ⌘-A *again*, this time to select the tiny icon *and* all the white space around it (see Figure 21-40). Choose Copy, then close the file, without saving any of the changes you made.
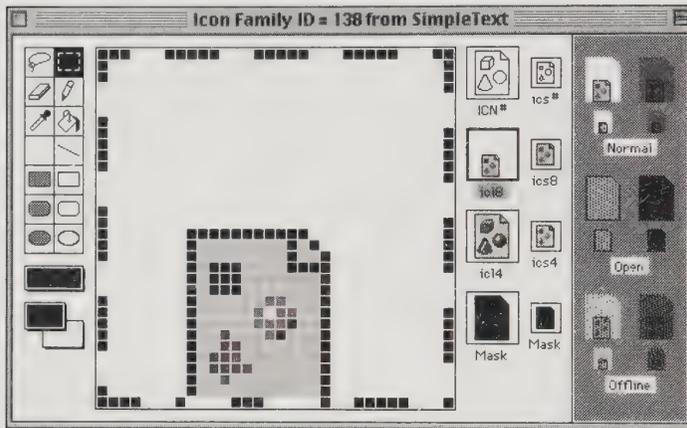
Figure 21-40: Paste a small icon into the large icon resource window, then select the whole thing to create a permanent small icon view.

Return to the Finder, select the program icon you want to "shrink," and choose Get Info from the File menu. Click the program's icon in the upper-left portion of the window to select it, then choose Paste. Then the full-size icon will be replaced with the small-icon version.

Now, no matter what icon view you pick in the Finder, the file will always display the small icon.

Build a better beachball

Every program has a series of animated cursor icons that gets displayed whenever you're waiting for the Mac to do something. There's the standard wristwatch icon you see in the Finder, of course, but some programs use "counting fingers," and others, like America Online, use the "spinning beachball."

Contest Winner

Because you must *stare* at these animated icons, waiting for the Mac to finish its business, free book winner German Velasquez thinks you might as well make them look interesting. You can change them to whatever you want by editing a program's CURS resources using ResEdit.

Here, for example, is how you can jazz up the AOL beachball: Open a copy of the America Online program with ResEdit, then double-click the CURS resource icon. You'll see the four resources, numbered 128 through 131 — the four frames of the beachball animation. Double-click each one to edit it, drawing or pasting in a replacement icon (see Figure 21-41). Of course, if you want an animated look, your replacement icons should be designed in such a way that they create the effect of motion when played back in sequence.
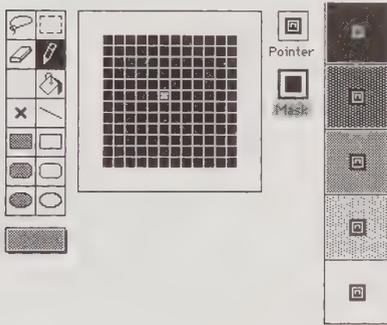
Figure 21-41: Designing a custom cursor in AOL. After creating a new cursor, be sure to drag the small picture of the icon to the right of the editing window onto the mask icon, so that the mask matches the icon.

Put your mouse on steroids

Speed Tip

If the fastest mouse-tracking setting in the Mouse control panel doesn't move the mouse fast enough for your taste, you can turbocharge your mouse's tracking speed with a simple ResEdit hack:

Open a copy of the System file using ResEdit and then open the *mcky* resource. (Mnemonic: It's *mickey,* the mouse resource!) Find the *mcky* resource with ID 6 and open it up. Now change the eight Threshold fields to 1, 2, 3, 4, 5, 6, 7, 15. (These numbers correspond to the eight Control Panel speed settings. They control how far and fast you have to move the mouse before it *starts* speeding up.)

Save your work and restart your Mac with your newly edited System file installed. Bump your mouse tracking up to the highest setting and see what you think. If the speed doesn't feel right, you'll have to do some experimentation. Repeat the steps outlined earlier, but try different numbers in the Threshold fields.

Pig-Mode

Those wacky ResEdit programmers have buried a wonderful, offbeat little surprise for you in the About ResEdit dialog box.

Strange But True

To uncover the surprise, hold down the ⌘, Option, and Shift keys while selecting About ResEdit from the menu. Your Mac starts oinking — yes, *oinking* — and a dialog box asks if you want to "start pig-mode." If you click OK and try this again, you'll once again hear the oink and see the dialog box shown in Figure 21-42.
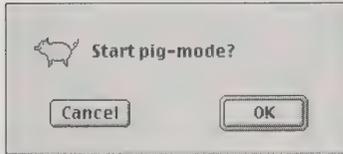
Figure 21-42: The dialog boxes that signal the starting and stopping of pig-mode in ResEdit.

Pig-mode, as it turns out, actually does have a function. It puts ResEdit into a special mode in which it constantly purges memory and compacts resources. However, it makes the program run slower and is designed primarily for programmers who are testing custom editors. We recommend keeping ResEdit in its no-Oink mode at all times.

The oink, however, is delightful, and we heartily recommend using ResEdit on itself to copy this sound out of the program so you can add it to your collection of system alert sounds. (See "Opening and playing sound resources," earlier in this chapter, for instructions.)

Top Ten ResEdit Pranks

You can't spend more than a few minutes working with ResEdit without at least *thinking* about the havoc you can wreak by editing program resources in sick, twisted ways. At least *we* can't.

Of course, we are in no way suggesting that you *actually* pull any of the following pranks — but we won't tell anyone if you do.

1. Switch the empty and bulging Trash icons, so that the Trash looks empty when it contains files and bulges when empty.

2. Edit the Balloon Help text strings (most of them are in easy-to-access STR# resources) so that pointing to a window's Close box produces a help balloon that says "Clicking this box will cause irreparable damage to the motherboard."

3. Edit the MENU resource to turn a separator line in a menu into an alluring new menu command (like "Double Processing Speed") that doesn't work.

4. Alter dialog boxes (using the DITL resource editor) so that the Cancel and OK buttons in a standard dialog box instead say Purge All Data and Erase Hard Disk (see Figure 21-43).
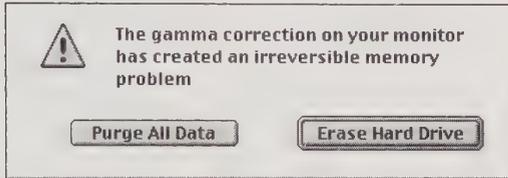
Figure 21-43: Imagine your coworker's expression when she tries to empty the Trash and sees *this* dialog box.

5. Use ResEdit's MENU editor to change all text in menus to white, rendering the commands completely invisible. (They will still work, if you can find them.)

6. Replace the standard alert box icon with the System Bomb icon.

7. Remap the keyboard so that pressing any key produces a semicolon.

8. Change the names of an application's menus so that the File menu contains the Format commands and vice versa.

9. Install a Desktop pattern consisting entirely of Trash can icons.

10. Create a startup screen that features a realistic System bomb message, urging the user to restart the Mac immediately.

Chapter 22

Utilities, Macros, and AppleScript

In This Chapter

▶ Hard-disk repair and backup software

▶ OneClick, Tempo, KeyQuencer, and QuicKeys macros

▶ AppleScript, MacsBug

▶ File-compression software, screen savers

▶ Extension managers

Instead of modifying documents, as most software does, a utility program is designed to modify your *computing environment*. It affects what you see on the screen, how your hard disk handles data, and other aspects of the computer itself. Utilities aren't work processors, in other words: they're *Mac* processors.

We are, we'll confess, utility junkies. Maybe it's part of that male technology thing, that we love tinkering with our computer almost as much as we love using it. In the Mac world, there's an unspoken social hierarchy: The person who has the most little startup icons appearing across the bottom of the screen is the coolest.

The Mac has hundreds of utilities. Many are sold by established software companies; many more are shareware, and some are free. Here are a few of the major utility categories:

- Hard disk defragmenters and file-recovery programs

- Antivirus software

- Macro software

- Screen savers

- File-management utilities

- File-compression programs

- Font/DA managers

- Screen-capture programs

- Colorizer/customizers

Once you have all this stuff going, there's one more utility you'll need — an extension *manager*, just to manage all your other utilities!

We've included examples of most of these utilities on the CD-ROM that accompanies this book (see the appendix).

CD

Hard Disk Repair and Recovery Software

Let's get this straight: Preventive action on your part is much better than any hard drive repair or file-recovery software. Check out our preventive-maintenance schedule in Chapter 8, which we guarantee will reduce the likelihood of disaster. Chapter 8 also contains our thoughts on hard disk formatting, defragmenting, and partitioning software.

What we haven't yet discussed is what to do when your drive crashes. In that event, if you had no backup, get a hard drive recovery program like Norton Utilities or TechTool Pro. (At this writing, alas, we're disappointed in Norton; you wouldn't be the first to discover that Norton finds *something* wrong with *every hard drive it checks,* even if you've just checked yours and Norton "repaired" it! Furthermore, the company, Symantec, is slow to update the program, and charges exorbitantly for technical support.)

In any case, such programs offer to try recovering files by their *file headers* — in other words, to scour the disk looking for the "footprints" of specific programs. If the file-type method fails, you can try a complete scan of the hard disk surface in search of anything that looks like a file. After a long time, you see a list of hundreds of files.

Now you're in for an emotional roller-coaster ride. You'll discover that not every listed file is marked "recoverable." Sometimes unimportant files are recoverable, but your vital ones aren't. Worse, sometimes you recover a "recoverable" file, only to find out that, when opened, it contains a screenful of gibberish.

OS 8.5

Fortunately, Apple is lessening the need for hard-drive repair programs. Staring with Mac OS 8.5, the Mac launches its own disk-repair program, Disk First Aid, *automatically* whenever you've had a system crash, catching imminent drive-directory problems in the bud.

Still, having hard-drive *recovery* software on hand is a terrific thing.

Disk Utility Secrets

When 1,400K isn't enough

Ever try to use one of those disk-recovery programs (Norton et al.) and discover that you can't create an "emergency floppy" from which to operate on your dead hard drive? Even the most stripped-down System 7.5 folder won't fit onto a high-density floppy — let alone Mac OS 8 or later.

Here's the sure-fire, brilliant solution. If your Mac can be started up at all, create a *RAM disk* (as described in Chapter 9). Because you can make the RAM disk any size you want, make it large enough to hold the System Folder *and* the recovery program — and start up from that! (See Chapter 9 for step-by-step instructions.)

Automatic backups with SpeedDoubler

SpeedDoubler, a utility from Connectix, has plenty of useful features. But one of the best, we think, is heavily *under*hyped: you can set up *automatic* copies that take place at prespecified times. We can think of no simpler way to set up automatic, middle-of-the-night backups.

To set them up, open the SpeedDoubler control panel. Click the Copy Agent tab, making sure that the Copy Scheduling Enabled checkbox is on. Click Add; in the resulting dialog box, you can specify what, where, how, and when you want the program to perform your backups.

Retrospect secrets

All this talk of disk-recovery software is fine, but it would be nearly unnecessary if you maintain a good backup of your hard drive. That's a good argument for owning *backup software* before you buy recovery software.

OS 8.5 — If you have Mac OS 8.5 or later, you already have a simple backup program: File Synchronization, a control panel described in Chapter 4.

For more control, automated backups, or other special features, upgrade to Dantz's Retrospect program. And while you're enjoying it, enjoy these secret features:

■ As with FileMaker and AppleWorks (ClarisWorks), you can prevent the program from asking, "Are you sure?" when you're deleting or duplicating something if you press Option while clicking the Delete or Duplicate button.

■ Every button in Retrospect's main Directory window can be triggered by pressing a two-letter combination. For example, in the Immediate operations panel, type *I-B* ("immediate backup") instead of clicking the Backup button.

■ Retrospect 3 was code-named "Peary"; in it, a history lesson lurks — if you know how to find it. First, choose About Retrospect from the menu. In the resulting window, click the Credits "tab" to see the three-minute display of scrolling programmers' names.

But if you Option-click the Credits tab, instead of credits, you see the handsome mug of Sir Robert Edwin Peary, Arctic explorer. His head will eventually scroll off the screen, to be replaced by a complete scrolling history book chapter about his life and accomplishments (see Figure 22-1).
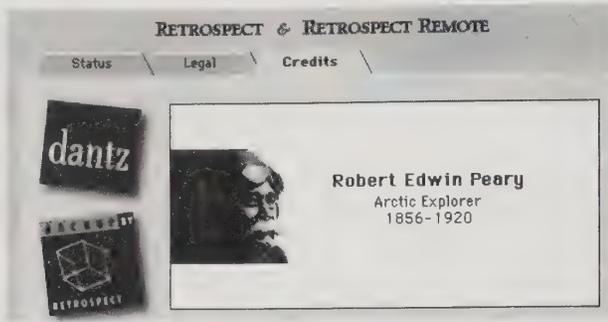
Figure 22-1: Explore your copy of Retrospect, and you'll be rewarded with another explorer.

Virus Protection

We'll be straight with you here: We don't use virus protection. Oh, we have Disinfectant on hand to check out things when things get suspicious. (So do you — it came with this book.)

But we can count on zero fingers the number of people we know who have actually *l*ost data to a virus. Oh, sure — we know people who've *had* computer viruses. According to a *Macworld* poll, about 8 percent of Mac users have had infections. There have been about ten widespread Mac viruses. But almost all of these have been harmless, just gumming up the works without destroying data.

Where viruses live

Mac Basics

Except for Word macro viruses (see the sidebar "Word macro viruses"), *you can't get a virus from a document.* All true viruses can do their dirty work only by infecting an *application* — and can't spread unless you launch that program.

And guess what else? A disk can't be infected if it's locked. No way, no how. That's nice to remember when you're taking a disk to somebody else's Mac to give them a file from *your* Mac: If your Zip or floppy is locked, the other person can copy stuff off of it, but no virus can invade your disk.

You don't have to be concerned about files you download from America Online or from any commercial Internet site (such as software-company Web sites). In fact, there are only a couple of ways that a virus can travel to your Mac:

- Aboard a floppy disk or cartridge brought to you by a friend
- From an Internet site not run by a commercial entity

TRUE FACT

Word macro viruses

In our general pooh-poohing of the virus threat, we're not including Microsoft Word macro viruses. These miniature, automated viruses are a particularly widespread and annoying little strain.

Macros (including these viruses) live in Word 6 and Word 98 documents (as well as Excel documents), and can even get transferred from Windows to the Mac — which is why they're suddenly so prevalent. The commercial Mac virus programs can hunt down and kill many strains of Word macro viruses — but because macros are so easy to write, and because there are so many zillions of macro viruses floating around, such programs aren't a complete solution.

We're rather fond of Word 98's simple but clever method of dealing with macro viruses, actually. When you open *any* document that contains macros — of any sort — an alert box appears. You're offered the chance to open the document with or without the attached macros.

The beauty of this system is that it lets you keep safe macros — that is, macros that exist in your *own* documents. But when you open a Word document you've received from somebody *else,* one click eliminates any macros that were attached to it — and with them, any chance that a virus survives.

Software protection

The commercial packages, such as Virex, Norton AntiVirus, and VirusScan, have three functions. First, they can determine whether your disk is infected by any known virus (including macro viruses). You can download updates that let these programs detect new viruses that come along. Second, they can cure your disk of most of these viruses, putting you back in business with no side effects. These programs can be told to scan every floppy disk you insert, so that you're essentially protected against getting viruses through the floppy drive. (*Man*, do we find that floppy-disk scanning annoying.)

CD

But Disinfectant does all of that, too (except for the downloadable updates part). It's free. It has a virus-watchdog INIT and a seek-and-destroy application, just like Virex or SAM. As of 1998, author John Norstad has officially quit updating it — he couldn't compete with the rafts of Word macro viruses — but even in its most recent form, it's all we've ever needed. And you already own it; it's included on the CD-ROM with this book.

For much more detailed and superbly written information on viruses, read the online instructions that come with Disinfectant.

The AutoStart Worm

As this book was going to press, the first virus worth even mentioning began rearing its head: the so-called AutoStart or HongKong virus (or worm). At its worst, this virus can corrupt some of your files — an extreme rarity in the Macintosh virus world.

Still, we refuse to get our knickers in knots over this virus, especially because it's so easy to deal with:

■ It only affects PowerPC-based Macs.

■ You can prevent getting infected incredibly easily: Just open your QuickTime Settings control panel and turn off the CD-ROM Auto-Play option. (If you don't *have* this control panel, you can't get infected.)

Best of all, it's perfectly OK to leave "Enable *Audio CD* AutoPlay" — the only option you'd ever really care about — turned on. You can't get infected by the AutoStart worm if *music* CD auto-play is turned on.

■ You can eradicate it, even once you're infected, with Virex, Norton Antivirus for Macintosh, or WormScanner (included on this book's CD-ROM).

CD

■ You can also eradicate it yourself. First, start up the Mac with extensions off. Use your Find program to locate and trash the invisible files called *Desktop Print Spooler* and *DB;* see Chapter 3 for instructions on locating invisible files. (Don't delete the real, non-invisible Desktop Printer Spooler file.)

Make sure the CD-ROM AutoPlay option is turned off in your QuickTime Settings control panel, then restart. (Unfortunately, this process only eliminates the virus from your system — it doesn't repair any files that have already been damaged.)

Macro Software

Now we're talking. We consider a macro program absolutely essential!

CD

OneClick (included on this book's CD-ROM), QuicKeys, Tempo II, and KeyQuencer are *macro* programs. Macros let you be lazy. By performing tedious, repetitive, boring tasks you usually have to do yourself, a macro lets you sit back while it types the date, sorts your database, or backs up your hard disk. This puts some workload back where it belongs: in the hands of your computer. All you have to do is press a keystroke of your choice, and the macro program takes over. If you're not already using macros, you'll be amazed at how much effort you can save.

MACINTOSH SECRET

The anti-viral About box

Disinfectant has one of the most entertaining hidden surprises of all. Just choose About Disinfectant from the Apple menu and wait.

Bonus Secret: If you'd like to hear the *entire* song, without being rudely interrupted by the foot, keep the mouse button pressed in the menu bar.

Here, for example, are 25 of the tasks for which we have macros. Remember, we press one key to trigger each of the following:

1. Apply a certain Finder label to every file modified in the last week
2. Empty the Trash
3. Arrange palettes the way we like them
4. Change tools (PageMaker, Photoshop, Quark . . .)
5. Choose common font/size combinations
6. Convert database formats ("Smith, J." to "J. Smith")
7. Type today's date
8. Drag top application window to bottom of screen
9. Go to the Finder and hide all other programs
10. Eliminate extra spaces between the sentences of a document
11. Go to end of a word-processing file
12. Type a standard phrase for answering e-mail ("Thanks for asking about the next edition of *Mac Secrets*. I thought I'd take this personal moment to tell you that it's well under way, and should be available by . . . ")
13. Jump to a specified folder when we Open or Save
14. Launch Excel
15. Make the Esc key work like a left-handed Delete key
16. Make the PowerBook's hard drive stop spinning
17. Mount an AppleShare volume (disk)
18. Turn off AutoGrid when launching ClarisWorks/AppleWorks
19. Print only page 1 of something
20. Restart the Mac
21. Save every ten minutes
22. Turn off the Mac's sound
23. Select Text Offset for a graphic (PageMaker)
24. Separate the area codes of phone numbers into two database fields
25. Strip linefeeds and funny characters from downloaded text

The key to using a macro is this: Whenever you find yourself doing anything for the second or third time, and you anticipate doing it a few more times, make a macro to do it. You certainly have enough keys to go around. When you consider that Shift, Option, Control, and ⌘ can be mixed in any combination with any keys, that gives you just about 2,000 possible keystrokes that can trigger macros — per application!

Macro Software Secrets ———————————————— ∎

Universal versus local (Tempo, QuicKeys, OneClick)

You have one set of macros that works no matter which program you are in. They constitute the Universal keyset. These are the macros that shut the Mac down, convert your straight quotes to curly ones, and type today's date.

You have another set of macros in each individual application. These "local" macros *override* any Universal ones that you have assigned to the same keystrokes. When you define an application-specific keystroke, macros warn you that you're using the same key combination as a Universal macro. You can just click OK and continue on your way.

This override feature can be useful in a number of instances. The primary example is smart quotes. Use Universal macros (the predefined QuicKeys called QuickQuotes and Double QuickQuotes) to give you curly quotes everywhere you can type: in file names, in your Note Pad, everywhere.

But there are some programs where you *don't* want those QuickQuotes macros to do their thing. You don't want to use any curly quotes when you're sending e-mail, because curly quotes get converted to *U*s and *R*s when they're received by non-Mac computers (including the mainframes that run CompuServe, GEnie, and the Internet). You also don't want QuicKeys to do your curly quotes in Word because Word's *own* smart quotes are *smarter* than the QuicKeys quotes. (See "Curly quotes" in Chapter 28 for our logic.)

Use your launch macro to make a program active

Speed Tip

You can launch any program on your hard drive by pressing its macro key. But that key's usefulness doesn't stop there. When you're running several programs at once, pressing that same key will also *bring forward* the program it originally launched.

(Of course, if a convenient way to switch open programs is all you're after, the terrific Program Switcher, provided on the CD-ROM with this book, is all you need.)

CD

Quick transposed-letters fix

When inspiration is flowing and you're typing madly, you may inadvertently transpose two typed letters, resulting in a word such as "adn" instead of "and." A macro program is ideal for fixing such a goof.

Place the insertion point just after the scrambled pair. Start your macro program recording the following sequence: Shift-left arrow (to select the second letter) and ⌘-X (to cut it). Use the left-arrow key (to move the insertion point before the first letter) and ⌘-V (to paste it). Then use right-arrow key, spacebar (to be ready for subsequent typing).

Macros for Mac virgins

You may think that QuicKeys, OneClick, KeyQuencer, and Tempo are the domain of advanced users. Technically, you're right.

But they're also great for a wide-eyed beginner, because macros can reduce the number of steps you must remember.

One woman we know is a book author who's absolutely stricken whenever she contemplates using a computer. Yet, at her publisher's urging, she got herself a PowerBook. We set up a macro for her: When she presses Control-S, the macro saves her work, automatically copies her manuscript folder onto a backup floppy disk (which lives, permanently, inside the floppy drive), and then puts the laptop to sleep.

Her data is safe, and she doesn't even know it.

When you fire off this macro, fixing those transposed-letter typos becomes second nature. (Hint: You can use the same logic to create macros that insert quotes or parentheses around a piece of selected text.)

The left-handed Delete key

As we've mentioned elsewhere, one of the most powerful efficiency advances you can make on your Mac is to change the Esc key on your keyboard to be a Delete key. You'll quickly discover that editing — for a right-handed person — is far quicker and easier if you can keep one hand on the mouse and use the other to press your new Delete key.

CD

Mapping the Esc key to the delete function is easy with QuicKeys or OneClick (included on the CD-ROM with this book). In QuicKeys, use an alias keystroke; in OneClick, just record a single press of your actual Delete key — and then assign it as described in "OneClick Crash Course," in the next section.

Moved to new address

CD

We've got more to say about macro programs — QuicKeys, Tempo, and KeyQuencer — but then, we've got much more to say about everything. To make room for our expanded AppleScript, OneClick, and MacsBug discussions, we've moved our QuicKeys/Tempo/KeyQuencer Secrets to the electronic edition of *Macworld Mac Secrets, 4th Edition* (on the CD-ROM that came with this book).

The OneClick Crash Course

Why do Mac veterans have such a love affair with OneClick, the macro/toolbar-building program that WestCode Software, against all business sense, decided to give away with this book?

Maybe because OneClick does cool things no other macro program can do (toolbars with pop-out labels, macros that generate other macros, and so on). Maybe it's the canned system enhancements that come ready-made when you install the program: the System Bar (like a smarter Control Strip — it even accepts Control Strip modules), the Launch Strip and Task Bar (like Mac OS 8.5's application-launching palette, but infinitely more flexible), and so on.

Or maybe it's the hundreds of add-ons written by OneClick devotees all over the Internet, all available for free downloading from www.WestCodeSoft.com: add-ons that search the Web, change file types (see Chapter 15), produce pop-up calendars, add WYSIWYG font menus in all your programs, track job/client time, and so on. (Many OneClick users *never* write their own macros, using only the goodies that come with the program or can be downloaded.)

Most people think that OneClick is a toolbar program; after all, in its design, OneClick is indeed very toolbar-oriented. Its toolbars are the ultimate in flexibility — they can be any color, size, shape, orientation, with picture or text buttons, and so on (see Figure 22-2). But even if you're a toolbar loather, don't give up on OneClick. It's perfectly possible to use OneClick without ever having a toolbar touch your screen.

Figure 22-2: OneClick palettes can look like anything you can imagine.

Recording the macro

In any case, here's the basics of creating a new macro in OneClick. Suppose you want a new keystroke that saves the currently open document onto the Desktop, where you'll easily be able to find it again. Here's how you'd create this macro using OneClick.

1. **Open OneClick by choosing OneClick Editor from the OneClick menu (see Figure 22-3).**

   The Editor appears, also as shown in Figure 22-3.

   Click the Palette tab, if necessary, and then check out the pop-up menu at the lower right. Its commands let you create a palette containing macros that work in *all* programs (Global) or one that works in only one specific program (Applications).

2. **Choose New Palette ⇨ New Global Palette.**

   In OneClick parlance, a *palette* is a group of macros (whether it's represented on the screen by a toolbar or not). An empty gray palette appears on your screen.

3. **Close the Editor window. To start recording your new macro, ⌘-Option-click anywhere in the palette and choose Record from the pop-up menu.**
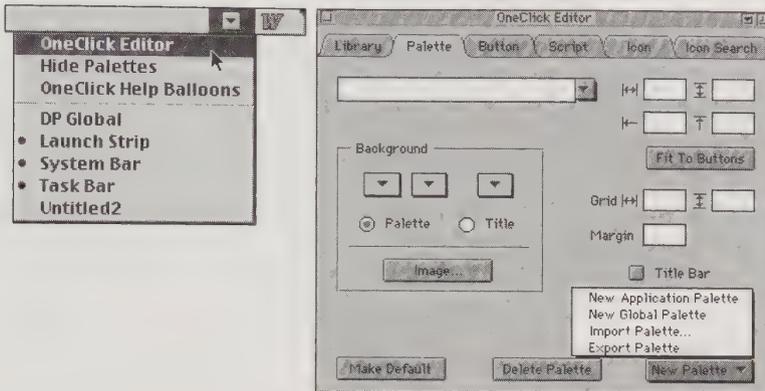
Figure 22-3: Choose from the OneClick menu (left) to open the Editor (right).

OneClick indicates that it's recording by making the button blink along with a microphone icon at the top of your menu.

4. ***Do*** **whatever it is you'll want your OneClick macro to do.**

In this case, choose File ⇨ Save As, and then click the Desktop button.

5. **Stop recording by choosing Stop Recording from the OneClick menu (or by clicking the blinking button on your new palette).**

Click the Cancel button in the Save As dialog box that opened in step 4.

Cleaning up the macro

If you now click the tiny square button on your blank palette, OneClick will repeat the Save As/Desktop process perfectly (and *fast*).

However, the macro isn't doing much good, represented as it is by a blank button on a blank palette. It would be much more useful if you could assign a keystroke to it — and a button label.

To do so, ⌘-Option-click your empty blank button. The OneClick Editor appears with the Button tab already clicked; this is the design world for your new button. Give it a name by typing into the top text box (such as Save to Desktop). Give it a keystroke by clicking in the Key box and *pressing* the key, such as Control-S, you'll want to trigger the macro.

If you're a toolbar-hater, close the palette *and* the OneClick Editor, and you're done. The macro works when you press its keystroke, even if its palette isn't on the screen. But if you do, in fact, want to trigger this macro in the future by clicking its button (on its palette), drag and resize the button on its palette into a pleasing place and shape. Click the Palette tab, where you'll find all the controls you need to color, title, and otherwise tailor this palette-in-progress.

Further info

CD

The OneClick manual that accompanies the software (on this book's CD-ROM) shows you hundreds of additional ways to put OneClick to use. And if you *really* get into it, you can learn the scripting language that lets you take OneClick well beyond its traditional role as macro program and toolbar builder.

OneClick Secrets

Keystrokes worth memorizing

In addition to the keystrokes *you* define (for your OneClick macros), OneClick comes with some useful predefined keys of its own. For example:

Shift-Option — Point to any palette button to make a help balloon pop out, identifying that button.

⌘-` — Hides or shows all your OneClick palettes.

⌘-Option-click — Produces a contextual pop-up menu when you click any palette or button (offering such choices as Button Editor and Script Editor).

Secrets of the add-ons

OneClick comes with a million predefined toolbars, macros, and functions, of course, and you can create a million more of your own.

But one of the best ways to get mileage out of OneClick is by using the add-ons made by *other* people, such as those provided on the OneClick Web page. Installing them, however, isn't exactly a drag-and-drop operation. Here's how you do it.

Launch the program to which the macro will apply; for example, if this is an e-mail processing add-on, launch Eudora or Emailer. Open the OneClick Editor and click the Library tab. From the pop-up menu, choose Open Library; then navigate to, and select, the add-on you want (such as Emailer Archiver).

A button now appears there on your Library screen, which you can then drag directly onto any new palette you create in the current application. Button installed!

The AppleScript Crash Course

AppleScript is the Apple technology — built into every system software version since 7.5 — that lets you automate Mac activities more directly than standard macro software. Companies that process a lot of data in repetitive

ways — such as newspaper publishers, Web site updaters, or anyone who answers e-mail or makes backups — have found AppleScript to be a blessing. AppleScript is the robot that automates workflow.

(OS 8.5) And AppleScript — #8 on Apple's list of "50 Mac Advantages over Windows" (which has no such technology) — is only getting more important. Version 1.3, part of Mac OS 8.5, has been completely rewritten in *PowerPC-native* form (which means faster). This new version can control more aspects of the Mac, including Mac OS 8.5's new Find by Content feature, Open Transport, Desktop Printing, and QuickTime. You can now associate AppleScripts with folders, too, so that dropping a file into a certain folder triggers an AppleScript — processing it a certain way in Photoshop, for example.

But we digress.

The AppleScript basics

Like QuicKeys and OneClick, AppleScript can record your actions and reproduce them later. But AppleScript can also do something more — *scripting.* A *script* is a series of text lines containing instructions for the Mac to perform. As with programming, you, the script author, can't assume anything; every little detail must be spelled out. But unlike other computer languages, AppleScript's grammar is very English-like: it has verbs, nouns, adjectives, and prepositions.

Furthermore, if you use the auto-recording feature of the Script Editor program that comes with every Mac, AppleScript writes the script *for* you. (You can even see the lines of instructions appearing in the Script Editor as you perform the steps.) You can edit the recorded script when you stop the recording function. When you then execute the script, your Macintosh performs your recorded actions automatically. You can save the scripts either as documents to edit later, as double-clickable, self-running applications (called *applets*), or as commands in a special menu on your menu bar.

A script is much more powerful than a standard macro because it can be much more specific. A certain script can grab specific text from a specific field of a database, or highlight and chart a specific range of database cells, and so on — automatically.

There's only one catch: The programs you use must be *AppleScriptable.* Fortunately, most of the Big Kahunas are, especially in publishing and Web development: QuarkXPress, FileMaker, Word, Excel, ClarisWorks/AppleWorks, Emailer, Canto Cumulus, SoftWindows 95, Timbuktu Pro, StuffIt Deluxe, BBEdit, CodeWarrior, Eudora, Navigator, Fetch, Anarchie, Tango, RealAudio Encoder, WordPerfect 3.1, Acrobat, PhotoFlash, DeltaGraph, JPEGView, Informed, and StuffIt are among the many that are ready to submit to your every automated command. In Mac OS 8.5 and later, an increasing number of OS programs are also scriptable, including all networking components, the Apple System Profiler, ColorSync, File Exchange control panel, Location Manager, the Find program, and the printing software.

And — oh, yeah: the Finder is AppleScriptable, too. But we'll get to that.

Is it scriptable?

All programs can be told, by AppleScript, to launch, quit, print, or open a file. These four commands are known as the *Required Suite,* and no program leaves home without them.

But to be genuinely scriptable, a program needs to understand a far longer list than four measly verbs. That's where the *Dictionary* comes in: it's a list of commands that an AppleScript can issue to control the program in question.

Opening a program's Dictionary (and therefore finding out whether or not a certain program is scriptable) is easy. Launch the Script Editor program (it came in your Apple Extras folder on your hard drive, and usually comes preinstalled in your Launcher, too). Choose File ⇨ Open Dictionary. Navigate to, and open, the program you're considering controlling with an AppleScript. As shown in Figure 22-4, a tall, skinny list of simple English commands opens now. Click one to see a screen that describes its correct usage.
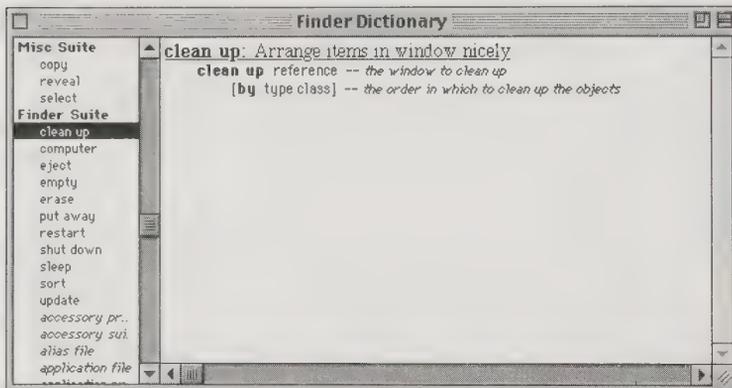
Figure 22-4: If you open the Finder's Dictionary, you see that almost every aspect of your desktop activities can be controlled with AppleScript nouns (always shown in italics) and verbs. Click an item in the list (left) to see the rules of its syntax (right).

Your first AppleScript

AppleScripts can do all kinds of incredible things: Transfer Emailer messages into a FileMaker database; automate the placement of weekly changing graphics at a newspaper; publish frequently updated FileMaker data to the Web; and so on. (In its own quiet way, AppleScript is one of the things that has made the Mac such a dominant force on the Web.)

But let's start with something simpler. Before Mac OS 8, Apple cleverly included a Shut Down command in the menu. Thanks to that command, novices didn't need to freak out when in ClarisWorks, for example, unable to find the *real* Shut Down command (because the Special menu isn't visible when you're in another program).

In Mac OS 8 and later, though, that command is gone from the menu. (We guess it's because pressing the power key on the keyboard can shut down all modern Macs.) Here's a little AppleScript that puts that command back where it once was — in a smarter, quicker form. Instead of just shutting down, this easy-to-write AppleScript also backs up your Documents folder, closes all windows, empties the trash — and *then* shuts down.

Before you start, set things up. Insert a backup disk into your Mac. If you don't have a Documents folder, create one for this exercise. Open a couple of windows, too, and put something dispensable into the Trash. Now you're ready to roll.

1. Launch the Script Editor. As you can see from Figure 22-5, it's got simple tape-deck controls: Record, Stop, and Run.

2. Click Record. Switch to the Finder and drag your Documents folder to the backup disk. Empty the Trash. While holding down the Option key, choose Close All from the File menu. (For now, don't actually shut down; you'll add that step manually in a moment. We're trying to spare you the hassle of having to shut down and restart every time you test your script!)

As you go, you can see the commands building up in the Script Editor window (see Figure 22-5).
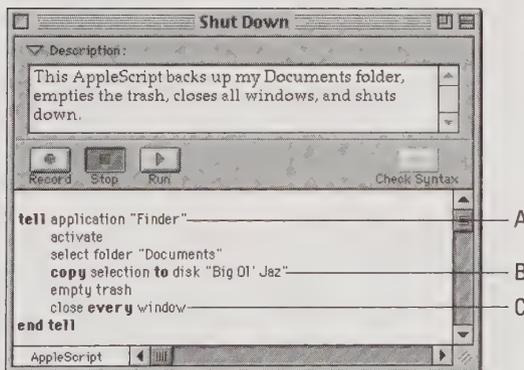
Figure 22-5: An AppleScript under construction. Note that every script begins and ends with a Tell command (A), which identifies the application that's supposed to respond (in this case, the Finder). This script goes on to make the Finder the active program, to select the Documents folder, drag it to a backup Jaz (B), empty the trash, and close all windows. Note that the program automatically puts AppleScript generic keywords in bold, and the terms specific to the task at hand in non-bold (C).

Pretty cool, eh? You're a programmer now, pal.

Choose Save from the File menu. Save this script onto your desktop as, for example, Shut Down Plus. From the Kind pop-up menu, choose Application — and check the Never Show Startup Screen checkbox. If you examine your desktop, you'll see a new icon there — the little program (applet) you've just made.

Debugging your script

If you double-click the Shut Down Plus icon, however, you'll discover an unfortunate fact of programming life: you've got a bug in your program. The script tries to copy your Documents folder to the Jaz *again* — but discovers that there's *already* a folder called Documents on the Jaz. And the program halts in midstream. The blinking icon at the upper-right corner of your screen tells you to go to the Script Editor, where, sure enough, an error message lets you know the problem. Click the Edit button.

You must now tell your script that it's *OK* to overwrite the Documents folder that's already on the Jaz. After all, you'll probably be running this script (and backing up) daily, so you'll definitely want your *current* Documents folder to replace yesterday's copy on that Jaz.

This is the part where you'd have to learn more about AppleScript, reading the help materials at `www.scriptweb.com` and `applescript.apple.com`, maybe cracking open a book or two. After a bit of digging, you'd find out that you can make your AppleScript go ahead and overwrite an existing folder of the same name by making these two changes:

- Add the phrase *with replacing* at the end of the Copy instruction. That pair of words is AppleScript code that means: "If the folder is already on the backup disk, just replace it."

- Change the word Copy to Move. Unfortunately, the "with replacing" instruction works only with the Move command, not the Copy command. In this case, of course, that's perfectly OK — the Mac *always* copies stuff (instead of moving) when you drag icons from one disk to another.

The result is shown in Figure 22-6.
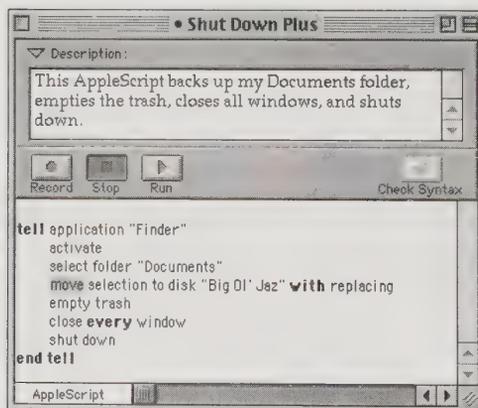
Figure 22-6: The finished script includes the shut down command and the it's-OK-to-replace-a-folder command.

And while we're manually editing our script, let's add that Shut Down command at the end of it — so that from now on, this applet will truly shut

the Mac off after doing its housekeeping duties. Hmm . . . wonder what the correct AppleScript command for "shut down" is?

Let's find out. From the File menu (of Script Editor), choose Open Dictionary. Navigate to your System folder and open the Finder, as you did earlier (see Figure 22-4). Scroll down far enough, and you'll spot the command you're after: *shut down.* Who would've guessed?

Return to your script window. Type **shut down** on a line just before the *end tell* command. Note that when you press Enter, the typeface changes to match the other neatly lined up commands in your script; you've just *compiled* that new line (made it part of the working script).

When you work on more complex scripts, you'll become fond of the Check Syntax button (in the Script Editor window). It analyzes your script and flags any mistakes, typos, missing words, and so on.

For now, though, you're essentially finished. Choose Save from the File menu.

Your little Shut Down Plus applet should work like a champ now. Drag it into your Apple Menu Items folder (in the System folder). (If you want it to appear at the bottom of the menu, like the old • Shut Down command, precede your Shut Down Plus icon's name with a bullet — • — which you produce by pressing Option-8.)

How to trigger an AppleScript

Once you've written an AppleScript, as you may have discovered in our little tutorial, you can do several things with it. You can save it as a standalone, double-clickable applet, which, like many AppleScripters before you, you can stash in your menu.

Unfortunately, when you choose an AppleScript from your menu, the AppleScript runs — and then leaves you in the Finder, instead of the original program. If such a thing bothers you, one solution is OSA Menu, a free extension (included with this book) that puts a new menu on your menu bar (next to the clock). Choose a script's name from this menu to launch it.

Another solution: if you have Mac OS 8.5 or later, you can create a *folder action* — an AppleScript that's automatically triggered when you open, close, or move icons into or out of a particular folder. (A folder to which you've applied an AppleScript displays a special icon.) To do so, Control-click the folder in question and choose "Attach a Folder Action" from the contextual menu; in the dialog box that appears, locate the AppleScript you want associated with that folder. (A sample set of folder-action scripts comes with Mac OS 8.5, in the System Folder, in the Scripts folder, and in the Folder Action Scripts folder.)

You can also trigger an AppleScript by pressing a key or clicking a button using OneClick, which is included with this book. When creating your macro in the OneClick Editor, click the Script tab and then type **AppleScript "Shut Down Plus"** (or whatever the name of your AppleScript is). OneClick will automatically trigger the named AppleScript when you click the corresponding

OneClick button — or press the corresponding keystroke. (You can also embed the actual text of an AppleScript script right in the middle of a OneClick script, as explained in its manual.)

What to do with AppleScript

CD

This was a simple (although useful) example, of course. If you're interested in pursuing AppleScript, open some professionally written scripts in Script Editor (such as those in your System folder ⇨ Apple Menu Items folder ⇨ Automated Tasks folder) and study how they were done. Visit the Web sites listed a few paragraphs back. Read and try the AppleScripts we've provided on the CD-ROM with this book. (We're especially fond of the Desktop Pictures slide show.) Try out Scripter (from Main Event), an AppleScript-writing program that makes Script Writer look like it's for kindergartners.

You can also use AppleScript to *combine* features of application programs. For example, a script may use the calculation capabilities of a spreadsheet and the formatting capabilities of a word processor to assemble an invoice.

AppleScript is not for everyone; beginner Mac users may find the scripting concept intimidating. The recording features are good for setting up the automation of routine tasks, but customizing those tasks to operate on different files, or with other applications than those originally recorded, means editing the script.

Screen Savers and Screen Grabbers

Thousands of people live long, happy lives without using either screen savers or screen-capture utilities. The rest, however, can't get along without such programs. Here's what you need to know.

MACINTOSH SECRET

AppleScript surprise

It's only natural that a program intended for novice programmers should have Apple programmer humor embedded in it. You'll see: Launch the Script Editor (which comes with System 7.5 and later). Choose About Script Editor from the menu. Then, while pressing the Control key, click the icon (or the words *The Script Editor*) to see the words *Dynamic Tofu* or *Guava Surprise,* depending on your version. Then click the Credits button for a secret panel of musical credits — in fact, the Toy Surprise Alternate Credits.

Our personal favorite is, as Mister Blobbo Sez:

Remember, kids: Time is just Nature's way of keeping everything from happening at once.

If you return to the menu, repeat all of the above with the About AppleScript command. As they say in Cupertino, "Pure Guava."

Screen savers

A screen saver blanks the screen after a few minutes of inactivity on your part. To signal you that the computer is still on, however, a screen saver must bounce some moving image around the screen. The programmers figure: If you must display some "I'm still on!" signal on the monitor, you may as well make it entertaining. That's why After Dark and similar programs let you choose from dozens of different displays: fireworks, random patterns, swirling lines, and, in After Dark, the now-famous Flying Toasters.

Of course, these days, the term "screen saver" is poorly chosen. Screen savers are actually *worse* for your monitor than (a) turning the monitor off when you're not using it, or (b) setting it up to go to sleep (using, for example, the Energy Saver control panel). Screen savers continue to exercise the phosphors on your screen, whereas making the screen completely dark will extend the phosphors' life. Furthermore, PowerBooks don't benefit *at all* from running screen savers. Even today's desktop monitors wouldn't burn in unless you left them on continuously—unused—for *two years,* according to monitor engineers.

But screen savers are *fun!* (We've even got a few Screen Saver Secrets; you can find them in the electronic edition of *Macworld Mac Secrets, 4th Edition* (on the CD-ROM that came with this book.)

Screen grabbers

In the early days, ⌘-Shift-3 was one of those hidden surprises built into the Mac by crafty Apple engineers. It takes a snapshot of whatever is on the screen, creating a PICT file called Picture 1 on your disk, even making a satisfying camera-esque *kachunk* sound. This kind of graphic is known as a *screen dump,* or, more pleasantly, a *screen shot.* As magazine and Mac book writers, we live and breathe screen shots.

OS 8 — Actually, today's Mac OS 8-and-later Macs offer many powerful variations of the venerable old ⌘-Shift-3 picture-taking keystroke. For example, try these:

- ⌘-Shift-4 — Turns the cursor into a crosshair. Now you can drag a cross a selected region of the screen, capturing only that much in your PICT file.

- Caps Lock-⌘-Shift-4 — Gives you the distinct *bullseye* cursor. At this point, you can click inside any window or dialog box, neatly capturing only that tightly cropped area.

- Add the Control key to any of the combinations above to put the captured image on the Clipboard instead of saving it as a PICT file on your hard drive.

But despite the improvements in Apple's screen-grabbing keystrokes, they still can't capture certain images—pulled-down menus, for example.

CD — That's why, if you have any interest in capturing what's on your screen, we heartily recommend that you get an actual, specialized screen-grabber program. Our recommendations are Captivate, Screenshot (commercial programs), Snapz, or Flash-It, which we used for this book. (As a matter of fact, Snapz and Flash-It come *with* this book.)

MACINTOSH SECRET

All those names and suffixes

When you get a new compressed file from a friend or an online service, how are you supposed to know which program is required to unstuff it?

Here's a rundown.

- **.sit** — To open this kind of archive, you need any one of the following: the commercial StuffIt Deluxe, the shareware StuffIt Lite, StuffIt Expander (included with this book), or the America Online program itself.

- **.zip** — A Zip file is the Windows equivalent of StuffIt. Once again, StuffIt Expander can open it for you.

- **.sea** — If a file's name ends in .sea, it's a self-extracting archive. It may have been created by any of the other compression programs. The .sea suffix tells you that you don't even need to worry about which program created it. A simple double-click will automatically expand the file. (A self-extracting archive is always about 15K larger than a non-self-expanding com-

pressed file. That extra bit of code is what turns a regular compressed file into a double-clickable program.)

- **.hqx** — You got this file from the Internet, didn't you? Anyway, it's a *BinHex* file. You can open this file, too, with StuffIt Expander.

- **.uu** or **.uu** — Another Internet scheme for sending files through the Internet as a bunch of encoded *text* (because actual *files* often can't cross from one online service to another). To open it, use, once again, StuffIt Expander.

- **.MIME** (Base64) — Yet another Internet compression format for sending files attached to e-mails. To open it, use, once again, StuffIt Expander; see Chapter 27 for details.

- **.dd** and **.cpt** — You need DD Expand (or DiskDoubler) and Compact Pro (shareware), respectively, to unstuff these increasingly rare archive types.

They're fast, slick, and simple. Press the key combo of your choice, and select a destination for the captured image — the printer, the Clipboard, a PICT file, or the Scrapbook. These programs let you capture the whole screen, just a window, just a menu (even with submenus), or a region you drag across.

Compression Software

You want to back up a file, but it's too big to fit on a floppy. Or you finally got a PowerBook, but you're out of space on the drive in a week. Or you have to send a file to someone by e-mail, but you're afraid it will take forever.

What you need is a *file-compression* program, such as StuffIt. These programs toy with one of life's great equations: Time = Money. In other words, you trade away the time it takes for a compression program to encode your files into a more compact form.

Different files get smaller, when compressed, to different degrees. Graphics files (particularly paintings, such as TIFF and PICT files) are among the most

compressible files. A typical, otherwise uncompressed, scanned TIFF file may take up 1,000K before compression, but only 120K after compression. Word-processing and database documents also get much smaller.

Printer fonts and sounds are among the files that don't compress much. They're *already* in an encoded form, so the compression programs can't find much redundancy to eliminate. (Screen fonts scrunch down just fine, however.)

Segmenting files

Compression programs like StuffIt solve an age-old (well, 15-year-old) dilemma: How do you give somebody a file that's too big to fit on a floppy disk?

Your first thought should be: "I know! I'll compress it!"

Mac Basics

If, after being compressed, the file is still too big, you have to break the compressed file into floppy disk-sized chunks. All the compression programs we discussed have *Segment* and *Join* commands that do just that. The Segment commands break up a large file so that the pieces will fit on separate floppies — and the Join commands sew them back together on the recipient's hard drive.

If you're asked to choose how large the individual chunks (segments) should be, though, be careful. Remember that an 800K floppy doesn't hold 800K, and a 1.4MB floppy doesn't hold 1.4MB. In fact, more realistic sizes for your segments are about 760K and 1,350K for double-sided and high-density disks, respectively.

Disk Images, DiskCopy, and ShrinkWrap

Years ago, Apple had a problem. It wanted to distribute software via the Internet. But some of the software it wanted to distribute, such as its PlainTalk Speech kit, wasn't just a single control panel; it was a suite of files — extensions, control panels, and so on — that had to be placed into the right spots in your System folder. To ensure that all these pieces would go into the right places, Apple also needed an Installer program. How on earth could Apple distribute all of these pieces electronically — while still keeping them together, with an installer, in an arrangement the installer understood?

The solution: Apple created *disk images*. A disk image (a file whose name generally ends with the suffix *.img*) is an increasingly common file format for downloaded software, especially from Apple. But once you've downloaded an *.img* file to your hard drive, you can't do a thing with it — unless you have a program that can *open* it.

CD

In this case, the program you need is DiskDup + (shareware), Disk Copy or Disk Image Mounter (from Apple, available from its Web site) — or the much superior ShrinkWrap (from Aladdin, and included with this book).

How to outsmart the hard drive at its own game

In Chapter 8, we explained the frustrating inefficiencies of the Mac's hard drive design before Mac OS 8.1: the individual *blocks* on your hard drive are probably 16K or 32K in size, yet only one file may occupy a storage block. As a result, each file smaller than a block wastes the rest of that space. A 2K SimpleText document, for example, wastes 30K of space on a hard drive that has 32K blocks. We said that there's no way to resolve the problem except by partitioning your hard drive into multiple volumes (desktop icons), each of which will have smaller block sizes, thus wasting less space — or by formatting your disk using Mac OS 8.1-and-later's optional *HFS Plus* scheme (see Chapter 8).

If you're using an older operating system and don't particularly feel like erasing your hard drive to reclaim that wasted block space, we have a better suggestion: install StuffIt Deluxe 4.5 or later. Its True Finder Integration feature lets you manipulate StuffIt archives in the Finder, exactly as though they were ordinary folders. For example, you can double-click a compressed StuffIt file called `Little Files.sit` — it opens into a window, exactly as a folder would, displaying all the compressed files inside. Again, exactly as with a folder, you can now double-click one of those files to decompress and open it automatically.

So what's the significance? Block size! The Finder considers each StuffIt archive to be a single file. By stuffing lots of little files — e-mail messages, Read Me files, and so on — into a single StuffIt file, you effectively cram multiple files into a single Finder file, confident that you're filling the blocks completely. Using that 2K SimpleText document as an example, you'd be able to fit about 25 of them into a StuffIt archive (because StuffIt also compresses them) that takes up only a single block — only 32K — instead of leaving them loose on your hard drive, where, with all the wasted block space, they'd occupy a total of 800K!

Mac Basics

Here's how you work ShrinkWrap: Whenever you encounter an *.img* file — including the Disk Tools floppy-disk "images" that come on the Mac OS 8.5 CD-ROMs — double-click it (if you have Disk Copy) or drag it onto ShrinkWrap's icon. That's it; a "virtual floppy-disk" icon appears on your screen, exactly as though it's a real floppy disk (the lower-right icon in Figure 22-7). Double-click it to see what Apple has in store for you — an installer, a Disk Tools floppy's contents, or whatever. When you're finished using the mounted disk image, drag its icon (not the original *.img* file!) to the Trash.

Figure 22-7: Clockwise from upper left: a disk image file in Disk Copy format; your hard drive; a virtual disk (RAM disk) created by double-clicking a disk image file; and a disk image file in ShrinkWrap format.

You can also *create* a disk image. Why would you want to do so? Maybe you, like Apple, want to distribute something (a little presentation, for example) to friends, confident that all pieces will remain in their original folder configurations. Maybe you haven't switched to the HFS Plus hard drive-formatting scheme (see Chapter 8), and you realize that a lot of small files won't waste their usual 64K apiece if they're all stored together on a much smaller "virtual disk." (That last sentence will make a lot more sense once you've read Chapter 8.)

Anyway, to create a disk image of your own, just drag a disk or folder onto ShrinkWrap's icon. The new .img file is created automatically. (You're not limited to creating disk images of floppies, by the way. ShrinkWrap is perfectly happy to create disk images of entire hard drives, Zip disks, Jaz cartridges, or whatever; it even offers to compress the contents in the process. As thousands of teenage software pirates have discovered, that feature makes ShrinkWrap ideal for creating easily uploaded duplicates of entire CD-ROMs.)

ShrinkWrap/DiskCopy Secrets ━━━━━━━━━━━━━━■

Unlock it!

Under normal circumstances, the virtual disk and folder icons ShrinkWrap and DiskCopy put on your desktop are locked; after all, the whole point is generally to distribute something you've created in its original, undisturbed form. But if you press Shift as you drag an *.img* file onto ShrinkWrap's icon, your virtual folder or disk icon generally appears on your desktop in *unlocked* form (depending on the way the original file was prepared). You can now add or delete icons from it.

You can achieve the same thing in Disk Copy; when you create a new image (by choosing Image ⇨ Create Image from Disk, for example), you'll be offered a pop-up menu of choices: Read Only (meaning locked) and Read/Write (meaning unlocked). Follow your heart.

No ShrinkWrap needed — and passwords

ShrinkWrap's Preferences are worth checking out. Among our favorite features, for example, is a *self-mounting* option. It lets you create disk-image files that your friends can open even if they *don't* have Disk Copy, ShrinkWrap, or a similar program. A self-mounting disk image is just as user-friendly as, say, a self-extracting archive, as described earlier in this chapter — just double-click to mount the "virtual disk" on the screen.

Another great preference: You can opt to protect an archive with a password. Yes, all you Mac fans who've e-mailed us with this question — now you can protect specific folders on your hard drive from prying eyes. (Remember the password, though. There's no "back door" to ShrinkWrap.)

Worth Learning
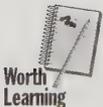
To view the preferences, double-click ShrinkWrap itself. Choose Preferences from the Edit menu.

Or, to change the preferences temporarily — for just a single operation — hold down the Option key while dragging something onto ShrinkWrap's icon.

ShrinkWrap: the secret RAM disk program

As Web-surfing fans have discovered to their delight, storing your browser's *cache files* (see Chapter 25) on a RAM disk (see Chapter 9) results in a huge speed boost. As it turns out, the "virtual disks" that ShrinkWrap mounts on your desktop can be either stored on the hard drive — or created as lightning-fast RAM disks.

To make your ShrinkWrap-mounted, imaginary disks become RAM disks, use the program's preferences dialog box. There you'll see the all-important "Keep mounted images in RAM." When that checkbox is on, ShrinkWrap creates a RAM disk every time it mounts a disk image. So how is this useful? Read the next secret.

Surf the Web at 2X speed

Speed Tip

Here it is: the secret you've all been waiting for! Here's how you use ShrinkWrap to accelerate your Web browser, as hinted in Chapters 9 and 25. As you can read in Chapter 25, the trick works by storing your browser's thousands of *cache files* (the individual text and graphics that make up a Web page) on a RAM disk — and RAM is light-years faster than a hard drive.

Suppose you'll be surfing for awhile, so you decide to make a 5-meg RAM disk — enough to hold a *lot* of cache files.

Double-click ShrinkWrap. Choose Edit ⇨ Preferences. Turn on "Mount images as unlocked by default" and "Keep mounted images in RAM." Click OK.

Next, choose Image ⇨ New Image; in the resulting dialog box, specify a name for your RAM disk (something creative, like "RAM disk") and the size you want (5,000K is close enough). Click OK.

Now there are two new icons on your desktop. One, called RAM disk.img, is a file. In the future, you'll be able to re-create your RAM disk just by double-clicking this *.img* file. (You might also stash the *.img* file in your System folder's Startup Items folder; that way, the RAM disk will be created every time you turn on the Mac, ready for action.)

The other icon is the actual RAM disk icon. See Chapter 25 for instructions on making your Web browser use *this* disk to store its cache files.

So why use ShrinkWrap instead of the Mac's built-in RAM disk option (see Chapter 9)? The biggest advantage: you can ditch the ShrinkWrap RAM disk (and reclaim the memory it's using up) without having to restart the Mac — just drag the RAM disk icon to the trash. You can also *create* or resize a ShrinkWrap RAM disk without having to restart.

Fast disk duplication

If you're ever required to make lots of copies of a certain floppy (or other disk), keep ShrinkWrap or DiskCopy in mind. There's no quicker, simpler way.

ShrinkWrap: Double-click the ShrinkWrap icon. Choose File ⇨ Preferences and make sure Batch Floppy Mode is selected. Click OK. Now choose Image ⇨ Duplicate Disk. When the Open File dialog box that appears, insert (and select) the master floppy you want to copy.

After a moment, the program tells you to insert a blank floppy (to copy onto); you're off and running. Keep feeding it floppies as requested; the program turns one after another into a duplicate of the original.

DiskCopy: Launch the program. Insert the master floppy disk. Choose File ⇨ Make Multiple Copies. Click the Read Master Floppy button. Wait for the minute or so DiskCopy takes to memorize the contents of that disk — and then, when the Mac spits out the master floppy, click the Make Some Copies button. Insert the first blank disk you want copied onto; when that's finished, insert the next blank; and so on.

CanOpener: the Great Retriever

You can't claim to be a utilities nut without owning CanOpener. Most people think of it as the world's greatest emergency retrieval system — it can open and retrieve text, sounds, icons, or graphics from any file on Earth, no matter how corrupted or what alien computer it came from. For example, it immediately and easily reads BMP, CGM, CUT, EPS, GIF, ICON, IFF, IMG, Lotus BIT/RLE, Lotus PIC, MacDraw, MacPaint, PC Paint, PCX, Photoshop, PICT, Pixel Paint, QuickTime movies, RAW, RIFF, RIX, Silicon Graphics RGB, Sun, Targa, TIFF, XBM, and XWD files.

Best of all, you already have it — on the CD-ROM that came with this book.

CD

But in our experience, CanOpener's abilities as an emergency tool are only half its value. The rest is its resource-sucking ability; we love extracting icons, palettes, sounds, and pictures out of every piece of software that crosses our desks. There's no better way to learn how a program is put together; without the risks involved with ResEdit, you can grab the sounds out of America Online, games, and Mac OS 8.5's theme sound files; the hidden pictures in commercial software; the secret icon families of any application; and so on.

Furthermore, if you're like us, you're constantly in word processor-document hell. People e-mail you with attached ClarisWorks documents, Word documents, documents you don't even recognize. Programs come with Read Me files; every e-mail program has its own document format; Web pages have a format of their own. Life's too short to waste launching and wedding programs all the time just to read this barrage of text documents.

Our solution: Set CanOpener up as an instant document reader. Put it on your Desktop. To set things up, launch the program. Choose File from the Preferences menu and set it up as shown in Figure 22-8.
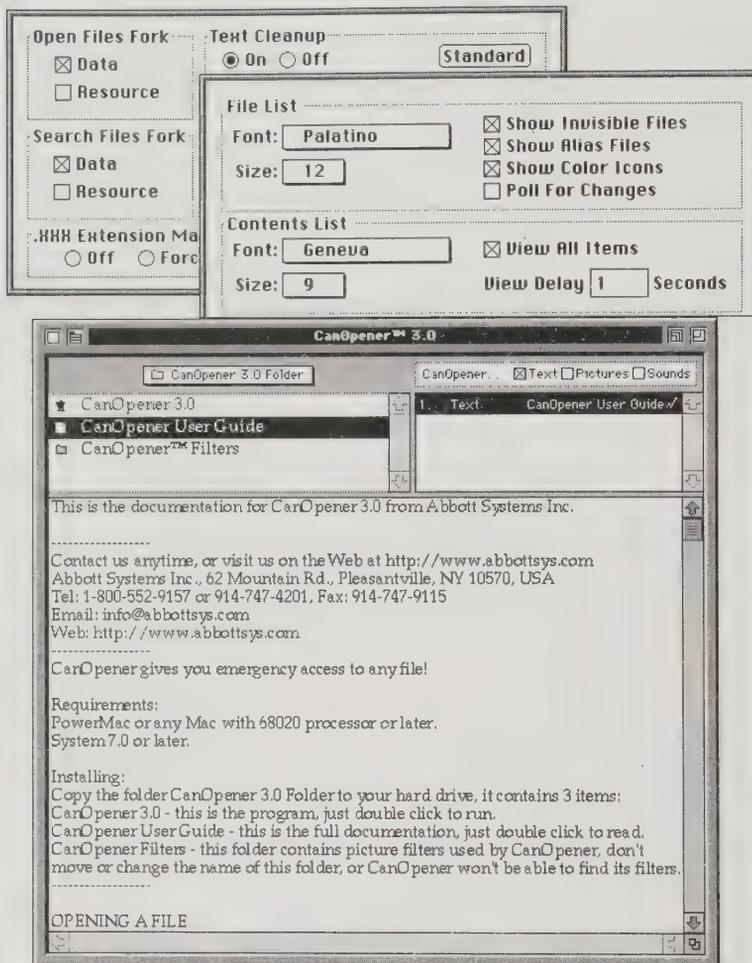
Figure 22-8: If you make the settings shown here, CanOpener will immediately display the text of any file you drop onto it, regardless of the computer or the program that created the document. Clockwise from upper left: the File preferences window, View preferences, and the main CanOpener window (note that only the Text checkbox is selected at the top of the window).

From now on, whenever you drop any file onto the CanOpener icon, you'll immediately see whenever text was inside, displayed automatically. You won't see any text formatting, but you'll usually make up the difference in sheer happiness from the speed and simplicity of the entire operation.

MacsBug: Weird Land of the Coder

It's whispered in the corridors of Mac user groups and chat rooms: *MacsBug.* Everybody talks about it, but nobody's quite sure what it is or for what it's good. "It sure isn't in *my* System folder," says the average Mac fan.

But MacsBug is real software — free, at that — used by Mac programmers. It's a *debugger,* used to help catch bugs in software that's being written. It acts as a safety net between the fledgling program and your OS; when the program crashes, the harsh, scary-looking MacsBug screen appears to give the programmer information about what went wrong.

Unless you're a programmer, there's not much you can do with MacsBug (which stands for Motorola Advanced Computer Systems Debugger) besides fool around. But fooling around itself can be highly enjoyable — and, unlike your ResEdit shenanigans, you can't hurt anything by fiddling with MacsBug. At worst, you'll have to restart your Mac after each experiment.

How to use MacsBug

CD

We've included MacsBug on the CD-ROM that comes with this book. If you'd like to join us on our instructive little tour, drop it into your System folder (MacsBug is neither extension nor application; it just kind of *is*) and then restart the Mac.

CASE HISTORY

Lawyer versus Lawyer

If you know anything about Microsoft Word, you know all about its fast save feature. When this option is turned on, saving your documents is much quicker; the program saves time by simply tacking on the latest text at the end of your file — without bothering to rewrite the entire document on your hard drive, in sequence, neatly tidied up, in compact form, the way it would when fast save is turned off.

Normally, you can't tell the difference; when you open a fast-saved document, Word automatically displays it with the correct pieces in the correct places; your only clue that the document was fast-saved is that the document file is larger on the disk.

CanOpener, however, changes everything; with it, you can examine a Word fast-saved document and see all the pieces, in the order in which they were typed. You can even see sections that were deleted that, in the interest of time, Word hasn't permanently purged from the document.

Imagine, then, the shock of a lawyer negotiating a contract recently — we'll call him Lawyer A — when Lawyer B called him on the phone. Lawyer B had used CanOpener to examine Lawyer A's Word-document contract proposal — and discovered that in its earlier drafts, its terms had been far more generous to Lawyer B's client! There they were, in all their glory: all the paragraphs that Lawyer A had written and later deleted or revised — in order.

Lawyer B therefore knew exactly what Lawyer A's bottom line was, and — it's safe to say — negotiated a much better contract.

When you start up again, your "Welcome to Mac OS" screen now has a new line of text added: "Debugger installed." (If you have any doubt that you're now in the land of software geeks, open your System folder, turn on Balloon Help, and point your cursor at the MacsBug icon for a wry and hilarious message.)

There are two ways you can "drop into" MacsBug's creepy little world: press ⌘-power key or have a system crash. As shown in Figure 22-9, the MacsBug world can be somewhat alarming at first. English is definitely not its first language; *assembly language,* the Mac's own machine code, is.

Figure 22-9: Don't be afraid of the dreaded MacsBug window.

Once in MacsBug, you can type any of these codes (follow each with Return):

- **EA** quits and restarts the program you were using when you called up MacsBug. (It stands for "exit to application.")

- **ERROR** makes MacsBug display a list of super-geeky error codes. Type **error #11**, for example, to find out what a Type 11 error is. (As Chapter 36 should make clear, the answer is all but meaningless — a Type 11 error turns out to be a "miscellaneous hardware exception" — but hey, you asked.)

- **ES** stands for "exit to shell." Quits and relaunches the Finder.

- **F** stands for Find. That's how you can find a scrap of text that's still in memory.

- **G** means "go back." You leave MacsBug and go back to whatever you were doing (unless you got there by crashing, in which case G doesn't always work). ⌘-G does the same thing.

- **HOW** makes MacsBug tell you *how* you got there—whether by crashing or pressing ⌘-power.

- **RS** stands for Restart. You can also try **RB**, for "reboot."

- **SWAP** switches back and forth between MacsBug and whatever program you were in.

- **VMDUMP** brings up screen after screen of programmery codes—the contents of your virtual memory swap file, actually. But if you've got RAM Doubler installed, MacsBug gives you instead the charming admonishment: "Yo! You're running RAM Doubler—not VM!"

Most of the MacsBug display is for programmers. You, however, may want to enjoy area A in Figure 22-9. This line identifies the program that was running when MacsBug kicked in—which can be handy when determining which of your programs is actually doing the crashing.

Area B indicates whether or not virtual memory is turned on. Area C is the *command line*, where you can type commands to MacsBug. (The mouse is dead while in the debugger, so don't even think about using it.) And area D is the *output region*, where MacsBug gives its answers to your commands.

So what's MacsBug good for? Let us count the ways.

MacsBug Secrets

Save your work after a crash

This trick is probably the most practical real-world way in which MacsBug can help the average non-programmer. If a program crashes or freezes, summon MacsBug (if it hasn't appeared on its own) and type **ES,** followed by a Return. (This doesn't work if the crashed program *was* the Finder, by the way.)

If the machine was *seriously* hosed, nothing useful will happen; press ⌘-Control-power to restart. But in many cases, you'll find yourself back in the Finder. Your Mac is tottering, but you've got enough time to switch to any open programs and save your documents there.

Then restart the Mac to make things right again.

Do the math

Speed Tip

MacsBug makes a quick-'n'-easy pocket calculator. Just type out the equation you want it to do (precede each number with a # sign) and then press Return. For example, you can type *#234 * #423 + #1*. Along with a lot of other cryptic codes, you'll see your answer — as usual, preceded by a # sign — in the "output area" (see Figure 22-9).

Psychedelic monitor, dude!

This one's goofy but fun. Type *swap* and press Return. If MacsBug replies: "Display will be swapped after each trace or step," type **s 40** (or another number). (If MacsBug doesn't give you that message, type **swap** and press Return until it does.)

Strange But True

Now your monitor blinks violently between MacsBug and whatever program you were in, making it look like a TV whose station is undergoing nuclear attack. There's no way to stop the onscreen shockwaves once they've begun, so choose your number-of-flashes number with care.

Menu blinking made annoying

When you choose a menu command under normal conditions, it blinks — black, white, black — between zero and three times, depending on your setting in the General Controls control panel.

Contest Winner

But free book winner Matt Garrison discovered a way to extend those menu-blinking options, for those days when your brain isn't running on all cylinders and you keep forgetting which command you've just chosen.

In MacsBug, type **sw a24 #12** (instead of 12, put whatever number of blinks you prefer). Leave MacsBug by typing **G** (and then a Return).

Now, whenever you choose a menu command, you'll see it blink 12 times, or 50, or whatever annoying number you've established.

(To restore the blinking, return to MacsBug and type **sw a24 #3** (for three blinks) — or just reset it in the General Controls control panel.)

Extension Managers

So now you have your hard drive utilities, virus protectors, macro software, screen saver, debugger, file-compression utilities, and customization software installed. Terrific! Now you need one more: a utility to *manage* those utilities! Enter the extension manager.

Why do you need a manager for these startup programs? Because, as is often the case with utilities, extensions and control panels can conflict. They may argue over the same piece of memory real estate, for example, and the result is almost always a system crash. You need a way to turn your various startup programs on and off, particularly when you try to ferret out what the conflict is. (See Chapter 36 for more on troubleshooting.)

The Big Two of extension managers — Apple's Extensions Manager and Conflict Catcher — let you specify *sets* of extensions and control panels. You may have a bare-minimum set to use when memory is at a premium and a full-fledged set for normal use.

Extension Manager Secrets

Extension manager time-saver

Mac Basics

If you use Extensions Manager or Conflict Catcher, you probably change your extension/control panel lineup as the Mac is starting up. You know that you can press the space bar until the dialog box appears, make your choices, and click OK.

But it's faster to make your selections *before* restarting the Mac. Just open the Extension Manager control panel, or choose Open Conflict Catcher from its upper-right CC menu-bar icon. You see the same selection dialog box as you do when starting up. But if you switch your extensions and control panels while the Mac is still on, you won't have to wait for the dialog box to appear when you restart.

Conflict Catcher: the world's best About boxes

Conflict Catcher (Casady & Greene) is a remarkable startup manager for several reasons. It can automatically find out which two (or several) of your extensions are conflicting with each other. It's something to behold: You just sit there and restart your Mac over and over again, as Conflict Catcher experiments with mathematically selected combinations of extensions, until finally it figures out which ones are fighting. (This book comes with a seven-day demo version of Conflict Catcher. Seven days isn't forever, but it's enough to get you out of some frustrating extension conflicts.)

Conflict Catcher has a proud history of awesome Easter eggs and buried credits. In Version 2, you could Shift-Option-⌘-click the title screen to find out how much the U.S. national debt increased in the time it took your Mac to start up!

Versions 3, 4, and 8 each offers a different built-in arcade game. To play, open the control panel in the Finder (not during startup). Click the version number in the lower-right corner (or choose About Conflict Catcher from the menu) to get the About box, complete with scrolling credits. (If you press Option while the credits are rolling, they'll reverse direction and scroll downward.)

But the fun has only just begun. Now type the word **play**. No period, no Return . . . just the word. The screen changes — now you're in arcade land! You get to play Extension Invaders, Extension Breakout, or Extension Space Attack. (We'll leave it to you to figure out which keys fire your missiles and move your little guy around the screen. Hint: the arrow keys and the spacebar are usually involved.)

Five more Conflict Catcher secrets

You can try these handy shortcuts even in the three-day version of Conflict Catcher you got with this book:

CD

- If only Apple would adopt this idea for the system software itself: If you have Conflict Catcher installed, you can interrupt the startup process by pressing ⌘-period at any time during the extension-loading process. You'll jump right to the Finder, running with only the extensions that loaded before your keystroke.

  In Version 8, you can actually click directly on any icon *while the extensions are loading*. The startup process pauses, a screen of information about that extension appears, and you continue only when you're good and ready.

- Other cool keys you can hold down during the extension-loading process (if you have Conflict Catcher): ⌘-R restarts the Mac instantly; ⌘-S shuts down; Caps Lock, when pressed at the very beginning of the Mac's startup process, makes Conflict Catcher's main window automatically appear — saving you the trouble of leaning on your spacebar for 30 seconds.

- You can even hold down the Tab key while extensions are loading to make the startup process pause after the last extension has loaded — and stay frozen until you release the key. We suppose this is a handy way to (a) review what has just loaded, in your search for a particular extension icon, or (b) admire how many extensions you have, you amazing person, you.

Chapter 23

Speech, Movies, and Sound

In This Chapter

▶ Recording and editing sounds and QuickTime movies

▶ QuickTime 3.0 and MoviePlayer Pro

▶ How to get your Mac to talk — and listen

▶ Getting TV on the Mac screen — and vice versa

▶ QuickTime VR

▶ Making music with MIDI technology

▶ Presentations: tricks, tips, and techniques

The Macintosh has always been the ultimate multimedia machine. Experience the frustration of setting up or using any of the Mac's high-tech talents on a Windows computer — speech, movies, sound, music, or all of the above in combination — and you'll see what we mean.

A Mac Digitized-Sound Primer

Recording sounds onto your Mac is a blast. Your cheerful authors' Macs are creaking with sounds from the world around us: our nieces and children, our grandparents, subway sounds. By playing these recordings through the Mac speaker, we can, in a manner of speaking, introduce somebody to our entire circle in a matter of minutes.

Mac Basics

Your Mac records sound by *sampling* the sound waves entering the microphone. Sampling means taking thousands of tiny sound snapshots per second and converting each to a number. (That's why it's also called *digitizing*.) Most Mac sound-recording software (including recent incarnations of the Sound control panel) lets you specify how many of these samples you want to make per second: 11,000 or 22,000, for example. The more samples per second, the more realistic the playback; 22 kHz is clearer than 11. (The "kHz" is short for *kilohertz*, meaning thousand samples.) All of today's Macs can even record at a crystal-clear 44 kHz — compact-disc quality.

But no matter what the sampling rate, sound files are big. One second of 22 kHz sound gobbles up 22K on your hard drive. You can do the math: A one-minute stereo 22 kHz sound, therefore, takes up 2,640K on your disk. (Note

that 11 kHz sounds are half as large, and 44 kHz files are twice as large. Double those sizes if you're recording in stereo.)

How to record sounds

Making new sounds of your own is extremely simple. As with most tasks in the computer world, you need only two items: hardware and software. The former is your Mac's microphone; the latter is, at minimum, your Monitors & Sound (or Sound) control panel or SimpleSound desk accessory. More sophisticated programs let you record longer sounds, edit them, and apply special effects to what you've recorded.

Microphones

Some Macs have microphones built right into the monitor: the LC 5000 series, PowerBooks, the iMac, and any Mac with an AudioVision/AppleVision monitor. (The mike looks like a couple of tiny toothpick perforations in the case.) There's no way to prevent this kind of mike from picking up the computer's own fan or hard drive noises, but at least you never lose it.

From 1989 to 1991, most Mac models came with the classic Apple external microphone, which looks like a gigantic vitamin C tablet. You plug the end of its very thin cord into the jack on the back of the Mac that's marked with a microphone icon.

All recent and current Macs, though, require its successor, the PlainTalk mike. (It costs $20, unless it came with your Mac model, such as Power Mac G3s.) It looks different — it's light gray and no longer SweeTarts-shaped — but it plugs into the same jack. The older Apple mikes don't work, nor do non-Mac mikes, such as those from Radio Shack.

The Sound control panel

The Mac's sound-recording software seems to leap to a new location with each new version of the Mac OS. For years, it was in the Sound control panel; then it jumped briefly to the short-lived Sound & Displays control panel. In 1997, recording features were available only in the SimpleSound desk accessory (for recording) — but today, on modern Macs running Mac OS 8 and later, they're also available in the Monitors & Sound control panel (which also governs volumes and other settings).

In each control panel, you have to do a little digging to *find* the sound settings. For example, in the Sound control panel included with System 7.5 and later (see "Sound" in Chapter 4), the pop-up menu comes up saying Alert Sounds. For most of the special audio tricks we'll be describing, start by using this pop-up menu to specify where the sound is *coming from* and where you want the sound to *go*.

Sound, speakers, and you

Your Mac actually sounds a lot better than it sounds, if you'll pardon the expression. That is, the sound it records and plays back is seriously hampered by the relatively cheap speaker built into the Mac. You'll be duly impressed if you bypass the speaker and listen to the Mac's sounds on better equipment.

For example, plug Walkman-style headphones into the speaker jack in the back of the computer. (Turn the sound level down, though, in the Sound control panel, or you'll fry your eardrums.)

Hooking up the Mac to your stereo is also possible. From Radio Shack, get a cord with a *male miniplug* on one end (for the Mac's speaker jack) and a pair of *male RCA plug*s on the other end. Plug these into the *line* inputs of your stereo receiver, usually marked something like

Aux or Tape. (Don't plug into the Mic or Phono inputs of the stereo; the sound distorts horribly.)

Perhaps the most convenient proposition is to buy a pair of speakers for your Mac. These aren't ordinary bookshelf speakers. They must be *shielded, powered* speakers. "Shielded" means that their big electromagnets won't affect the Mac or the monitor; "powered" means they have a power plug and don't have to be hooked up to an amplifier. You can find them for next to nothing these days — $10 per pair, for example.

What's wild about listening to a higher-fidelity sound source such as headphones or speakers is that you may hear all kinds of other Mac sounds. This computer is just full of busy little whirs and hums: when the floppy drive is in use, when the hard disk is accessed, and so on.

Similarly, in Monitors & Sound, you must click the Sound icon at the top of the window to view all the various sound-related possibilities.

Where sound can come from

Before you record, you must specify a sound input — that is, you must tell the Mac where the sound is going to be coming from. If you're using the old Sound control panel, this entails choosing Sound In from the pop-up menu; if you're using Monitors & Sound, the Sound Input pop-up menu in the lower right; if you're using Mac OS 8.1, you must use the Sound Input Control Strip module (see Chapter 4).

On most Macs, your choice of sound inputs includes only one or two options. But depending on what other sound-producing gear you own, you may see any of the following. (Sound control panel users: You may have to click the Options button to see these.)

- **Microphone:** Click this icon to select the microphone (described earlier) plugged into the microphone (Sound In) jack on the back of the computer.

- **AV Connector:** This icon represents the sounds being picked up by the mike that's embedded in the AppleVision (or AudioVision) monitor, if you have one.

■ **Internal CD:** If your Mac has a built-in CD-ROM drive, it can, of course, play normal audio compact discs. If you want to record a little bit of music, click this option.

■ **Expansion Bay-PC Card:** This option is for PowerBooks only. It lets you record sound from something in the PowerBook's expansion socket, notably your removable CD-ROM drive. (It's theoretically possible that somebody will come up with a PC-card microphone, but we have yet to see it. Wilder yet: if you choose this option in the Monitors & Sound or SimpleSound program, the PowerBook will record from *both* the expansion bay *and* the PC card slot simultaneously!)

■ **External Audio** or **Line In** or **RCA In:** You also can record from a tape deck, Walkman, DAT (digital audio tape) player, your TV set, and so on. Just make sure that you have the correct cables; each cable must end in a miniplug like the one on the end of Walkman headphones. You may need to visit Radio Shack and get an adapter cable; it should have male RCA plugs at one end (for your tape deck, VCR, and so on) and a stereo miniplug at the other. Make sure that the Microphone icon is selected in the Sound control panel, and you're ready to roll.

The only trouble you may have is that AV, Power Mac, and other recent models require an *amplified* input signal. That's why the old Apple microphones and non-Apple microphones don't work.

(OS 8) On the same control panel screen, you should also see the famous Playthrough checkbox, known in Mac OS 8 and later as Listen. On older Mac models, the built-in speaker is silenced *immediately* when you plug something into the back-panel speaker jack. On recent models, such as Power Macs, however, you can turn the built-in speaker back on again — by choosing this Playthrough or Listen checkbox. When this option is selected, sound flows from the Sound In source to the Mac's built-in speaker (*and* to anything plugged into the speaker jack). Turn this option on if, for example, you want to listen to an audio CD while you work.

If your microphone is plugged in *while* Listen is selected, you'll hear anything you say into the mike broadcast from the speaker, and you'll have yourself the world's most overpriced PA system. (You may even get that irritating squeal known as *feedback*.)

Where the sound can go

The other sound-related settings in Monitors & Sound are as follows (if you have the old Sound control panel instead, choose Sound Out from the pop-up menu to view some of these options):

■ **Sound Out Level:** This slider controls headphones or external speakers *only*. It doesn't affect sound from the Mac's built-in speaker. Apple suggests that you leave this slider at maximum, and then turn the physical volume knob on the speakers down to the volume level you like.

- **Computer Speaker Volume:** Drag this slider to set the Mac's internal speaker sound level. (It's much quicker to use the slider on the Control Strip, however, as described in Chapter 4.)

- **Sound Out Balance:** This slider controls the left-to-right balance for headphones or external speakers. The only reason to shift it out of the center position is (a) to compensate for the fact that one speaker is farther from your ear than the other, or (b) to try to hear something more clearly that was recorded in only one track of a stereo recording.

- **Computer Speaker Balance:** For most people, this control does nothing. It's useful only on Macs with built-in *stereo* speakers, which pretty much means certain high-end PowerBooks or the iMac.

- **Sound Output:** If your Mac offers a choice of speakers — external, AppleVision-monitor encased, or built-in — this pop-up menu controls where the Mac sends its sound.

- **Sound Output Quality:** Why would you ever want anything less than CD quality (44.100 kHz)? We'll just mumble something about "Well, suppose you're trying to hear just how bad your sound recording will sound when it's played on a crummy speaker or over the Internet," and leave it at that.

Making the actual recording

Plug your microphone or stereo into the back of the Mac, as described earlier. Use the Sound In controls, also as described earlier, to select the appropriate sound source: Microphone, Internal CD (to record from a CD-ROM drive), or whatever. You probably want Listen (or Playthrough) turned *off* if you're using the mike and *on* if you're using an external device or a CD. (If you're using the CD drive, use the AppleCD Audio Player desk accessory, or your Control Strip, to choose the track that you want to hear.)

Your Mac may use any of three methods to actually record a sound:

- **SimpleSound:** Choose this desk accessory from your menu. Click Add, and then click Record.

- **Monitors & Sound:** Launch this program (in your Control Panels folder) and click the Alerts icon at the top. The original version of this control panel didn't offer an Add button (so that you could create new sounds); if yours doesn't, you must use the SimpleSound method. Mac OS 8 and later, though, does offer an Add button; click it, and then click Record.

- **Sound:** If you're still using an older Mac (or older system software), open the Sound control panel. From the pop-up menu, choose Alert Sounds; click New; and then click Record.

If you're using Monitors & Sound or the Sound control panel, you have ten seconds to record. Unless you like a bunch of "dead air" at the end of your recording, be ready with your mouse on the Stop button. The rest should be easy.

What to do with sounds

Once you've recorded a new sound, its name shows up in your list of alert sounds (in the Sound control panel, in Monitors & Sound when you click Alerts).

After a sound is in your System file, you can do all kinds of things with it. Double-click the System file to open it and reveal the sound files nestled within. At that point, you can trash a sound by dragging it; rename it as you would any icon; back it up; and so on.

Once you've mastered the art of recording sounds, you can begin putting them to work for you. Here are some ideas of things to do with your new custom-made sound recordings:

- **Change your error beep.** Whichever sound is selected in the Sound/Monitors & Sound control panel's list becomes your new error beep. (Choose a short one unless you want to go stark raving mad.)

Mac Basics

- **Make sounds for friends.** Any sound that you create with the Sound control panel becomes a draggable, trashable, movable icon. To see it, open your System Folder; then double-click your System-suitcase file. You'll see all your sounds listed in the window. Manipulate them as you would any other icons — e-mail to friends, post on your Web page, whatever.

- **Annotate your word-processor documents.** Word, WordPerfect, and some other word processors let you record sounds directly into your documents. An icon appears in the text — and the sound plays when you click the icon. (In Word 98, you must first install the Voice Annotation software that comes in the Value Pack folder; it isn't automatically installed with Word.)

- **Leave a good-morning memo.** Put a sound-file icon into the Startup Items folder of the System Folder. Next time you start up the Mac, you (or whoever next uses the Mac) will hear that cheery recording played just as the Desktop appears.

- **Suck sounds out of all your other programs.** Use ResEdit, as described in Chapter 21, to open all the programs and games on your hard drive. Root through them in search of *snd* resources. Open a *snd* resource and highlight one of the sounds in the list. A new menu, called snd, appears on the menu bar. It lets you play the sound or (if you have an Apple microphone) rerecord it.

By using the Edit menu, you can cut or copy the sounds, which is great fun. Paste them into your Scrapbook or System file for easy future access. Or, replace the sounds with ones you make yourself.

CD

To get you started, here are a few programs that contain sound resources ready for your perusal: the Jigsaw Puzzle desk accessory; the America Online program; Kid Pix (*tons* of them); the System file (the famous camera-shutter sound, among others); HyperCard (19 of them); and so on. Games, in particular, tend to be crammed with great sounds — check out Maelstrom, for example, included on the CD-ROM with this book.

OS 8.5

And if you have Mac OS 8.5 or later, forget about it: your system runneth *over* with sounds. Once in ResEdit, open your hard drive; the System folder; the Preferences folder; the Appearance folder; and the Theme Sounds folder. In the files you find there are dozens of fantastic sound effects (as usual, in the *snd* resource) ready to suck out and use for other purposes.

■ **Tune your instrument.** This tip, suggested by reader Phil Walsh, is of particular interest to musicians — but they'll love it. Using your Mac, make a recording of your tuning fork or electronic tuner, playing an A-440 (or whatever note you tune to). Because a digital sound file always plays back perfectly, you'll always have your Mac or PowerBook to tune to when you can't find (or don't own) an electric tuner.

How to edit your recorded sounds

CD

Your Macintosh came with software for recording sounds — the Sound control panel — but no way to *edit* them. That's why we've included SndSampler and UltraRecorder on the CD-ROM included with this book — simple, flexible programs for sound recording and editing. These programs let you copy, paste, and rearrange the sound snippets you record (or get from other sources) and save them in several sound-file formats. Make Nixon say "I am — a crook" by editing out one word. Rearrange the phrases in your friends' utterances. It's all easy — just cut and paste to rearrange, trim, or otherwise mangle the sounds you've recorded.

For more power and pro-level design, consider Macromedia's SoundEdit II. It's the same idea as SndSampler — but nicer to look at and with higher horsepower.

Sound Secrets ———————————————————————————————— ■

Record CD quality longer than ten seconds

Worth Learning
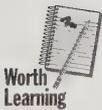
As noted earlier, the Monitors & Sound (and Sound) control panels stop recording a new sound after ten seconds. The solution: use the SimpleSound desk accessory instead. Its recordings are limited only by the amount of free RAM on your Mac.

Stop that sound!

Mac Basics

You can stop any sound whose playback is in progress by pressing either Esc or ⌘-period. That's nice to know when it turns out that someone selected, as your error beep in the Sound control panel, a full 10-second sound clip of Barney the Dinosaur singing — and your Mac is now trying to beep three times.

How to listen to a CD while you work

In general, you can only listen to a music CD through your Mac's built-in speaker if your CD-ROM drive is *built into* your Mac. If you have an external CD player, you'll have to use headphones or external speakers.

Use the Sound In controls of your Sound, Monitors & Sound, or Control Strip panel to select Internal CD. If you want the music to play through your Mac speaker, be sure that Listen (or Playthrough) is turned on; leave this option off if you have headphones or external speakers hooked up. Use the Sound Out controls to select the 44.100 kHz option (for best quality).

CD

Insert your music CD. Then use the AppleCD Audio Player desk accessory to start the music and specify the tracks to be played (see Chapter 3 for full instructions) — or use the pop-up controls on the Control Strip, as shown in Figure 23-1.

Alternatively, if you have QuickTime 2.5 or later, open your QuickTime Settings control panel, and turn on the Audio Auto Play option. Thereafter, music CDs will begin playing immediately when you insert them — no AppleCD Audio Player desk accessory required. (Doing so doesn't make you vulnerable to the AutoStart virus described in Chapter 21 — only the "CD-ROM Auto Play" option does.)

Speech-recognition bad news: When CD-ROM Playthrough is enabled, the Mac ignores your microphone. No more "Computer, open ClarisWorks" commands, as described later in this chapter — you must choose one deluxe AV feature or the other.
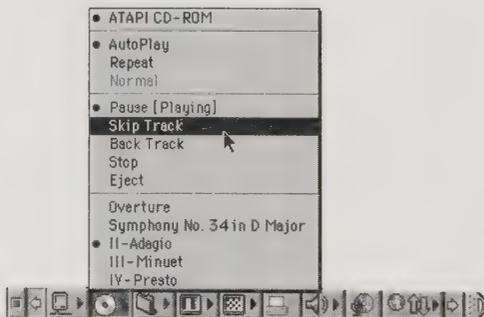
Figure 23-1: Using the Control Strip, you can control your music CDs as you work. And how did we get the actual track names to show up here? Easy: By typing them into AppleCD Audio Player, as described in Chapter 3.

Record sounds from a CD

While a music CD is playing, as described in the previous secret, you can record a snippet of up to ten seconds long the same way you'd record an error beep.

Just specify your designate your CD-ROM player as the sound-input source; start the music playing; and use the normal Add and Record buttons, as described earlier. You may find the Pause button (in AppleCD Audio Player or your Control Strip) handy for getting things ready. (Note: Some models can't record from a CD if you've got anything plugged into the microphone jack on the back panel.)

For longer clips, install QuickTime. Launch the MoviePlayer program that came with your Mac; choose Import from the File menu; and you'll be able to directly open the tracks of a music CD that's inserted into your CD-ROM player. The result is an *audio-only* QuickTime movie containing the song you selected!

CD

(If you want to convert that QuickTime movie into an ordinary, double-clickable, System 7 sound file — or extract sounds directly from audio CDs without the intermediate QuickTime step — use the free program Movie2Snd, included on the CD-ROM with this book.)

Record the Mac's self-speech

If you try out PlainTalk, the Mac's speech feature, as described later in this chapter, it may seem a shame that you can't capture the Mac's utterances as sound files you can distribute and cherish forever. Actually, you can. (Turn off the speech *recognition* feature for this trick — only use the Text-to-Speech feature, which runs on any Mac.)

Just run a cable (with a miniplug on each end) from your Mac's speaker jack to its microphone jack! Then launch SimpleText and start it talking; switch to the Sound control panel. The Mac continues yakking away in the background as you record the sound as usual.

Strange
But True

(What's really weird is that, if you play back your newly recorded speech sound while SimpleText is still going, you hear both voices at once!)

Converting sound-file formats

The standard Mac sound file's icon — what we call a "System 7 sound" — looks like a little triangular speaker with sound waves emerging from the right side. That's not the only sound-file format in creation, however. On the Internet, you're also likely to find AIFF files and WAVE (or .WAV) files, the predominant format on DOS/Windows computers.

CD

Never fear: you can use and enjoy all of those formats. All you need is a program that can read and convert such sounds into standard Mac sounds — and the CD-ROM that comes with this book has just such a program. It's called SndSampler, and you can read about it in the appendix, "The CD Software Vault." (MoviePlayer 3, part of the QuickTime Pro kit described later in this chapter, can also open, convert, and save AIFF and WAV files.)

Sound stuff with this book

CD

Mac has no microphone? No problem. We've provided on the CD-ROM with this book enough material to get you started on a promising sound-management career: professional sound clips from the Kaboom! and Graphics Essentials collections (from Nova Development and Olduvai, respectively).

Music with MIDI

The digital sounds you just read about aren't really music, as far as the Mac is concerned. They're fixed digital recordings, *samples,* that may or may not contain music — they might just as easily be hinge squeaks or voices.

The Mac is equally famous for its second music technology: *MIDI* (rhymes with *giddy*). MIDI stands for Musical Instrument Digital Interface — computerese for *synthesizer hookup.*

We think of MIDI as something like PostScript, the printer language spoken by the Mac over a cable. But instead of sending page-description instructions to a printer, MIDI cables convey *music*-description signals to a synthesizer. One signal says, "Play middle C"; another says, "Push the sustain pedal down." The keys and pedals don't actually move, but otherwise the instrument responds by playing just as though a human were at the controls.

Sequencing

Because the Mac transmits hundreds of these MIDI signals per second, it can play some very complex music indeed. It can, for example, play the synthesizer's string, woodwind, and percussion sounds simultaneously. Using a technique called *sequencing,* you can record one instrument's musical line at a time into the Mac; then, like a multitrack tape recorder, the Mac plays all the parts back in perfect synchronization.

Unlike a tape, however, the Mac-as-a-sequencer can change the key or tempo independently; you don't get Alvin and the Chipmunks when you speed up the piece, as you do with a tape. Also, unlike a tape recorder, the Mac never makes you wait to rewind or fast-forward; a sequencer is random access, so you can jump instantly to any spot in the piece. Above all, composing with a sequencer means you can fix wrong notes, add accents or crescendos, or copy and paste parts of a song without ever having to rerecord the original performance.

What you need

All you need for MIDI sequencing are three ingredients: a synthesizer, a MIDI interface to connect it to the Mac, and a sequencing program. (To play back MIDI files, you don't actually need a synthesizer; you can use QuickTime, as we'll explain later in this chapter. But to *record* music, you need a real musical keyboard.)

The keyboard

The most important aspect of the synthesizer you buy for MIDI is that it should be, of course, MIDI-compatible (some of the really inexpensive ones aren't). It should also be *multitimbral* (capable of playing more than one instrument sound at a time). You can tell if a keyboard is MIDI-compatible by checking for the presence of two round, nickel-sized MIDI jacks in the back. You can't really tell if it's multitimbral by looking; get a salesperson to tell you. The most basic multitimbral MIDI keyboards cost about $150 in music stores; Casio, Yamaha, and Kawai each make several keyboards with street prices in that range. The more realistic the sounds, the more the synthesizer costs.

For multimedia work and presentations, consider getting a *sound module* (a synthesizer that has no keyboard). After you record the music, you don't *need* a keyboard; remember, the Mac plays MIDI over a cable, not by pressing keys. Therefore, a sound module, such as the cigar-box-shaped Yamaha TG100, is portable, inexpensive, and lightweight. But when hooked up to speakers, it still sounds like a fair representation of actual instruments.

The interface

You next need a MIDI *interface* to connect the synthesizer to the Mac. A MIDI interface is generally a small box. You plug one end into the modem port of your Macintosh; into the other end you attach MIDI cables from your synthesizer. There are two cables, labeled IN and OUT, because MIDI signals only run one way in each cable.

Don't let them sell you some $300 professional interface. For most people, there's no reason in the world not to get a cheap $50 Altech or Opcode interface with outputs for three musical keyboards (and no power plug to hog spaces on your surge suppressor). (Actually, while we're talking about saving money: at this writing, you can get a CyberSound Studio kit that includes a compact three-octave keyboard, MIDI interface, cables, *and* simple recording software — for $100. Visit *www.cybersound.com* for details.)

The sequencer

The final element of a MIDI sequencing setup is a *sequencing program*. In some ways a sequencer is unique in Mac software; there's no Print command. You can't paste anything from it into PageMaker. You hardly use the Mac keyboard at all. But a good sequencer can turn you into an orchestra.

All sequencers are fundamentally alike. In one window there are buttons labeled Play, Stop, Rewind, Record, and so on. You click Record, and play the synthesizer. After you click Stop, every note you played appears as a strip on a horizontal bar graph. As with a tape recorder, you press Rewind and then Play; the sequencer plays the synthesizer, recreating your performance to the subtlest nuance. The sequencer captures and plays back an amazing amount of musical feeling from the stream of numbers that pours in from the MIDI cable (see Figure 23-2).

■ **Pedaling information.** Actually, the sequencer only stores two tiny messages: when the pedal goes down and when it comes back up.

■ **Key velocity.** *Key velocity* is a numerical measurement of how hard you strike each key when you play. On a real piano, key velocity determines *volume:* The harder you strike, the louder the note. In the crazy world of synthesizers, velocity doesn't *have* to control volume. Hitting a note harder can instead make the sound have more vibrato, be brighter sounding, or have a wah-wah effect. In fact, you can even program a synthesizer to sound *softer* the harder you press a key!

■ **Aftertouch.** Here's a musical quality you can't even *get* on a real piano: the ability to affect the sound *after* you strike the note. On synthesizers equipped with this feature, the concept is simple: You can adjust how hard you're pressing on a key after it's already been struck! If you think about it, how else could you get a crescendo in the middle of a long trumpet note?

Figure 23-2: When you play your MIDI synthesizer, the sequencer program records all kinds of information, in numeric form, about the music. For every single note you play, it records (A) the measure number, musical beat, and fraction of a beat when you pressed the key; (B) when you pressed or released the foot pedal; (C) which note you struck and how hard you played it; and (D) how long you held the key down. You can, of course, edit any of this information.

After all this information — and much more — is recorded, the Mac can reproduce with uncanny accuracy your exact musical performance. The advantage is that if you play a wrong note, you can fix the *pitch* of the note without affecting any of the other musical nuances.

MIDI Secrets

Sharing the modem port

After your MIDI interface is hooked up to your modem port, where does your modem go?

This age-old problem can be solved in two ways. The reliable, inexpensive way is to buy an A/B switch box for your modem port. (Most Mac mail-order companies carry them.) Various products have purported to do this function switching automatically, but we've never seen one work right.

You can also buy a *serial port expander card* (if your Mac has slots); they're sold by KeySpan, MegaWolf, and others. Such a card adds two or four *more* "modem ports," so you can have a modem, MIDI interface, label printer, and yet another modem port–connectable peripheral all attached at the same time. All of these ports work simultaneously.

Unfortunately, only some modem-port-using programs *recognize* these new ports — namely, programs that are *Comm Toolbox-compatible.* Virtually every telecom program on earth (America Online, Open Transport, and so on), as well as 3Com's PalmPilot software, is Comm Toolbox compatible; you can safely put your modem on one of the expanded "modem ports," and hook your MIDI up to your *actual* modem port. Your digital camera and Wacom tablet will just have to wait their turns.

Hail the power of MIDI files

CD

MIDI files, the generic interchange format for Mac music, aren't just good for swapping music between brands of Mac sequencers. They're also great for swapping music with other brands of computers! Any computer — IBM-compatible, Amiga, whatever — can read your MIDI files. To transfer them, send them by e-mail (see Chapter 27) or put them on an IBM or Apple II disk using PC Exchange (see Chapter 16). We've included a collection on the CD-ROM with this book as examples.

The real beauty of MIDI files, though, is their tiny size. In essence, MIDI files are simply text files, remarkably compact when compared with actual digitized sound files. That's why MIDI files are so popular on the Internet; they can be uploaded and downloaded quickly and easily.

QuickTime Movies

QuickTime is Apple's movie technology. If you haven't seen movies playing on your screen before, you're in for a treat. QuickTime movies aren't the tiny, jittery movies they were when QuickTime 1.0 played on Macintosh LC IIs; today, with QuickTime 3.0 or later on a Power Mac, the quality is amazing.

We'll tell you how to get going in QuickTime and how to go beyond the basics. But first, we want to make sure you realize that there's some expense, a bit of terminology, and some serious hard drive space-guzzling ahead.

How to record your own movies

In theory, digital movies on your Mac shouldn't be possible at all. If you work with graphics, you know that just one full-color picture takes up a megabyte of disk space. A TV picture is composed of thousands of individual frames flashing by at 30 per second — in other words, to fill your whole screen with color movies, your Mac would have to be able to process 30MB per second.

That's not just a lot; it's almost impossible for the average personal computer.

That's why QuickTime is such an achievement. To reduce the amount of information necessary to display video, its authors have pulled all kinds of clever stunts. The primary cheat is, of course, that the movie you watch *doesn't* fill the screen — most QuickTime movies play in a rectangle that's only a quarter or half of the standard screen size. Obviously, such a small movie drastically cuts down the amount of data the Mac needs to handle. Next, QuickTime compresses the file, discarding redundant information as it studies the color information in your movie.

The biggest coup in QuickTime technology is the way Apple made it so that any QuickTime movie can play on any QuickTime-ready Mac. If you play a certain movie on a G3 Power Mac, it plays back very smoothly, flashing 30 frames per second in its little window. Play that same movie on an LC, and you only see eight frames per second — but you'll still *hear* everything. In other words, if a Mac is having trouble keeping up with the movie, QuickTime is smart enough to skip frames but honor the sound track.

What you need

Any post-1990 Mac, from the LC forward, can *play* QuickTime movies. If you want to make your *own* movies — capturing them from a camcorder or VCR — you need *digitizing circuitry.* You can get these fancy electronics in one of three ways:

- Get it built into certain Mac models (such as the Power Mac 7500, 7600, 8100, 8500, 8600, some Power Mac G3 models, and so on).

- Add it, in the form of a NuBus, PDS, or PCI card (a *digitizing card*), to a Mac with slots (see Chapters 12 and 13 for model information). The least expensive cards range from $300 to $500, such as the Xclaim 3D card and Miro's line of MiroMotion cards; the fancier cards, suitable for professional TV production, approach $10,000.

- Buy a Connectix QuickCam — a golf ball-sized camera that plugs into your Mac's modem port. (It's about $50 for the black-and-white-with-microphone model; $200 for the color-with-no-microphone version.) If your Mac doesn't already have built-in video-recording circuitry, a QuickCam is by far the least-expensive means of getting into QuickTime moviemaking. The resulting flicks are jerky and small, but they're still great fun.

- If you have a PowerBook, you can hook up a QuickCam, sure — but you'll get better quality movies from a *zoom video* camera — another golf-ball-sized camera whose PowerBook end is a PC card that slips into the slot on the side of your laptop. The Kritter (www.irez.com/) is one such PowerBook camera. It can *show* what it's seeing on your PowerBook screen, like a TV — full-screen, no jerkiness — and it can *record* what it's seeing as a QuickTime movie at around 15 frames per second, in a 320 by 240-pixel window.

Finally, you need the QuickTime extension itself; it comes with every Macintosh, or you can download the latest version from *www.apple.com.*

Recording and compressing

To make a QuickTime movie, plug your camcorder, TV, or VCR into the back of your Mac (either into its built-in Video In jacks, or into the jacks provided by your installed digitizing card). Each digitizing card (or AV-savvy Mac) comes with its own software with tape-deck controls: Record, Play, Stop, and so on. All you have to do is set your camcorder, TV, or VCR playing, click the on-screen Record button, and save, and you have yourself a new QuickTime movie on the hard drive.

When you save the file, you're asked to choose a *compression method*. You have a choice of several compression methods (called *codecs*, short for compressor/decompressor). One codec works best for video, another for animations, another for still images, and so on. Each strikes a different balance between picture quality and the space the file takes up on your hard disk.

Of the codecs, the most useful are **Apple Video**, **Cinepak** (Compact Video), and QuickTime 3.0's breathtaking **Sorenson** codec. Apple Video movies look good and compress relatively quickly (and we mean *relatively* — saving a QuickTime movie can take minutes or hours), but they take up a huge amount of disk space. Cinepak takes an incredibly long time to save a movie — sometimes overnight — and the resulting movie is, say, 10 percent grainier than other QuickTime movies. But people love Cinepak because the files are much smaller on the disk, and, most important of all, they play back more smoothly. Those aspects make Cinepak-compressed movies useful for QuickTime designed for playing from CD-ROMs.

If you're sure that the recipients of your finished QuickTime movies have QuickTime 3.0 or later installed, by all means compress your movie using the newer Sorenson codec instead. The resulting movie is as tiny as Cinepak on the disk, but astoundingly crisp, smooth, and clear in playback.

Of frame rates and tradeoffs

Smooth playback is not a point to be underestimated, either. The smoothness or jerkiness — the *frame rate* — is measured in frames per second (fps). Remember, TV smoothness is 30 fps. A QuickTime movie is visually satisfying at anything over 15 fps. Unfortunately, Mac models that come with built-in digitizing circuitry have a history of feeble frame rates. For example, a Quadra AV or 630 with the Apple Video card can't muster frame rates better than 12 fps; a PCI-based Power Macintosh 7500 grabs movies at a relatively slow 15 frames per second (with a 320-by-240 pixel frame size). Only the top-of-the-line Power Macs can digitize at pro-level frame rates (25 to 30 fps).

But you can maximize your frame rates if you're willing to make some sacrifices. The world of QuickTime is positively *brimming* with tradeoffs you can make. For example, on a certain Power Macintosh, you might capture a movie at 24 fps — if the window is at a smallish size, 320 by 240 pixels. Capture that movie with a "full-screen" window (640 by 480), and the frame rate drops to 15. Record sound simultaneously, and you lose another couple of fps.

QuickTime Digitizing Secrets ─────────────────■

Use the best video signal

Getting a video picture squeezed down into a tiny QuickTime movie frame means compressing lots of picture information — and, therefore, *losing* lots of picture information. Therefore, the idea is to start with the highest quality you can. The better the quality of the original video, the better the final QuickTime movie.

■ Professional or semiprofessional equipment (camcorders called Hi-8, digital S-VHS, Beta or 3/4-inch) produces better results than VHS or 8mm gear. Use a fresh video tape. If your camcorder/VCR and your Mac's digitizing card both offer *S-video jacks,* use an S-video cable between them for a strikingly improved picture.

■ If possible, put a microphone directly on the person you're recording (instead of using the built-in camcorder microphone).

■ If you're recording indoors, you'll have lower contrast and more static if you just use ambient room light. Add lamps and other additional lights to avoid those problems.

■ Use a tripod for much more professional results.

Get the best frame rate

The frame rate, of course, is how smoothly your movie plays back. The first factor that will affect the finished movie's rate is how smoothly your Mac can digitize the incoming video signal — if the Mac has trouble processing the incoming video quickly, you'll introduce skips into the QuickTime file from square one.

■ **Defragment your hard drive.** (See Chapter 8 for instructions.) Despite our disdain for defragmenting for everyday computing, it's common sense for digital video — if your hard drive has plenty of space, but the hard drive head must jump around the disk surface to find it, the Mac can't possibly record the incoming QuickTime information as fast as it might.

■ **Turn off AppleTalk.** This networking feature takes time out from the Mac's processing a few times per second to see if there's any network activity. Those interruptions will affect your QuickTime movie.

■ **Turn off as many extensions as you can.** As with AppleTalk, many extensions use up your Mac's juice (a screen saver, for example).

■ **Change your monitor's setting to "Thousands of colors."** QuickTime, for various technical reasons, has been designed to operate the smoothest at this setting — even more smoothly than at the 256-color setting, contrary to what you might expect.

■ **Use the "None" codec during recording, if you have a choice.** For example, VideoShop (Avid) and Apple's Movie Recorder programs let you specify one compression option to use during recording, and another to apply to the freshly captured material just after recording. Use the None compression setting while you're digitizing, to get the smoothest frame

rate; you can always re-compress afterward (using the Video, Cinepak, or Sorenson codec, for example).

- **Record onto the fastest hard drive you can.** Bigger hard drives are usually faster than smaller ones; SCSI drives are generally faster than IDE drives; hard drives are generally faster than Jaz drives, which are faster than Zip drives, which are faster than floppies. (Of course, if you're recording something small, and you have lots of RAM, the fastest disk of all is a RAM disk, described in Chapter 7.)

  The best video-digitizing hard drives of all are the ones that bear the label "AV" or "AV-ready." Unlike normal drives, they don't perform automatic re-calibration during the data flow, which can introduce glitches in recording.

- **Keep your movie's size to a 4:3 *aspect ratio*—that is, your movie's frame size should be 160 pixels wide by 120 tall, or a multiple of those numbers.** For example, 640 by 480, 320 by 240, and 240 by 180 are all standard movie sizes. Any deviation from these portions will slow down the movie.

- **Go easy on the *key frames*.** You'll see a setting for key frames whenever you create or save a QuickTime movie (in the same dialog box where you choose a codec). A key frame is a "handle" for your Mac to grab onto, like the thumb indentations on a fat dictionary; it permits the Mac to quickly locate a different part of the movie, in the event that your viewer will want to skip around or play the movie backward. In that case, specify a key frame every second or so (every 15 frames, for example).

If your movie is meant to be played from start to finish, however, key frames do nothing except slow down playback.

Remember your audience's equipment

Ironically, when it comes time to master your finished QuickTime movie, your problem may not be a QuickTime movie that's too slow—it may be a movie that's too fast. We refer, of course, to preparing a QuickTime movie that will ultimately be played from a CD-ROM. It's important to remember that a CD is many, many times slower than a hard drive—even the so-called "12x," "24x," and other-x drives. Worse, when you're creating a QuickTime movie for CD playback, you generally must gear it to the lowest common denominator equipment: a "quad-speed" drive, that older but far most commonplace device.

The point is that a movie whose frame rate is too high for the CD playing it will look absolutely horrible. (Example: if your CD-ROM drive can deliver a maximum frame rate of 15 fps for a particular movie, a 10 fps QuickTime file will look far better than a 30 fps QuickTime file.)

Use a program like Adobe Premiere's "CD-ROM movie maker" plug-in or Terran's Media Cleaner Pro) to process your movie destined for a CD-ROM; either one can intelligently limit the data rate of the finished movie to play successfully on a particular CD-ROM type. (For example, 15 fps is about the maximum for a double-speed CD player on a QuickTime movie whose frame size is 180 by 160 pixels. If the movie is compressed using the Sorenson method, the size or frame rate could improve.)

How to play back and edit movies

Once you've captured a pile of raw film clips (or grabbed them from America Online, a CD-ROM of *clip movies,* or another source), you can play them back in several ways. All kinds of software can play QuickTime movies: SimpleText, Word, any presentation (slide-show) software, WordPerfect, ClarisWorks, your favorite Web browser (with the QuickTime plug-in), and so on. (See Figure 23-3.)
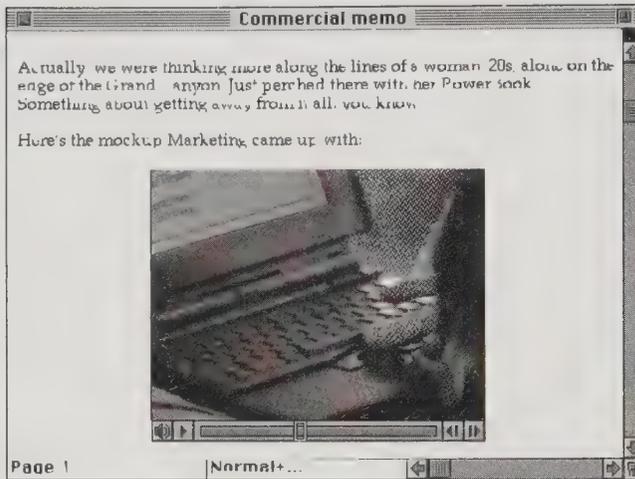
Figure 23-3: A QuickTime movie embedded in a Word file. It's a big file on the disk, but wow, does it convey more than words.

There's also MoviePlayer, a straightforward QuickTime movie-editing program that has come with the system software since System 7.5. (MoviePlayer 3.0 offers editing features only if you've paid for the Pro version — but see our QuickTime secrets later in this chapter.)

Using this basic moviemaking software, you can perform simple editing on your QuickTime movies: cutting pieces out, rearranging clips, and anything else you can think of to do with Cut, Copy, and Paste commands. You can even paste movies (and watch them) right in the Scrapbook desk accessory. Ditto with ScrapIt Pro, included with this book. (See the appendix, "The CD Software Vault" for more on the software that accompanies this book.)

CD

To do any fancier editing (such as creating dissolves between scenes or superimposing footage), you need an editing program like Premiere (Adobe) or VideoShop (Strata). These programs are creaking with fancy features that can duplicate almost every single one of the special video effects you see in today's TV commercials. (You generally get one of these programs with the purchase of a video card or a video-ready Mac.)

What good is it?

In our experience, making a QuickTime movie in one of these editing programs is like making a real movie: You spend incredible amounts of time relative to the length of the final product. We average about a day of work per minute of finished, polished movie.

Still, it's pure heart-racing fun. Suddenly you're Hollywood, with complete control over the look of every single frame of your masterpiece. In terms of real uses, there are promotional and training presentations, children's programs, games, the archiving of precious footage (digital movies never deteriorate), and, of course, storyboarding or production of actual movies or shows.

As Macs become faster and improved versions of the QuickTime extension appear, the frame rate of the average movie increases. So does the frame *size*. For example, your garden-variety Power Mac running QuickTime 3.0 can deliver half-screen movies with the smoothness of TV — without even batting an eye.

QuickTime Secrets ─────────────────────────────────────── ∎

QuickTime 3, QuickTime Pro, and saving money

CD

In an effort to turn its financial situation around, Apple in 1998 released the first-ever version of QuickTime that you have to *pay* for. QuickTime 3 itself is free (and on this book's CD). But a Web-site-only payment of $30 gets you a serial number that, when typed into the QuickTime Settings control panel, unlocks the "pro" features in the free copy. (Typing in your number also eliminates the shareware-like splash-screen ad that appears every time you launch MoviePlayer.)

Alas, the non-pro version has *fewer* features than QuickTime 2.5 did! To the dismay of many, for example, the free MoviePlayer 3.0 doesn't let you edit the movies you're watching by cutting and pasting — it only plays them. Nor does the free MoviePlayer offer full-screen movie playback — only normal and double size. And you can't export your movie or save it into a different format using the free MoviePlayer. (For a complete list of features that get unlocked when you register the Pro version, visit www.apple.com/quicktime/rights/mac.)

QuickTime Pro is well worth the $30, and we think it's about time that Apple stops giving away its crown jewels. On the other hand, if you find yourself needing — once — to trim off a few seconds from some QuickTime movie, you probably won't want to pay for the privilege.

It's for such occasions that we share the following little tidbit: It turns out that MoviePlayer *2.5,* the previous version, can still edit your movies — even if you've installed the QuickTime 3.0 (free) extensions and control panels. (MoviePlayer 2.5 is widely available; it's on the Mac OS 8 and 8.1 system CD, it was on the CD that came with this book's previous edition CD, it's available from user groups, and so on.)

The QuickTime Pro plug-in — and saving money

Another juicy feature of QuickTime 3 that's available only in the Pro version is the ability to *save* a movie you encounter on the Web. Using the QuickTime plug-in, you used to be able to drag such movies to the desktop — right out of your browser window — to preserve them forever.

The free version of QuickTime 3 does an astounding job at playing movies directly off the Web. Unfortunately, only the Pro version lets you drag them to the desktop.

Unless, of course, you know this trick (for Netscape browsers only): Control-click any movie you find online. From the pop-up menu, choose Plug-In Settings. In the resulting dialog box (see Figure 23-4), choose "Save movies in disk cache," and click OK.

From now on, whenever you view a QuickTime movie in your Web browser, it will be *automatically* saved onto your hard drive! To find it again, open your System folder ⇨ Preferences folder ⇨ Netscape folder ⇨ Cache folder. Inside, plain as day, you'll see a file called Cache whose icon and file size bear a distinct resemblance to a QuickTime movie. Drag it to the desktop, double-click, and you're off and running.
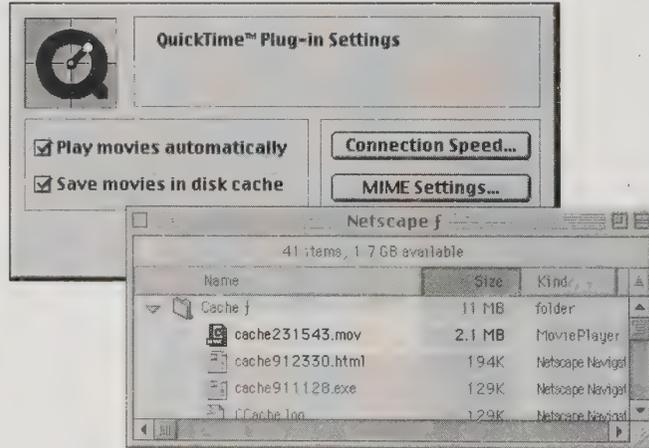
Figure 23-4: The QuickTime 2.0 Plug-In (which is, confusingly enough, part of QuickTime 3) offers an option (left) that stores Web-viewed QuickTime movies in your Netscape Cache folder (right).

The classic Startup Movie trick

Here's how to watch a QuickTime movie when you're stranded on a desert island without a single application. Just put a movie file named Startup Movie loose in your System Folder. Each time you turn on the Mac, it plays in the center of the screen. (You can interrupt the playback by pressing the spacebar.)

The best possible playback

When quality counts, don't play your QuickTime movie in SimpleText or your word processor. Instead, use the special presentation mode of MoviePlayer.

To do so, open your movie in MoviePlayer. From the File menu, choose Present Movie (available only in MoviePlayer 2.5 or a paid-for 3.0 Pro). In the dialog box that appears, you're offered some fancy movie playback options, such as adding a few seconds of blackness before or after the movie. Try the double-size or full-screen playback options. The picture becomes blotchier, but the frame rate remains the same, allowing you to watch the movie while standing farther away.

Worth Learning

When you click Play, the Macintosh hides all other programs; suspends all background operations; and devotes all of its processing power to serving up frames of movie. You'll notice a distinct improvement in playback smoothness when you use the Present Movie command (compared with any old QuickTime playback).

Hidden Standard Controller tricks

The Standard Controller is the interface you usually see for playing QuickTime flicks. It's the funny little scroll bar shown in Figure 23-5.
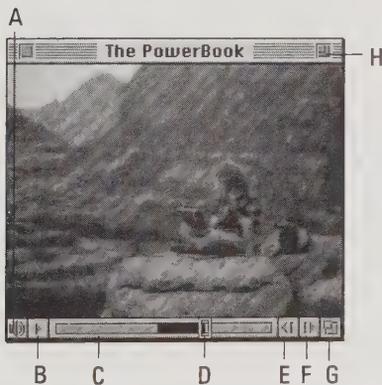
Figure 23-5: The Standard Controller for controlling QuickTime movie playback.

A. The volume control. Click this speaker icon and hold the mouse button to get a sliding volume scale. Secret: *Option*-click the speaker icon to immediately mute the sound. Option-click again to restore the sound.

Fans of the spoof rock-band documentary movie "This is Spinal Tap," meanwhile, will appreciate *this* undocumented feature. If you *Shift*-click the volume slider, you can actually drag the slider up *beyond* the maximum. That is, you can boost the volume to "11," as Spinal Tap fans would say. (You even get new little hash marks that show you where the usual volume maximum would be.)

B. The Play/Pause button. In most programs, you can also press the spacebar to start and stop playback.

C. The scroll bar. This strip is a map of the entire movie, no matter how long. Click anywhere in the strip to jump to the appropriate spot.

D. The slider. This little rectangular handle indicates where you are in the movie. Drag it back and forth to move through the frames.

Shift-drag to turn a portion of the strip black, as shown in Figure 23-5. That's how you *select* a chunk of movie. Anything that's black can now be cut or copied. (To paste it, move the slider to the point where you want to paste, and then paste. And to *deselect* whatever's currently selected, just click anywhere in the selection strip.)

E. The step-backward button. Click to step one frame toward the beginning of the movie.

F. The step-forward button. Click to step one frame toward the end of the movie.

Secret: You can Control-click either of these step buttons to make a jog-shuttle control appear. Keep the mouse button down and drag the tiny handle left or right. Your movie plays backward or forward at a speed you dictate by the distance your mouse travels, *with* sound!

Option-click these step buttons to jump to the first or last frame of the movie. You can also ⌘-click either of these step buttons to change the playback direction of the movie!

And *Shift*-click these buttons (or press Shift-left arrow or Shift-right arrow) to *select* a stretch of movie one frame at a time.

G. The resize box. You can drag this resize box as you would any window's resize box. You can make the playback frame long and thin, if you want to. Be aware, however, that the result is an extremely slow, choppy playback. QuickTime movies like to be played back in their original shape, and preferably at even multiples of the original size — twice as big, half as big, and so on.

In fact, if you *Option*-drag this resize box, the window gets larger or smaller in those increments.

H. The zoom box. To restore a movie to its original dimensions after you stretch its window, click this zoom box.

Quick backward playback with sound

Shift-double-click the main part of the window, where the movie plays. Try it — it's weird! Backward playback with sound!

Double-click the image *without* the Shift key to play forward; single-click the image to stop it.

ANSWER MAN

How do I play AVI?

Q: I found a movie clip on the Web that I want to play, but it says it's an AVI movie. What the hey is that?

A: It's the Windows equivalent of QuickTime. Not as good, of course, but roughly the same idea.

There are three ways to view the AVI movie. First, download Video for Windows, a converter file that turns QuickTime and AVI movies into each other, from www.microsoft.com.

Alternatively, use Microsoft Internet Explorer as your Web browser. (It can view AVI movies directly.) Open the AVI movie (by choosing Open from the File menu) and then drag the movie box to your Desktop. The movie turns, as though by magic, into a QuickTime movie clip. Open this clip with MoviePlayer or SimpleText, choose Save As from the File menu, and save the result as a "self-contained" QuickTime movie. You're done!

Finally, get QuickTime Pro, described earlier in this chapter. Both its browser plug-in and its MoviePlayer program can open and save AVI files.

24-bit color at twice the speed

If your Mac is equipped with enough video RAM to display 24-bit color (see Chapter 10), QuickTime movies look their all-time best. Unfortunately, they also play at their all-time slowest, because of the massive amounts of color information the Mac must process every second.

If you record or save your movie in *16-bit* color, though, you notice very little degradation from 24-bit color. As a bonus, you'll get playback that's *double* the speed of 24-bit.

Strange But True: How is this possible? The Mac works with color in powers of two. When it's working in 24-bit color, it actually reserves *32* bits of data. (That's why 24-bit color is sometimes referred to as 32-bit color, as in *32-bit QuickDraw.* Even 32-bit color, in other words, is only 24-bit color; 8 of the bits of information, known as the alpha channel — ask a Photoshop guru — are reserved for special effects.) Dropping back to 16-bit color cuts the data stream in *half.*

In recognition of this wonderful trick, Apple endorses 16-bit color as the Official Color Depth of QuickTime.

Still more keyboard shortcuts

Use the arrow keys to step through the frames of the movie one by one. Press the up-arrow or down-arrow keys to adjust the sound level.

Press the spacebar or Return to start or stop playback. (That works on the Web, too, if you're using the QuickTime plug-in.) If you're also holding down Shift, you select the portion of the movie that plays.

And let's not forget ⌘-right arrow and ⌘-left arrow. They make the QuickTime movie play forward and backward, respectively.

Hidden messages

If the QuickTime extension is in your System Folder, you can get a sample sense of the programmers' humor if you choose Show Balloons from the Help menu. Just point to the QuickTime icon in the Extensions folder.

Then point to the Musical Instruments extension while you're at it. ("Punishment for a misdeed"!?)

Instant credits

Talk about undocumented features! Turns out that if you paste some copied text into a QuickTime movie (in MoviePlayer, for example), it creates text titles! You get about two seconds of white text on a black background, in 12-point Geneva, pasted at the insertion point. Cooler yet: If your credits text begins life in a program that supports *styled Clipboard text* (SimpleText, ClarisWorks, America Online 3 or later, or Microsoft Word 6 or later, for example), you can choose fonts and sizes for the text — all of which get preserved when you paste it into your movie!

MoviePlayer 2.0 and later is Drag-and-Drop savvy, too. For example, you can type your credits in SimpleText, highlight them, and drag them directly into a QuickTime movie in MoviePlayer. (As always, however, the 3.0 version of MoviePlayer offers these features only in the Pro version.)

Instant still shots

As it is with text, so shall it be with PICT files: Once again, you can either paste or drag-and-drop *graphics* into a QuickTime movie you're working on in MoviePlayer. The graphic appears immediately, preset with a two-second duration.

It's best to drag in graphics that match the frame size of the movie you're doing, though. Otherwise, the entire movie's frame size will change to accommodate the size of the largest graphic you insert.

Four very secret menu commands

Depending upon which key you hold down on the keyboard, you can make MoviePlayer 2.5 or 3.0 Pro's Edit menu do some really weird things. For example, the Shift key turns the Paste command into a **Replace** command; anything you paste *replaces* whatever portion of the receiving movie you've selected (instead of being inserted in front).

The Option key has a trick or two of its own. When you press Option, the Edit menu now has Add and Trim commands. **Add** actually lets you *superimpose* whatever's on the Clipboard with what's already in the movie — an especially

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MACINTOSH SECRET

Your secret synth

The world hasn't made nearly enough fuss about one astonishing feature of QuickTime 2 and later: music.

QuickTime comes with an accompanying file called QuickTime Musical Instruments. This extension contains 30 instrument sounds from a Roland synthesizer. You can create orchestrated music, completely forgetting that the previous Macintosh sound limit was four notes at a time in a cheesy Casio-organ sound. (Moreover, QuickTime has an opening for software plug-in instruments from other companies, enhancing the promise of this cool technology.)

Start with a MIDI file. (They're available by the thousand on America Online and elsewhere, or you can use the ones we included on the CD-ROM with this book, or you can record your own if you're a MIDI jock.) Launch Apple's MoviePlayer, choose Open from the File menu, and open the MIDI file. In the Save As box that appears, click Save. (You can also just drag a MIDI file's icon onto MoviePlayer's icon to open it as an untitled movie.)

The result is a QuickTime movie, with video or not, that plays amazing, rich, realistic instrumental music. And it doesn't take up much room on the disk, as a digitized Mac-mike recording would.

So much synthesizer, so little time.

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useful trick when you're working with text (you create subtitles this way) or sound (you add a sound track to what's already there). **Trim**, on the other hand, is nearly as destructive as the Clear command whose place it takes. Trim chops off any of the movie that isn't *selected*. Think of it as you would the Crop command in a graphics program.

And then there's the secret **Add Scaled** command. You get it in the Edit menu when you press Shift and Option together. It's like Paste, except that you're supposed to highlight a region of the movie before pasting. Whatever you're pasting gets stretched or compressed in time so that it fits the highlighted region! The sound track also gets stretched, too; in other words, you can speed up or slow down whatever you're pasting. That ability can be very powerful, very comical, or just weird.

Roll credits

While your Mac is starting up, press ⌘-Option-Q-T (for *QuickTime,* get it?). You get an enormous full-screen slide show of the programmers' mug shots, complete with their names displayed beneath. It's a parade of geeks!

QuickTime VR

A QuickTime VR movie isn't really much like a regular QuickTime movie. Instead of watching a moving scene passively, you view a still photo on the screen — and *you* control the movement. If you drag your mouse around inside the photo, your camera angle changes. You can actually turn completely around, viewing your environment from every angle; you can even look up or down, zoom in or out, and get a spooky feeling that you're really there (see Figure 23-6).
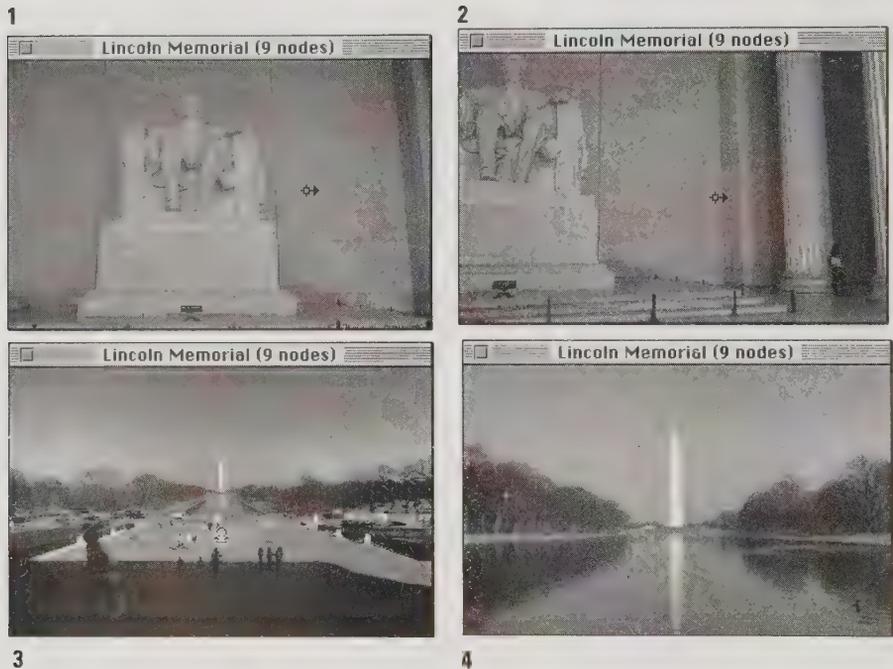
Figure 23-6: As you drag your cursor inside a QuickTime VR scene, the cursor shape changes to indicate the direction it thinks you're "looking," and the entire "camera angle" changes accordingly so that you can peer in any direction (shots 1 and 2). If you turn around far enough, you'll be facing the opposite direction (shot 3) — and in a multinode VR, your cursor shape may indicate that another click will jump you to another camera position (shot 4).

The average Mac fan can't make a QuickTime VR movie — at least not without taking 360 degrees' worth of still photos using a tripod-mounted camera, and stitching them together with a QuickTime VR kit. (These kits include PictureWorks' Spin Panorama, Panimation's Nodester, and Live Picture's PhotoVista.)

CD

You can, however, buy products that *incorporate* VR technology, such as Paramount's *Star Trek: the Next Generation Interactive Technical Manual* CD-ROM. You can also savor the QuickTime VR scenes included with this book's CD-ROM—some of them are mind-blowing. And you can visit Web sites that have VR scenes embedded in them, letting you "visit" distant places in a startlingly realistic way. For a tour of Web sites that have QuickTime VR movies embedded in them, visit www.apple.com/quicktime/samples. (We're particularly impressed with QuickTime 3.0's Web-based VR ability, which lets you start playing with the virtual-reality scene almost instantly—in a gray, grainy, low-res version—and then, as more of the data loads into your Mac from the Internet, the picture becomes full color and more detailed.)

QuickTime VR Secrets ────────────────────────────■

Zoom in, zoom out

You can do more in your VR movie than just turn your head; you can also move forward or backward in any direction. The scheme is simple: press Shift (or, before QuickTime 3, Option) to zoom forward, and the Control key to zoom out.

While zooming, you'll notice that the picture breaks up somewhat—but it returns to a clearer image as soon as you release the key.

Change your camera position

Technically, there are three different kinds of QuickTime VR movies. We've included samples of each on the CD-ROM with this book:

CD

- **Panorama movies.** This is the standard VR movie type, a sort of living photo: a single location shot that lets you turn your head 360 degrees.

- **Object movies.** In this kind of movie, you don't move around at all. Instead, a single three-dimensional object floats in front of you. Dragging the cursor in this kind of picture moves the *object,* not the camera, permitting you to rotate the object in space. They use this kind of movie for interactive "virtual museum" movies, so that you can you can examine all sides of, for example, a sculpture.

- **Multi-node movies.** Now we're talking. In this kind of movie, you start out at one location, operating exactly as you would in a panorama movie, looking up, down, and around. Occasionally, however, you'll notice your cursor changing shape as it passes over specific spots in the picture. (It becomes a tiny bullseye, like the usual cursor, with a big fat upward-pointing arrow protruding from the top.) If you click at this moment, you'll actually jump to another position in the scene—your entire rotating camera apparatus will move.

Knowing this trick, and working with multi-node panorama movies, makes QuickTime VR truly breathtaking. Apple released, for example, a 26-node movie created inside a San Francisco art museum. It also created a nine-node Lincoln Memorial movie and a 12-node Monument Valley movie; no technology — not TV, not books — can come closer to letting you experience the feeling of actually being somewhere.

Mac Meets TV

As we've mentioned in other chapters, the video signal that creates a picture on the Mac screen is utterly unlike the one in a TV set. The electron guns scan the screens at different rates *and* in different patterns.

Therefore, the fact that you can show your Mac's picture on a TV set, or vice versa, is remarkable.

Bringing TV to your Mac

CD

It's easy enough to watch TV on your Mac — if you have the right hardware. In general, the simplest route to TV/Mac watching is to buy a Mac that offers TV inputs, such as an AV model (tower G3 model, a Power Mac 75/76/85/8600, a Performa or LC with the Apple TV System card, and so on). (For a complete list of Apple's TV cards, and which Mac models accept them, see Chapter 24 of *Macworld Mac Secrets, 4th Edition* on this book's CD-ROM.)

If your Mac didn't come with such video input jacks, you can add them in the form of a PCI card, such as the Xclaim 3D card. If you have a recent PowerBook, you can buy an Irez Kritter camera/PC card "zoom video" combination that turns your laptop's screen into a TV screen.

Run a cable from the video-output jack of your VCR, camcorder, or videodisc player to the Video In jack on the back of the Mac. (If you're using S-VHS or Hi-8 equipment, use the S-video input port on the Mac for better color.) If you want sound too, connect the audio output of your TV or VCR to the Mac's microphone jack.

Watching TV

After you're wired, watching TV on the Mac is as easy as launching the Video Player program in your Apple Extras folder (or whatever similar program your Mac came with). Feel free to resize and reposition the video window; you'll find that choosing Full Size from the Monitor menu turns your entire monitor into a glorified TV set — a sure way to get gasps from fellow Mac fans.

Unlike *recording* video (as QuickTime movies), simply *showing* the VCR, camcorder, or videodisc player's incoming video on your screen involves no decrease in picture smoothness, quality, or frame size. That's why even a PowerBook 2400, 3400, or G3 can show full-screen video (when equipped with the above-mentioned Zoom Video PC card).

Bringing your Mac to TV

Getting the Mac's image *to* your TV or VCR is much easier than going in the other direction. You can make this arrangement in one of two ways. First, you can buy a Mac with *NTSC video-output jacks* (NTSC is techspeak for "normal TV"), such as a Power Mac 8500, 8600, tower-style G3, or Performa or LC with an optional Apple TV/Video System card. (The 1998 PowerBook G3 line includes built-in, NTSC-converted, video-output jacks for this purpose.) Second, you can buy a $200 add-on converter box, such as the Focus LTV.

The connections are what you'd guess: Run a cable from the Video Out jack (of your Mac or your adapter box) to your VCR's input jack. Do the same with the sound cable.

Why the picture looks crummy on the TV

Mac Basics

Three incompatibilities prevent the Mac's video image from looking good on a TV screen. One is the flickering of thin lines, especially the horizontal lines in a title bar or the lines in a spreadsheet. You may recall from Chapter 11 that the Mac repaints its screen 60 times per second; a TV draws its screen picture only 30 times per second, in alternate passes — one pass draws the odd-numbered lines of the screen, and the next draws the even-numbered lines. Any thin horizontal line in the Mac image falls in just one line of the TV's interlaced image; therefore, it only gets painted during an odd or an even pass of the TV's electron gun — 15 times per second instead of the normal 30 — and so it flickers.

Fortunately, almost any converter box you can buy today — including the built-in video features in video-ready Macs — has anti-flicker circuitry.

The second and more serious problem associated with getting a Mac image on TV is *overscanning.* A TV paints its screen from edge to edge, extending past the edges of the glass. You've probably never noticed that the outer perimeter of your TV picture is chopped off, because (a) directors deliberately film their TV footage with the overscanned perimeter in mind, and (b) it's TV; who cares if you're missing the outer 3 percent?

In presentations, however, missing the outer edges matters. Some of the Mac's most important elements (the menu bar, icons, and so on) tend to be at the edge of the Macintosh display, and on a TV they may wind up off the screen. Keep a generous margin, therefore, when you're designing your presentation.

The last problem with displaying the Mac image on a TV is that, frankly, a TV has poor resolution (dpi) compared to the Mac. Nothing ever looks quite as good on a TV as it does on the Mac.

As a result, you should use larger font sizes and less detail when you set up a presentation you'll be showing on TV. Use Photoshop (or another professional graphics or presentation program) to create *antialiased* (smooth-edged) text, and avoid sharp color contrast between the text and the background color.

PowerBook owners in particular should be careful with photos and other color graphics. Until the 1997 family of PowerBooks, most of these laptops came equipped with only enough video RAM to send 256 colors simultaneously to an external monitor (such as a TV). Therefore, unless you carefully prepare your photos as indexed-color images (as described in Chapter 28), you'll get blotchy, crummy photos on the TV.

Shooting the screen

Computers on the nightly news *always* seem to be on the blink. Their monitors have those crazy horizontal lines rolling, rolling, rolling up the screen — but that problem only exists in the TV *picture* of the computers, not in person, and not in movies!

This problem occurs whenever you record a computer screen with a video camera. The problem, once again, is the difference in scan rates. The symptom is that in the TV image of the Mac, a fat whitish line always appears to be rolling up or down your Mac screen.

There are two possible fixes. First, filming a *PowerBook* screen never presents this problem. It comes out beautifully on TV (because it's not a CRT screen). Second, of course, you can record the output from an NTSC converter box, as described earlier.

Multimedia presentation secrets

Our thanks to Elise Dorsey of Ready to Go, Inc., for these tried-and-true secrets.

■ **Make them remember.** Begin and end your presentation with exciting music and/or eye-catching graphics. People always remember the beginning and the end the most.

■ **Avoid jerky or "tearing" animated objects.** When animating objects to move across a path, remember that smaller objects move faster. If you're using a slowish Mac, avoid animating large graphics.

And if you're using a slower Macintosh, animate one object at a time to avoid noticeable jerks when the Mac's processor is drained from having to display a second staggered animation.

■ **Thwart Murphy's Multimedia Law.** Things *always* go wrong with software and equipment. Always.

Test your presentation — *before* the presentation day — on the *exact* computer from which it will be displayed. Problems to look out for: necessary software is not installed; necessary fonts are not installed; screen displays colors differently; different Mac CPU speed affects quality of animations; different screen size is incompatible with your presentation; sound is not turned up enough; color depth (256 versus thousands of colors) is set wrong; and so on.

■ **Make it tasteful.** First, pay as much attention to how your objects exit the screen as you do to how they enter the screen. Second, avoid repetitive animations, such as an animation that begins each scene. These become tedious and distracting.

■ **Put controls where you can find them.** Put your buttons (for Next Slide, for example) and other presentation controls in a consistent area on the screen. *Never* put the buttons for controlling the entire presentation in different locations on different screens.

■ **Place your colors carefully.** Use *cool* colors for your background and *warm* colors for your foreground. Cool colors are variations of red, yellow, blue, and green that have a bluish tone; warm colors are the same hues with a reddish tone. For example, blue-green is cool; yellow-green is warm. Blue-purple is cool; magenta is warm.

■ **With fonts, think organization.** Use a consistent format for the titles, subtitles, body text, and so on. Text style is a key to your viewer of the structure of your content. By using a consistent visual language, your information is easier to assimilate.

TRUE FACT

Putting it together: presentation software

You've made your movies. You've recorded your sound effects. You've composed a throbbing, insistent beat using MIDI and your synthesizer. Now you have to *show* it all to somebody.

Fortunately, an entire Mac software category is dedicated to letting you integrate these different pieces into an attractive viewer-controlled show.

On the most basic level, you can perform media integration with slide-presentation programs such as ClarisWorks, Microsoft PowerPoint, and Aldus Persuasion. These programs let you create static slide-show presentations, although they can play QuickTime movies, too.

For more cinematic presentations, you need a program such as Gold Disk Astound, Macromedia's Action, or Vividus's Cinemation. These programs let you do more than insert pictures and movies onto a static slide; you can *animate* objects to fly along paths on screen and add a sound track that plays continuously as scenes change. Also, you can build interactivity into the presentations by creating buttons that

link to other objects, sounds, or scenes. Viewers can control the flow of the presentation by clicking the various buttons.

On the high end, script-based multimedia packages are available, such as HyperCard and Macromedia Director. Don't expect to load one of these programs and turn out a polished presentation an hour later. All three employ scripting *languages* that take months to learn. The scripts permit a high level of interactivity and let you control external devices such as videodisc players from within a presentation.

Generally, integration programs are designed to *combine* sounds and pictures, not *create* them. But there are exceptions: Macromedia Director and Cinemation include a full range of painting tools so that you can create frame-by-frame animation from within the program. Gold Disk's Astound includes a sound recording feature. All the programs include a text tool, so you can create titles and headings without having to import every word.

Speech I: The Mac Talks

The voice of your computer isn't Swedish anymore.

For years, you could make a Mac speak out loud using an extension called MacinTalk — *if* you could find MacinTalk, *if* it worked on your model, and *if* you didn't mind its drunken-Scandinavian accent. (Shortly after creating Macintalk, the primary programmer left Apple, leaving the company in the lurch and the software in the "unsupported" category for several years.)

Today, though, a talking Mac is easy to set up, fun to listen to, and essentially free of that bizarre nasal inflection. Apple rewrote Macintalk, making it far more flexible and powerful.

The key is to get the software kit called PlainTalk 1.5 (or a more recent version). PlainTalk comes with System 7.5 and later (and with this book), and updates are available from Apple's sites on the Internet or online services. And the beauty of Apple's text-to-speech software is that it works on almost any Mac. (Contrast this with Apple's speech-*recognition* software, which works only on PowerPC-based Macs and AV Quadras.)

CD

Once you've installed the various PlainTalk extensions into your System Folder, all you need is SimpleText, ClarisWorks, WordPerfect, America Online, Tex-Edit (included with this book), Word 98, or one of a handful of other programs equipped with a Speak command. Type a few choice sentences and then (in SimpleText, for example) choose Speak All from the Sound menu. Using that same menu, you can choose from among the 18 different character voices that Apple provides.

You'll discover that PlainTalk is amazingly intelligent when it reads. It can generally distinguish between the two alternate meanings of "Dr.", for example (doctor or drive) — and it's cyber-savvy enough to say "wink" for ;) . . . "grin" for :) . . . and "frown" for the :(symbol!

To interrupt the Mac's reading, press ⌘-period.

Text-to-Speech Secrets ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━

Make any program talk

Got a program not on the magical list of programs that are MacinTalk-savvy? No problem. Now that you've got OneClick (included on the CD with this book), you can add speech features to every program you own.

CD

Just install OCSpeak, a button you can add to your OneClick palettes. It can read aloud the contents of a drag-and-dropped file, a highlighted blob of text, or whatever's on the Clipboard, using your default voice or a random voice. See the appendix for more on OneClick.

Make your Mac sing, too

Strange But True

If you play around with PlainTalk's voices much, you'll discover that four of them are musically inclined! The voices called Bad News, Good News, Pipe Organ, and Cellos each *sing* whatever you type — to familiar melodies. Bad News is a funeral march (actually a Chopin prelude); Good News is the graduation march (*Pomp and Circumstance*); Pipe Organ is the theme music from the *Alfred Hitchcock Presents* TV show; and Cellos sings "In the Hall of the Mountain King," from *Peer Gynt,* by Edvard Grieg.

Unfortunately, you may never even realize that the Mac will sing the *entire* melody — instead of starting over after a few notes — if you let it. The trick is not to use *any* punctuation. For example, if you try to make the Mac sing the following to the graduation-march theme (the Good News voice), the melody will start from the beginning at each punctuation mark:

Hey, congratulations! You're suddenly rich! Your lottery ticket just won the big prize.

But if you type it as shown below, you'll get the whole thing sung to the correct melody, to great comic effect:

Hey congratulations you're suddenly rich your lottery ticket just won the big prize.

What's that number?

Here's a function of Mac-talk that may surprise you. Quick: How do you pronounce this number? *123,468,915,125*

It might take you a moment or two to figure that out, but not the Mac! Have the Mac *speak* the number. As reader Chad Chamberlain discovered, you'll hear it instantly and perfectly pronounce the number "one hundred twenty-three billion, four hundred sixty-eight million, nine hundred fifteen thousand, one hundred twenty-five"!

Macintalk Pro and non-Pro

Depending on what version of the Mac OS 8 you have — and which CD it came on — you actually may have any of *three* MacinTalk versions. Each requires its own extension; each comes with a set of corresponding voices from which you can choose.

They're called MacinTalk 2, MacinTalk 3, and MacinTalk Pro. All require the Speech control panel, but each comes as a separate extension, to boot. Just by looking at one of these extensions, or at one of its corresponding voices (in the Voices folder, in your Extensions folder), you can tell which version an extension is — a tiny 2, 3, or P (for Pro) appears on the icon. If you find a voice file that has *no* 2, 3, or P on the icon, then you're missing the corresponding extension.

MacinTalk 3 is the standard extension; it's accompanied by the 19 standard-quality voices: Albert, Bad News, Bahh, Bells, Boing, Bubbles, Cellos, Deranged, Fred, Good News, Hysterical, Junior, Kathy, Pipe Organ, Princess, Ralph, Trinoids, Whisper, and Zarvox.

If you're lucky, you may also have the Macintalk *Pro* extension. It makes three special additional voices possible, such as Bruce, Agnes, and Victoria. These voices use up more RAM, but sound that much more lifelike. (All of these extensions and voices are downloadable from *www.apple.com*.)

Speech II: The Mac Listens

The Power Mac models' voice-command feature *seems* incredibly exciting. This is the future! This is *Star Trek!* This is James Bond! You speak; your computer obeys.

Not many people actually use the Mac's free speech-recognition software, however. It uses a healthy chunk of RAM; it works only for American English speakers with no accent; it can't operate menus (it can only *open* things); and some finagling is required to get it to work with G3 Macintosh models. (Furthermore, you can only use Speech Recognition with the built-in microphone of the PowerBook 5300 or 2300 series. The PowerBook 3400 can use either its built-in microphone or the Apple PlainTalk microphone, described earlier in this chapter.)

Let's begin our tour with the Speech control panel. It has a tiny pop-up menu with four commands. Each displays a different panel of controls: Voice, Feedback, Listening, and Speakable Items.

Voice

The Voice pop-up menu lists the various timbres of voice that the Mac can use to talk *back* to you — to reply, for example, when you ask the computer what time it is (see Figure 23-7). You get a list of dozens of amazing voices, ranging from the crazy old Deranged guy to the chilling calm of Mr. Whispered.
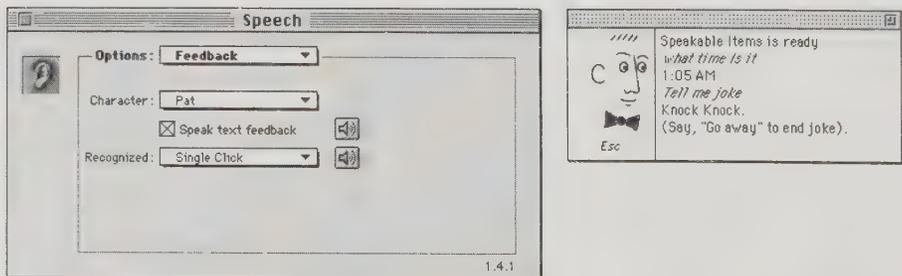
Figure 23-7: Using the Speech control panel (left), you establish the visual and vocal identity of whoever you want to be your Mac's alter ego in the little feedback box on the screen.

Feedback

This panel of the Speech control panel offers a Character pop-up menu, in which you can select, by first name, a visual cartoon character. This will be the Mac's personality in responding to the things you say. If you say, "Tell me a joke," the animated character you specify here will tell a knock-knock joke — using the voice you specified with the Feedback pop-up menu.

You can combine any Voice with any Feedback character; Raymond can have a female voice, if you so desire.

Listening

Using this panel, you tell PlainTalk when you want it to listen. You'll have by far the best results using the "push-to-talk" feature, with which the Mac doesn't listen at all until you're pressing a particular key (which you specify here). Apple implies that you can choose any key to be the push-key, but actually your choices are Esc, a punctuation mark or bracket, and any key on the numeric keypad except Enter.

Using the other controls, you can, if you really want to, set up the Mac to respond to your utterance only if you begin the sentence with the computer's *name* — which defaults to "Computer." This way, you don't have to press a key while talking. However, this system (which was the *only* system in previous versions of PlainTalk) doesn't have the high degree of accuracy of the "push-to-talk" method.

Speakable Items

This final panel contains the master on/off switch for speech recognition. If you click Off, the Mac won't attempt to decipher anything you say — except possibly "OK" and "Cancel," which "click" the corresponding buttons on the screen; this feature has its own on/off switch here.

TRUE FACT

Valley of the TV nerds

The eight Feedback characters offered by the Speech control panel are designed to communicate the Mac's disposition as you use the speech-recognition feature. The characters communicate even more, however, about the Apple programmers who created them.

Think about it. There's Pat, who's the spitting image of the mystery-gendered Pat from the *Saturday Night Live* skits. There's Raymond, a dim-witted-looking guy whom you wouldn't be nuts to assume is based on Dustin Hoffman's character in the movie *Rain Man*. There also are Connie (Chung) and Sally (Jessy Raphael, of talk-show fame).

We think it's safe to say that these programmers spend quite a bit of time being influenced by pop-culture TV and movies. Our only relief is in seeing that Vincent, the severed-ear character, is a clear reference to van Gogh. At least *someone* over there has culture.

What you can say to the Mac

So, what, exactly, can you *do* when speech recognition is turned on and configured?

Well, the Mac *can't* take dictation, writing down what you say; for that you need the program called PowerSecretary, as described in Chapter 10. Nor can it execute menu commands when you speak them ("Shut down," "Restart," "18 point," and so on) — unless you first define them as AppleScripts (read on). (A few, such as "Close window" and "Empty the Trash," have been programmed already for you.)

No, what PlainTalk 1.4 and later does is *open* things — things whose icons (or aliases) you've put into the Speakable Items folder, which is inside the Apple Menu Items folder in your System Folder. You can launch programs and documents with the greatest of ease: "open ClarisWorks," "open Monitors," and so on.

If you're handy with AppleScript, you can increase PlainTalk's possibilities by writing little AppleScript "applets" (which you then put into the Speakable Items folder). That's how Apple pulls off some of the more elaborate PlainTalk responses that come preinstalled — the ones you get if you say to the Mac:

> "What day is it?"
>
> "What time is it?"
>
> "Tell me a joke."
>
> "Is file sharing on?"
>
> "Find original of this."
>
> "View window by small icon."

If you have so set up the Speech control panel, the Mac also acts on OK and Cancel buttons.

Speech Secrets

The Mac talks — and it's funny

Strange But True

For five minutes of pure hilarity, open the Speech control panel, and choose Voices. After you select a voice from the pop-up menu and click the little speaker icon, you'll hear a sample sentence uttered in the voice style you selected. The beautiful part of this is that the Apple programmers have chosen some incredibly witty and appropriate things for their little imaginary friends to say. Here are a few of our favorites:

Whisper: "Psssst — hey you, yeah you! Who do ya think I'm talking to, the mouse?"

Deranged: "I need to go on a really long vacation."

Pipe Organ (singing): "We must rejoice in this morbid voice."

Zarvox (alien-sounding monotone): "That looks like a peaceful planet."

Albert (you have to hear it): "I have a frog in my throat. No, I mean a *real* frog!"

Make up your own jokes

Tell your Mac, "Tell me a joke." And it actually tells you a knock-knock joke! Isn't that clever?

No, not really; it's actually just reading from a script. The script, sitting in your Speakable Items folder (in your Apple Menu Items folder, in your System folder), is called Tell Me a Joke. You can open it up with ResEdit (see Chapter 21) and read the surprisingly long list of canned jokes.

With some judicious editing, you can even add your *own* jokes. And then get your Mac to call the Improv and see if they've got any openings.

ClarisWorks speaks out

Although you can't tell on casual inspection, ClarisWorks can actually speak.

Version 4: Choose File ⇨ Shortcuts ⇨ Edit Shortcuts. Scroll to the bottom of the Available Shortcuts display and look for the little pair of lips. Click the lips icon; click the Add button to add that icon to your Shortcuts palette.

Version 5: From the pop-up menu at the left end of a toolbar, choose Edit Button Bar. Double-click the name of the button bar you'd like to edit; choose Word Processing from the pop-up menu; select the Speak Text icon (looks like a tiny talking Mac); click add; and click Done.

Now, whenever you highlight some text — any text — in ClarisWorks and click the Lips icon (on ClarisWorks 4's Shortcuts palette) or the Speak Text icon (on the ClarisWorks 5 button bar that you edited), ClarisWorks will speak! It will use whatever voice you've specified as your default voice in the Speech control panel.

Actually, ClarisWorks 4 can also read incoming text to you when you're online (and using its Communications window) — your e-mail, your BBS text, and so on. Choose Edit ⇨ Preferences ⇨ Communication icon ⇨ Speak Text. Now go online — and start listening.

Lost treasures of PlainTalk

Apple's programmers loaded PlainTalk with hilarious secret responses. Unfortunately, most of these were edited out of existence by Apple Computer's No Fun Squad, and, thus, they don't exist in version 1.4 or later.

If you still have an older version, speak the following to see if any of these question/answer buried treasures are still around:

"Do you need help?" in SimpleText/TeachText. (The Mac says: "I'm trapped inside this computer and I can't escape!")

"I need help!" in SimpleText. (The Mac says: "I'm sorry, they did not have time to add my artificial intelligence module.")

"Tell me about Casper," with Speech Setup open. (The Mac says: "He's a friendly ghost from ATG." Casper was the code name for PlainTalk, and ATG is the advanced technologies group.)

"What about Speech Recognition?" with Speech Setup control panel open. (The Mac says: "Don't forget ATG," and displays a credit message.)

"Did anyone test you?" with Speech Setup open. (The Mac says: "Not to mention ULQ," and displays the text message, "Of course! I was tested by 'Braz' Ford and Morgan Wize.")

"Are there any Easter Eggs?" in the Finder. (The Mac says: "If there were any, do you think I would tell you?")

MACINTOSH SECRET

Be the star of your own Feedback screen

As we've mentioned, you can choose from among nine different visual personalities for your Mac — representations of the computer itself when it is responding to your voice commands.

You needn't be satisfied with Apple's TV- and pop-culture derived personas, however. You can substitute any character you wish, including yourself, using ResEdit and appropriate drawings or photos. See Chapter 21 for details on using ResEdit. For now, here's what to do:

Open your Speech Recognition extension with ResEdit, and double-click the PICT resource icon. Inside, you'll find the graphics that represent Apple's default speech-recognition feedback personalities.

All you have to do is replace the images by pasting in new ones. Of course, you'll notice that the Mac uses several different expressions for each character, and you'll have to create an equivalent number of your own replacement pictures. Also, make sure that your replacement images are exactly the same size as the ones you're replacing; one way to do that is to copy each existing picture out of ResEdit and paste it into Photoshop, where a new document window will automatically appear at the correct size; doctor the picture as desired, then copy it out of Photoshop and paste back into the ResEdit resource. (If you'll be using speech recognition with the Monitors control panel set to less than 256 colors, you should also create a black-and-white version of your replacement pictures and paste them over the appropriate black-and-white character images in ResEdit.)

You can even change your new feedback character's name (as shown in the Speech control panel's pop-up menu). Open the STR resource (in ResEdit) with the same ID number as your character's lowest-numbered PICT resource — and just change the name inside.

When you're finished with your ResEdit surgery, restart the Mac. Your new character should appear happily in the Speech control panel.

Part IV

The World Online

Chapter 24

Mysteries of the Modem

In This Chapter

▶ V.32bis and other jargon: What it means to you

▶ 56K, ISDN and cable modems

▶ Modem initialization strings

▶ The Mac as fax

Connecting a modem to your Mac is easy; getting it to communicate with the outside world is more challenging. Welcome to telecommunications, a technology riddled with numbingly unintuitive terms like Cyclic Redundancy Checking, TCP/IP, and YMODEM-G; a technology in which several of the commonly used abbreviations are in French; a technology requiring equipment that makes hideous sputters, whines, and squeals when it's working *right*.

Of course, we don't believe for a minute that DOS-flavored terminology, shrieking hardware, or even French words should stop you from mastering the art of communicating via modem. Once you've gotten your Mac online, the world is your desktop. Plug into the Internet or an online service, and your Mac becomes a tool for shopping, conducting research, exchanging ideas on an international level, playing games, even commuting to work — without ever stepping out of the house. When you consider the possibilities, it's hard to think of a more exciting way to use your Mac — if you can get it all to work.

In this chapter, we'll show you how to set up a modem and coax it to talk to other computers and fax machines. The subsequent four chapters cover the much juicier subjects of the Internet, America Online, the World Wide Web, and e-mail.

Hardware

Computers and telephones communicate in two fundamentally different ways. As you probably know, your Mac thinks in binary numbers, processing every shred of information in digital form. With each action performed by the Mac, millions of electronic switches in its circuits are thrown either on or off, producing a stream of 1s and 0s.

Most telephones don't think in 1s and 0s; they're *analog* devices, meaning they convey data (specifically, sounds) not through a series of on and off signals, but by means of a steady flow of electric current that's *modulated* to different frequencies, voltages, and amplitudes.

Mac Basics

So the modem's job is to take your Mac's digital code — all those 1s and 0s — and translate each little piece of code into a corresponding frequency that can be sent over the phone line. It does this by varying (or modulating) the electronic signal being sent through the phone line, assigning a different frequency for each bit or group of bits. In case you haven't already heard, this is how *modems* got their name; they *mo*dulate and *dem*odulate the electric current passing through the phone line.

Nowadays, more and more phone companies are upgrading to digital lines themselves, allowing for faster transmission speeds with some modem technologies; but in general, your digital information still has to be converted into an analog signal somewhere along its journey over the phone lines. (In fact, phone data usually gets converted from digital to analog and back *many* times during a transmission, because today's global telephone networks are a mix of newer digital lines and older analog systems.)

Both internal and external modems are available for the Macintosh. External modems, which plug into one of the Mac's serial ports, are usually equipped with a row of status lights that tell you when the modem is ready to connect; when the phone is off-hook; when the modem detects a tone from another modem; and when the modem is receiving or sending data.

Modem speeds

Probably the single most significant feature of your modem is its transmission speed. Right now, most people use modems that transmit at 28,800 bits per second (usually written *28.8 Kbps),* 33.6 Kbps, or 56 Kbps. The days of speed-doubled modems appearing every year are over, however. Despite all the hype, engineers tell us that with the introduction of 56K technology, modems have hit their limit, pushing data as fast as is technically possible through the existing pre-digital phone lines found in today's telephone systems.

Just what do these all these numbers mean in terms of actual speed? Well, sending a 1MB file with a 33.6 Kbps modem (under ideal phone line conditions) takes about four minutes. The same file transferred at 9,600 bps, takes almost 15 minutes. And if you're saddled with a vintage 2,400 bps modem, the file transfer stretches on for more than an hour! Obviously, a faster modem saves you a lot of time (and frustration) and can even save you money on long-distance charges and online service fees.

So here's our advice: When it's time to shop for a modem, buy the fastest one you can afford. (Read our warning about 56K modems in the next section, however.) If you're connected to an online service that charges by the hour, every extra dollar you spend to upgrade to a higher transmission speed will wind up back in your pocket as you reduce your telephone and online charges. Even if your Internet service provider (ISP) provides unlimited access, you'll find the extra speed of a faster modem worth the price.

The truth about 56K Modems

Strange But True

The 56K label on today's bestselling modems is a joke — not *one* 56K modem actually transmits at 56,000 bps over real phone lines! The 56K designation is a theoretical limit, not a measure of actual speed. In real life, you're lucky to get 44 Kpbs — and that's *if* you have a 56K modem and *if* you're connecting to an ISP that has the exact same "flavor" (X2, K56flex, or unified) of 56K modem on its end. Some 56K models, in fact, are barely faster than their 33.6 Kbps counterparts.

Furthermore, even when 56K modems *do* transmit at speeds that approach 56K, they only do it in one direction — from an ISP to your modem. In other words, you can't *send* files at 56K; you can only receive them at that speed. When you send (upload) a file using a 56K modem, it goes at 33.6 Kbps, max.

Worth Learning
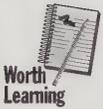
But there's even bigger problem with 56K: The current 56K modems aren't universally compatible. There were two original 56K technology standards — one called *X2*, the other *K56flex* — and they speak completely different languages. If your ISP has X2 hookups and you bought a K56flex modem, you're out of luck — you'll connect at 33.6 Kbps, tops.

Here's how this ugly 56K mess evolved: Generally, whenever new modem technologies are introduced, they're designed to conform to an international format set by a worldwide organization called the ITU (see "Standards and Protocols," later in this chapter). By adhering to the ITU's standards, modem manufacturers guarantee that any two 33.6 modems in the world, for example, will communicate correctly.

But the world's modem vendors jumped the gun with 56K technology — they introduced 56K modems before the ITU had established a specification. Some modem manufacturers adopted the X2 standard (developed by Rockwell Semiconductor); others went for 3Com's K56flex technology.

Finally, in early 1998, the ITU gave its stamp of approval to a final, unified technology standard — unhelpfully dubbed *V.90* (you say it "vee dot ninety"). No more competing standards — yeah!

Paradise? Nope. Predictably, V.90 is incompatible with *both* X2 and K56flex. Fortunately, most modem manufacturers had anticipated this moment. If you have an X2 or K56flex modem, contact the company that made it to find out how you can upgrade it to V.90 (usually using a software updater you can get from the Web). But don't actually upgrade your modem until your ISP *also* upgrades to V.90! Otherwise, you'll be stuck again with an incompatible 56K standard, and you'll have to do all your Internet surfing at 33.6Kbps.

Other modem shopping tips

When you go shopping for a modem, you also may notice that some manufacturers boast transmission speeds of 115.2 Kbps or higher for their modems. In fact, these modems usually transmit at 33.6 Kbps. They claim faster *effective throughput* by including features that compress the files you're sending. But you never actually get speeds that high. First of all, the files you're

sending are generally compressed already (using StuffIt, for example). Second, any modem automatically slows down if it detects noise or other interference on the phone line. With less-than-ideal line conditions (and *most* line conditions are not ideal), you experience less-than-ideal transmission speeds.

Mac Basics

With these modems, as with all modems, the important thing to remember is that two modems can only communicate at the highest speed supported by *both* modems. If you buy a 33.6 Kbps modem and subscribe to an online service that offers only a 28.8 Kbps connection, you'll be forced to log on at 28.8 Kbps. And if you equip your PowerBook with a 28.8 Kbps modem that's advertised to feature "built-in data compression for an effective throughput of 115,200 bps," but your office uses a modem that *doesn't* support data compression, you'll still transmit at 28.8 Kbps, at best.

Standards and protocols

For telecommunications to work, the modem on the receiving end of the phone line must follow exactly the same rules of frequency modulation and demodulation as the modem doing the sending. If they don't follow the same rules, it's impossible for them to properly decode the signals they send and receive. In other words, there must be a standard to assure that two modem-equipped computers can talk to each other.

Enter the ITU-T — the International Telecommunications Union — Telecommunications Standardization Sector (formerly known as the *Comité Consultatif International Télégraphique et Téléphonique,* or CCITT), an international group of experts that decides which modem communication methods and protocols constitute the standard. Modem manufacturers, telecommunications carriers, and governmental bodies all sit on this committee, which is actually an agency of the United Nations.

At any rate, with consistent standards set for transmission methods, you're assured that two modems can communicate with each other as long as they support the same standard.

Here's a rundown of the standards now in common use. The first five standards primarily have to do with the *speed* of transmission; the others relate to *error correction* and *data compression*.

- **V.22bis:** You don't see this one much anymore; it's the standard for 2,400 bps communications. The *bis,* by the way, is from a French word that can mean *repetition* (the reprise of a song chorus) or *prime,* in the sense that we might say X, X', Y; the implication is that this is a revised version of the V.22 standard. (On the other hand, *bise* is also French for *kiss,* so perhaps this is part of an inside joke concocted by the laff-a-minute ITU-T.) If your modem says it is V.22bis-compliant, it simply means that it can talk to other 2,400 bps modems.

- **V.32:** The standard for 9,600 bps communications.

- **V.32bis:** The standard for transmissions of up to 14,400 bps.

ANSWER MAN

Baud and bps: The true story

Q: All right, once and for all. I'm sick of not understanding this. What's the difference between a 28,800 baud modem and a 28,800 bps modem?

A: The terms "baud" and "bps" both refer to a modem's transmission speed, the rate at which it sends information over the telephone line. Many people (and Macintosh books, we might add) consider the terms interchangeable — but they *don't* mean the same thing.

Baud is the number of times a modem changes the *frequency* of its signal per second, while *bps* refers to the actual number of *bits* of digital information transmitted each second.

So why all the confusion? In the olden days of telecommunications, baud and bps *were* the same. Slower modems — those operating at 300 bps — used to send one bit of information with each frequency change; the 1s were represented as tones of 2,225 vibrations per second, and the

0s as tones of 2,025 vibrations per second. With this one-to-one correspondence between bits and the frequencies representing them, the number of frequency changes per second *did* equal the number of bits per second. So 300 baud was the same as 300 bps.

This relationship changed with the development of faster modems. Instead of one frequency representing one bit, a single frequency is used to represent *groups* of bits. So the number of frequency changes per second no longer equals the number of bits per second. A modem may send at 600 baud (meaning there are 600 frequency modulations per second), but those frequencies may each represent 2- or 4-bit strings, achieving 1,200 or 2,400 bps.

The bottom line: What you care about (and should use in conversation) is the *bps* of your modem, not the baud, which is irrelevant.

- **V.34:** This standard originally referred to modem transmissions of up to 28,800 bps. In 1996, the ITU-T amended the standard to include the specification for speeds of 31,200 bps and 33,600 bps as well. A V.34-compliant modem doesn't *necessarily* transmit faster than 28,800 bps — but it can, if the manufacturer chooses to include the higher-speed features. Little-known fact: The V.34 standard isn't just faster than previous standards; it's more reliable. Modems that comply with V.34 are better at maintaining stable communications despite noisy phone lines and other interference problems.

- **V.90:** This is the recently adopted standard for 56K data transmission, replacing the x2 and K56flex specifications that were being used by modem manufacturers before a universal 56K standard was established. V.90 permits download speeds of up to 56Kbps and upload speeds of about 33.5 Kbps.

- **V.42:** This standard has nothing to do with speed; it's an *error-correction* standard. It includes levels 2 through 4 of the Microcom Networking Protocol (MNP) — a transmission scheme that checks for errors in transmission and, if some of your data appears to have been garbled by static on the line, automatically resends the last message. These error-correction features are built into the hardware of V.42-compliant modems.

■ **V.42bis:** A data-compression standard that greatly speeds up data transfers by compressing data before it is sent, with decompression handled by the receiving modem. Another transmission protocol, called MNP Class 5, also offers data compression and is supported by many modems. Files already compressed by a utility such as StuffIt don't go any faster with this kind of compression, by the way; their contents already have been compacted as much as possible. For V.42bis to be fully operational, you must connect the modem to your Mac with a *hardware handshake cable* — a cable specially wired to take advantage of the data compression hardware in the modem.

These standards are not mutually exclusive. A modem can (and likely does) support more than one standard. If a modem is listed as being compliant with the V.42, V.42bis, and V.34 standards, that means it can support data transmissions at up to 28,800 or 33,600 bps, has built-in error correction, and uses data-compression technology.

Now, we'll be honest: You don't need much knowledge of communications protocols and standards to use your modem. For example, if your modem supports V.42bis data compression, you really don't have to *do* anything about it. All it means is that if your modem happens to connect to another modem that also supports the V.42bis standard, a data-compression routine is automatically triggered to speed up the throughput. You don't have to issue any special commands, push any buttons, or throw any switches.

Handshaking: two modems get acquainted

When two modems connect, they first compare each other's features to determine the highest-level standard they're both equipped to support. When they've agreed upon a connection method, they go ahead and establish a suitable data connection. This process of comparing features and reaching a mutually agreeable standard is called *handshaking.*

Most modems are good at handshaking; that's why you usually don't have to worry about which standards and protocols your modem supports. The modems are smart enough to work things out between themselves.

To illustrate: Suppose that you try to establish a connection between two modems — one that's both V.34- and V.42bis-compliant, and another that is V.32bis-compliant. The V.42bis modem first tries for the best connection possible, employing its full battery of built-in error correction and data-compression features. But the other modem doesn't support those features, so the V.42bis modem drops down — it pretends it has no error-correction features. But there's still another problem: One modem is trying to connect at 28.8 Kbps, while the V.32bis is limited to 14.4 Kbps. So the faster modem drops down to the fastest speed of the other modem. After comparing a number of other transmission parameters, the two modems agree to a standard 14.4 Kbps connection, without data compression or error correction, and the connection is established.

Beyond the modem: ISDN, Cable Modems, ASDL

Imagine dialing into the Internet, connecting to a remote computer, and downloading files at more than twice the speed of the very fastest modem.

Enter ISDN

You can do it — with an ISDN line. ISDN stands for Integrated Services Digital Network. This relatively new (and expensive) technology, offered by an increasing number of phone companies, lets you transfer data at up to 128 Kbps — and that's *without* data compression. (By contrast, as we've said, conventional modem technology can't be pushed much further than 45 Kbps.)

Why are ISDN lines so fast? Because, although they operate over existing phone wires, ISDN lines carry digital information rather than analog signals. In other words, an ISDN line doesn't even require a modem. Remember, the whole job of a modem is to *convert* a computer's digital information into the analog signals used by traditional phone lines and vice versa. With a fully digital line, that conversion isn't necessary — and permits much faster data throughput.

ISDN is *so* fast, in fact, that it may be too fast for your Mac. Power Macs and Quadra AV models can handle communications at up to 250 Kbps, but older Macs require a special NuBus serial card to keep up with the flow of data pouring in and out of an ISDN line.

That's not the only hardware needed to use an ISDN line. You also have to buy a *network terminator,* an interface box that the ISDN line plugs into, as well as a *terminal adapter,* which lets you connect the network terminator to your Mac. The price of ISDN has dropped a lot, but it's still more expensive than plugging in a modem. At this writing, the hardware needed to connect to an ISDN line costs about $300. (Setting up the hardware may be a headache, too, unless your phone company is willing to do that for you.)

Operating the lines is also spendy. Prices vary by phone company, but most charge from $50 to $100 per month for an ISDN line, plus a fee for initiating each call, plus actual online long-distance charges.

ASDL, SDSL

ISDN's successors are already on the way. One of these technologies, SDSL (symmetric digital subscriber line), is twelve times faster than *ISDN*. With SDSL, you can transmit data at 1.544 *Mbps* — that's 1,544 Kbps — over traditional phone lines. SDNL will allow voice and data to be transmitted simultaneously over the same line.

Also under development is an even more staggering new technology called ADSL (asymmetric digital subscriber line) that can theoretically permit connections up to *6.312* Mbps, again over ordinary phone lines. At that

speed, it will take less than two seconds to move an entire megabyte of data over the phone lines!

At this writing, SDSL and ADSL are still in the testing stage, require extremely expensive hardware, and can be used only to transfer data over fairly short distances.

Cable modems

Then there's the much-hyped *cable modem* — a modem that plugs into the same coaxial cable and fiber-optic lines used by cable companies to carry television signals into your home.

Current cable modems can deliver data at a 512 Kbps — about 10 times faster than 56K modems. But at the moment, cable modem technology is expensive and hard to get. Very few cable companies and ISPs are offering it, and those that do charge a premium. Set-up requires a Mac with an Ethernet jack (which is where the cable modem plugs in); you usually lease the modem itself; and you need to make sure there's a cable TV jack near your Mac. Installation can run up to $200, with fees of about $45 per month for a two-way line that lets you both send and receive data through the cable.

Furthermore, a cable modem isn't quite the uploading nirvana you may imagine; the high data transfer rate may be only available *downstream* — that is, going *into* your Mac. When you *send* data on these "one-way" cable systems, you're stuck at the same old slow speeds you can get today. (Fortunately, a few cable companies are now offering two-way systems.) Furthermore, the system slows down dramatically during peak use periods, since you're sharing the wiring with thousands of other households.

Future cable models are expected to reach transmission speeds of 10 Mbps — over 1MB per second, although it may be years before cable companies upgrade their systems to handle such modems.

But make no mistake: having a cable modem is dreamy. It frees up your modem port. You save 90 seconds every time you use the Net, since you're online around the clock — there's never any dialing. Web surfing isn't much faster (you still wait for pages to get sent from the *other* end), but downloading files is staggeringly fast. If your area offers cable modems, we say: go for it!

The Software

Before your modem can communicate with the outside world, *you* must communicate with your modem. That's the job of telecommunications software — the link between your Mac and the modem's brain. You need telecom software to control the modem's settings, select data for transmission, capture incoming data to your hard drive, and monitor the status of phone connections.

Connecting to the Internet or online services

When you subscribe to online services (such as America Online) or sign up with an Internet service provider (ISP), you generally get all the software you need to connect. In fact, AOL's software automates much of the process of configuring your modem with the proper settings, shielding you from the hassle of having to manually plug settings into the various control panels that handle online communications. More and more ISPs give you self-configuring software, too — when you launch the set-up software, you just pick your particular modem from a list of models and the program takes care of the rest. The software connects you to the Internet, fetches a local access number for you, and configures your system software as needed. (See chapters 25 and 26 for much more about hooking up to an online service or ISP.)

Going online without the Internet

Almost everyone uses a modem to connect to the Internet, through either an ISP or a subscription service such as America Online. But you don't *need* the Internet to use a modem. You can also dial into free bulletin boards or dial directly into other remote computers. In fact, that's the way virtually everyone used their modems just a few years ago.

Today, the role of the BBS (bulletin-board system) is a sliver of its former self; the vast majority of Mac fans access the Internet for their information instead of BBSes. Even user groups, formerly in the vanguard of local BBS creation, have mostly moved their operations onto the World Wide Web.

For that reason, we've moved all of our tips regarding bulletin boards and dialing remote computers. You'll find it on the CD-ROM that came with this book — in Chapter 27 of *Macworld Mac Secrets, 4th Edition*, which we've included in electronic form. If you still use a telecom program such as ZTerm to log into a local BBS, or you want to know how to make your Mac connect directly to another via modem, you'll find everything you need on the CD-ROM.

Look in that electronic chapter, too, for our "Modem settings demystified" discussion of full and half duplex, flow control, parity, and other geeky topics you rarely encounter these days.

How your Mac talks to a modem

Modems speak their own language, a series of commands called the Hayes *AT command set.* This collection of modem commands was originally developed by Hayes Microcomputer for its modems, but the commands have now been adopted as the industry standard. As the name suggests, the primary command of the set is AT, which stands for *ATtention.* In a typical command, the letters AT are immediately followed by other command letters, which instruct the modem to perform a certain action — listen for a dial tone, turn on the fax features, turn off data compression, and so on.

There are dozens of AT commands (you can probably find a list of them in the manual that came with your modem), but don't bother memorizing them. In the days of text-based telecom programs such as MicroPhone or ZTerm, you actually *typed* these codes onto the screen in order to make your modem do things. But today's telecom programs generally don't require you to fiddle around with these commands.

There is, however, one rather vital string of Hayes commands that deserves your attention and respect — your modem's *initialization string*.

The modem initialization string

The initialization string is the cluster of Hayes commands that gets sent to your modem the moment you launch a telecommunications program, such as America Online or Mac OS 8's PPP dialing software (see Chapter 25). The initialization string tells your modem exactly which features to activate or suppress during the current work session. This process is vital because not all modem features are compatible with all programs. Certain features (such as faxing capabilities, error correction, and data compression) may actually get in the way of programs that don't support those features. So the modem initialization string primes your modem, getting it ready for action, restoring all the appropriate settings in order for your telecom software to work properly.

Here's a typical initialization string:

```
ATE0Q0V1X4&C1&D0M0
```

Each chunk of this string contains a specific modem command. For example, **Q0** tells the modem to return a result code — such as RING or CONNECT or BUSY — when something happens. **V1** specifies that the result code be expressed in English, rather than as a numeric code. The command **&D0** tells the modem to ignore the status of the DTR (Data Terminal Ready), a signal generated by the serial ports of some computers to monitor the flow of data to and from the modem. DTR is always ignored when using a modem with a Mac.

CD

We tell you all this because sometimes you can solve major telecom snags by adjusting this initialization string. If your modem simply won't dial out or refuses to communicate with CompuServe, it may be that a different initialization string is needed to activate (or disable) the appropriate features. Check the manuals that came with your modem and your telecom programs to see if a change in the initialization string is needed. And if you've got some kind of perverse fascination with all the different possible AT commands you can make part of your init string, see (once again) the modem chapter of the electronic version of *Mac Secrets, 4th Edition* (on the CD-ROM that came with this book).

You may have to do a little hunting to figure out where a particular program stores its initialization string. In America Online 3 and 4, you can edit the initialization string by clicking Setup on the sign-up screen, and then clicking Edit Modem Profile.

Telecom Secrets

Preventing line interruptions from extension telephones

A modem connection or file transfer can be ruined if someone unwittingly picks up a telephone extension elsewhere in your home while your modem is online.

You can prevent this from ever happening by connecting a Radio Shack Teleprotector #43-107 to the other telephone extensions in your house. This gizmo makes other extensions in the house go dead when you use your modem, so that you can't be interrupted when online. If you have a lot of phone extensions in your house, this can get expensive: You have to install a Teleprotector at *each* extension — not on the line connected to your modem. And, of course, the Teleprotector does its job regardless of the *type* of call taking place on your modem line, meaning that it disables your other telephone extensions for voice calls as well.

Dialing out with no dial tone

Normally, a modem waits for a dial tone before starting to dial out. If the phone system you're on doesn't provide an initial dial tone — or if you're in a country with a telephone system that uses a dial tone not recognized by your modem — use your telecom software to insert the X3 command into your dialing string (like this: AT**X3**DT555-1212). Your modem dials without a dial tone present.

Making your modem shut up — and speak up again

Don't you hate the blood-curdling screech that modems and fax modems emit when connecting? It's easy to make your modem mute by issuing the ATM0 command (that's a zero). Just include this command in the modem initialization string that's fed to your modem whenever you start a new connection, as described earlier in this chapter. To turn the speaker back on again, the command is ATM1.

Disabling Call Waiting
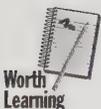
Call Waiting, the optional phone-company feature that, when you're talking on the phone, makes a *click* to alert you that you've got another call coming in, can cause serious problems during a telecommunications session. The click can cause glitches in the transmission and ruin file transfers.

If you use a single phone line for your modem and your voice, disable Call Waiting before you log on. In most areas of the country, you just dial *70 before making a call.

In other words, add ***70** to the number string stored in your PPP control panel or AOL software. For example, if the number you normally dial to connect to your ISP is 555-1212, replace this number with ***70,**555-1212 (see Figure 24-1). The comma adds a brief pause after the disabling command is issued and before the number is dialed. (The *70 thing applies only to one call. As soon as your modem hangs up, Call Waiting will be turned back on.)
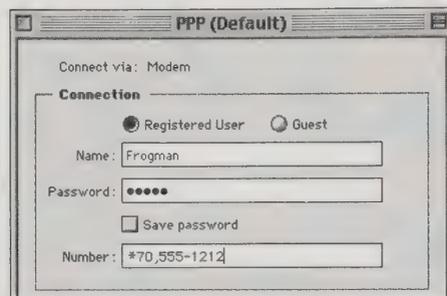
Figure 24-1: Adding *70 to your dialing string disables call waiting when you're online.

All about GeoPorts

For years, instead of having the traditional modem and printer ports on the back, most Macs have had one or two GeoPorts — small round jacks that look for all the world like normal modem or printer ports. Apple's GeoPort Telecom Adapter, a $99 gizmo that plugged into that jack, acted like a modem, but wasn't one. Through software, it could also serve as a fax modem, speakerphone, and so on. The possibilities were endless.

CD
Unfortunately, for the same $99, you could have bought an even faster *real* modem; the GeoPort adapter was a flop. Still, if you'd like to read up on the GeoPort in detail, check out the electronic edition of *Mac Secrets, 4th Edition* (on the CD-ROM that came with this book), where you'll find our complete discussion of this once-promising technology.

Mac as Fax

When fax modems first debuted, the Macintosh community was skeptical, to say the least. Many of the earliest models were only *send-fax* devices, capable of sending faxes but not receiving them. Even the models with full send-and-receive capabilities were overpriced, came with lousy software, and offered unpredictable performance.

Today, most modems on the market today *are* fax modems, even those under $100. Most are equipped with circuitry capable of reliably transmitting data to and receiving transmissions from Group III fax machines at a rate of 9,600 bps. Fax software has come a long way, too; the best programs make faxing a document no more complicated than printing.

How to fax

With most fax modem packages, you can send outgoing faxes directly from within any Macintosh application. To fax a document, the directions vary by modem brand:

- **Global Village/Boca:** Hold down the Option key as you choose Print from the File menu. Actually, you choose *Fax* from the File menu — the word *Print* disappears when you hold down the key.

- **Apple's ExpressModem software (including the GeoPort Telecom Adapter):** Press Shift and Control while choosing Print from the File menu. On the iMac, press Option and ⌘ instead.

- **Supra and some others:** The software installs a new Fax *menu* to the right end of your menu bar. Choose Fax from this menu — not only when you have a document to be faxed open on the screen, but even when you've got document *icons* highlighted in the Finder.

Any modem brand also offers a secondary, less convenient method: you first select the fax modem device's name in the Chooser — just as you would select a printer — and then choose the Print command.

In any case, the fax software *prints* (faxes) the document by converting each page into a bitmapped image, dialing a fax number with the modem, and transmitting the converted file through the phone line. The document is transferred from your Mac to the remote fax machine without having to be printed first.

Likewise, a fax modem lets you receive incoming faxes right on your Mac. You can read the fax documents on-screen without ever having to print them. Of course, if you *do* need a printout of a document, all you have to do is print it as you would any other document.

Fax Modem Secrets ──────────────────────────────■

Faxing PostScript graphics

Most fax modems don't understand PostScript. If you try to send a document containing PostScript graphics (from Illustrator or FreeHand, for example), the fax machine prints only PICT representations of the PostScript images, with unacceptably jaggy results.

But you can make the results look a little better using the following method: When you first create the PostScript graphics, make them about three times larger than intended; import them in a page-layout program (or Color It or Photoshop); and reduce them to the desired size. The reduction gives the final PICT image a finer resolution in the final faxed document. (Alternatively, you can buy a PostScript converter program like Infowave Imaging's StyleScript, which does the deed automatically.)

Margins of error

Keep in mind that some fax modems and fax machines chop off the edges of a document during the transmission process. To protect the integrity of your documents, create extra-wide margins on documents that you plan to fax—an extra quarter-inch on every side.

Using a fax machine as a scanner

If you happen to have a regular, paper-fed fax machine in addition to a fax modem, you can actually use the fax machine as a scanner—turning printed pages into digital images and capturing them on your Mac via the fax modem. The resulting scans won't look nearly as good as those produced by a real scanner—they'll be in black and white, with a resolution of 200 dpi—but it really does work.

DIALOGUE

Fax modem versus fax machine

JS: You know, people ask us all the time which they should get—a fax modem or a fax machine. And we, of course, always respond with the one obvious answer . . .

DP: We tell them to buy a fax machine.

JS: Exactly! And we—wait a minute. No, we don't. We heartily recommend the fax modem.

DP: *You* heartily recommend the fax modem.

JS: And why shouldn't I? A decent fax modem costs *one-third* as much as a stand-alone fax machine. It's the deal of a century.

DP: You pay less, you get less.

JS: No, you get *more*: A modem for dialing up the Internet and, in some cases, a built-in answering machine.

DP: Sure, but face it: A fax modem, no matter how many fancy features you roll into it, hardly takes the place of a real full-featured fax machine.

JS: Such as?

DP: Suppose I want to fax in my order from a preprinted order form in a catalog. Now, with a fax machine, I'd just fill out the order form, feed it into the machine, and send it off. Just how could I do *that* with a fax modem?

JS: Well . . .

DP: You can't fax *any* preprinted documents with a fax modem. That's a serious drawback. You're strictly limited to the documents on your Mac. You can't even fax a letter with your signature on it, unless you first scan your signature, save it as a graphic, and then paste it into your letter—which, of course, would require buying a scanner, too. And take three times longer than simply signing a piece of paper . . .

JS: All right, all right . . .

DP: And speaking of graphics, remember that most fax modems can't send PostScript images. Artists and designers who need to transmit high-quality graphic images to clients can't use a standard fax modem; typically, they have to print their material on a PostScript printer and then fax out the results.

JS: OK, so a fax modem *doesn't* completely replace a regular fax machine. But it offers a million other advantages.

If you'd like to try this stunt, you can find the step-by-step instructions in Chapter 31, under "Scanning Secrets."

Make on-screen faxes easier to read

The fax software that comes with most Global Village modems *antialiases* text, smoothing out the edges of each character so that your incoming faxes look less jaggy on screen. But if the smoothed-out text on a fax seems a little *too* blurry for your taste, you can adjust the degree of antialiasing by pressing the up and down arrow keys. (The changes you make don't affect how the fax will look when it is printed.)

DP: A million?

JS: Well, four.

DP: I'm all ears.

JS: When you need to fax a document using a fax modem, you don't have to print it first. In fact, you don't even have to lift your fingers from the keyboard. Do you realize what a time-saver that is? And when a fax comes in, it pops up right on your screen. You can preview *every* fax you get and delete the ones you don't really need. No wasted toner and ink. Now, what could be more convenient than *that?*

DP: A regular fax machine. On most monitors you can't even *read* a whole faxed page at full size.

JS: So?

DP: So, that means you either have to change the magnification using the fax software, or — worse yet — scroll horizontally and vertically to read the document. There goes all the time you saved.

JS: OK. Let's talk ecology.

DP: I'd love to.

JS: Fax modems save paper; you can send and receive fax documents without printing them. Over the course of a year, you can save literally *reams* of paper. Maybe even an entire tree! It's an environmentalist's dream.

DP: Not quite. Let's not forget that using a fax modem means leaving your Mac *and* modem on 24 hours a day! An environmentalist might not be too thrilled about all that wasted power. And besides, let's be honest: Sooner or later you're going to have to print out at least *some* of those incoming faxes . . .

JS: Not really. You just save your faxes right in a folder on your disk.

DP: Yes, but *eventually*, Joe, eventually you'll need to print something out . . .

JS: True, but on those *rare* occasions when I do have to print out a fax, at least my hard copy won't wind up on that awful, thin, waxy, thermal paper spit out by most fax machines.

DP: I'll grant you that: Fax paper is truly a loathsome substance.

JS: I'm glad we agree.

ANSWER MAN

Two Macs, modem to modem

Q: I've got an iMac and a Mac that doesn't have Ethernet. How can I transfer stuff from one Mac to the other?

A: What you're really asking is: Can I transfer files from one Mac to another, modem to modem, without actually placing a call?

And the answer, fortunately, is yes. Just run a piece of phone wire from one modem (or the iMac's telephone jack) to the other. On each Mac, run a program like the ClarisWorks Communications module or Zterm (included with this book). The following instructions describe the ClarisWorks method:

Set the connection parameters on both machines to this: Baud Rate: 57600; Parity: None; Data Bits: 8; Stop Bits: 1; Handshake: DTR & CTS.

Leave the default file transfer settings, which should be Protocol: XMODEM Tool, Method: MacBinary, and Transfer Options: Standard.

Choose Session ⇨ Open. On the sending computer, type *ATD* and press Return. On the receiving computer, type *ATA* and press Return.

Once the modems are connected, choose Session ⇨ Send File on the sending Mac. Locate and select the file you want to send; click Send. On the receiving Mac, choose Session ⇨ Receive File.

That's it! The file gets sent over the phone wire to the receiving Mac, even though you haven't actually made a call.

Chapter 25

The Web, the Net, and Everything Online

In This Chapter

▶ How to get online

▶ The Open Transport control panel suite

▶ The Internet: e-mail, FTP, Telnet, Gopher, IRC, newsgroups, mailing lists

▶ Browsing the World Wide Web

▶ Creating Web pages

▶ America Online and CompuServe

The U.S. government designed what we today call the Internet during the 1960s. It was meant to be a communications web with so many alternate routes for messages that it would survive even if a nuclear attack took out a major city or two. The network was originally named *ARPAnet* (for the Advanced Research Projects Agency network). In the decades that followed, the Internet grew beyond the United States, but was still used mostly by educational and government agencies.

In the '90s, the Internet was opened to commercial access. Once companies were allowed to use the Internet, they began selling access to individuals like us — and, as every headline and magazine has no doubt informed you, the result was an explosion of interest and popularity. Today, the Internet is a collection of thousands of regional computer networks that are capable of connecting to each other through main communications lines that can transport data at 45 *million* bits per second.

A great majority of American and European institutions have Web sites today, making the Internet an incredible resource for your research, shopping, and entertainment pleasure. Thanks to its global reach, any consumer can buy directly from a company, cutting out middlemen and saving a lot of time and money.

We'll do plenty of gushing about the glories of the Web later in this chapter. But first, a caution: Our tale of the Internet's origins should clue you in as to

why it uses so many arcane terms and complicated protocols. It was designed at a time when terms like *Macintosh* and *ease of use* were equally alien — and nothing much has changed.

What's on the Internet

The Internet's allure boils down to several popular features. In general, you need a separate Macintosh program (usually shareware) to access *each* of the following features.

In approximate order of popularity, then, here's what the Internet is good for (most of which we'll cover in this chapter):

■ *Electronic mail.* You've heard of this. You send messages anywhere in the world for pennies, and they arrive in minutes. Required software (examples): Claris Emailer, Eudora, Outlook Express. See Chapter 27.

■ The *World Wide Web* integrates text, pictures, sound, and video into convenient point-and-click *pages* (screens). The Web is the one Internet feature that doesn't require a computer science degree. We've devoted a separate section to this hottest of all possible cyber-passions at the end of this chapter. Required software (examples): Netscape Navigator, Microsoft Internet Explorer, Cyberdog.

■ *Usenet newsgroups.* Newsgroups are public bulletin boards. They give the Internet its color and sense of community. There are thousands of newsgroups, on every conceivable topic. You could fritter away your entire life just trying to keep up with a few of these newsgroups. Plenty of people do. Required software (examples): Newswatcher, Navigator, Outlook Express.

■ *File Transfer Protocol (FTP)* means downloading software — like having access to a global, all-inclusive shareware library 1,000 times the size of America Online. Required software (examples): Fetch, Anarchie, Navigator, Microsoft Internet Explorer.

■ *Internet Relay Chat* (IRC) lets groups of people type messages to each other in real time, like a typed CB radio. If you've used Instant Messages or chat rooms on America Online, you get the idea. Required software (examples): ICQ, GlobalChat, Homer, Ircle.

■ *Telnet* is a purely text-based protocol that allows you to access databases, bulletin boards, and downloadable files — no graphics, no animation, just plain text-based menus. You may have to type in a password or User ID in order to access a Telnet site. Telnet sites certainly aren't the most alluring sites on the Internet, but a number of specialized databases are available only using Telnet. Required software (examples): Better Telnet, NCSA Telnet, dataComet.

■ *Gopher* is a menu-based system for retrieving information from databases: university-library card catalogs, census data, whatever. Required software (examples): TurboGopher, Gopher Surfer. To download a file, just drag its

icon to your desktop or hard disk. The file is copied to your computer. (Gopher is like FTP, in that you can use it to retrieve files; but FTP shows only lists of files on the host computer to which you're connected, while Gopher can show lists of files that are on many computers.)

Unfortunately, although everyone agrees that there's a lot of great stuff and info on the Net, it's incredibly scattershot. You'll find 100MB of data on violins, say, but nothing on brass quintets. Our best advice is to (a) spend hours and hours exploring, or (b) keep your eyes peeled for Internet addresses in magazines, books, newspapers, and even TV ads.

Getting online I: Finding an Internet account

Even if you've read Chapter 24, and you have a modem, you're still not quite ready to go online and explore the famous Internet — and its most popular attraction, the World Wide Web. Before you can start downloading Dilbert cartoons, searching Apple's Web site for the latest system update, or e-mailing your cousin in Sierra Leone, you'll have to wrangle yourself a connection to the online world.

There are three ways to get such a connection. You can work at a company that's already wired to the Internet. You can sign up with an *Internet service provider*, or ISP — a local or regional company that lets you dial into its computer system and share its Internet access. Or you can subscribe to a commercial online service (such as America Online).

Internet Service Providers

You've probably heard of some of the national ISPs: Concentric, EarthLink, NetCom, MindSpring, IDT, IBM.net, MCI, AT&T WorldNet, and so on. Signing up with an ISP generally costs about $20 a month (plus sometimes a setup fee); that money generally gets you unlimited Internet access time. (If only the phone companies offered such a deal!)

Mac Basics

It's important to understand that ISPs generally offer no content of their own — no *Time* magazine, no encyclopedias, no stock quotes, none of the organized, popular features of online services. All you get is a phone number to dial for your Internet connection. Beyond that, you're generally supposed to set up and configure your own Internet software (Navigator, Outlook Express, and so on). They sell you the privilege of dialing into their system, but it's up to you to find your way around.

Still, unless you're a total Mac beginner, ISPs are the way to go (when compared with the pricey, congested America Online). Your Web surfing is faster and less prone to blackout periods when you're connected directly to the Internet.

Choosing an ISP is a nerve-wracking procedure. Sure, you can always switch if the one you signed up with turns out to have lousy tech support, be Mac-hostile, or have the wrong kind of modems at their end. But if you switch, your e-mail address switches too — and your friends won't be able to find you unless you tell them explicitly.

So choose carefully. Ask your friends for recommendations, consult the business-section ads of most newspapers, look in Mac magazines for ads, or check the frequently updated Web sites that list (and rate) ISPs (if you can get onto the Web already, that is). We went to www.yahoo.com, did a search for "Internet service providers," and came up with a list of several comprehensive ISP–rating Web sites (assembled by CNET, Internet Life, and PC World). These may change, but you're sure to find something similar whenever you look.

And what are you looking for when you read these descriptions? Above all, a local phone number — and if you live far from a major city, an 800 number that won't bankrupt you. If you travel, you want an ISP with a *lot* of local access numbers (such as the terrific IBM.net, www.ibm.net, which has 1,500 local numbers, all over the planet). If you have a 56K modem, make sure you're signing up for an ISP whose modems match your type (X2, Kflex, or v.90, as described in the previous chapter).

If all of that research sounds like a lot of bother, and you live in a major city, consider using the Internet Setup Assistant that comes with Mac OS 8 and later. (If you have Mac OS 8 or later, but haven't tried this Assistant, use your Find command to locate it on your hard drive.)

This headache-saving program walks you through the process of choosing an ISP — specifying where you live, what your credit-card number is, and so on. After about 10 minutes, you're actually online with a full-fledged Internet account.

DIALOGUE

Internet: Help versus Hype

JS: OK, I did my share: I wrote my half of this chapter. But I still don't feel right about this whole Internet thing.

DP: Internet *thing*? Joe, in case you haven't noticed, the Internet is the biggest technological/cultural/social phenomenon of our time. It's changing the way we work, the way we shop, the way we fall in love.

JS: Please! You know perfectly well that most of this Internet stuff you read everywhere is pure, unadulterated *hype.*

DP: Hype?

JS: Look, when you peel away all the glitz and media hysteria, it's just a computer network. A very, very, very big computer network.

DP: Have you tried surfing the Web? We're talking about a global network of information, at your very fingertips.

JS: Yes, in a completely disorganized, random state of undirected chaos.

DP: It's not that bad.

JS: And it's not *surfing.* It feels nothing like surfing. It feels like sitting and watching a progress bar. It's a huge time waster — and everyone's getting sucked in by the hype.

DP: Oh, come on. You're exaggerating.

JS: No I'm not. Last week, I wanted to do a little research on biopharmaceutical oligonucleotides and I had to sift through *mounds* of information to find anything useful.

DP: Oligonucleotides?

JS: It's a hobby.

DP: Well, you should've used a search engine.

JS: I did use a search engine. That was the problem. AltaVista turned up 4,633 hits. Yahoo! turned up 5,024.

The Internet via AOL

Instead of tracking down an ISP and fending for yourself, you can sign up with a subscription online service, such as America Online.

AOL's Internet access (in AOL 3.0 and later) is clean, integrated, and easy, presented with a point-and-click interface that needs no configuring. Its simplicity explains why AOL is the world's largest ISP.

But as millions of disgruntled former AOLaholics can tell you, America Online has its problems. It costs slightly more than a regular ISP — $23 per month instead of $20. The advertising is going crazy: not just a strip of crass commercialism at the top of every screen, as you get on the World Wide Web, but garish, hideously designed full-screen ads that must be dismissed with a mouse click before you're allowed entrance to AOL. And don't even get us started on the topic of AOL's busy signals.

But enough about America Online; that's what Chapter 26 discusses.

Getting online II: Preparing your Mac

The software suite collectively known as Open Transport, bless its heart, makes getting online easy. Its three Internet-related control panels have idiotproof blanks to be filled in — and then you're online. (Open Transport is a standard part of Mac OS 8 and later, but can be installed onto any '030 or faster Mac running System 7.1 or later. Download the latest, if you don't already have it, from `www.apple.com`.)

DP: You struck gold.

JS: Gold? It took me three days to check out all the links. And most of them turned out to be complete dead-ends. Sixteen required plug-ins I don't have, nine turned out to be pornographic, and one was a home page by a fourth grader in Elk Mound, MN.

DP: Ah, but eventually, you found the site you wanted, didn't you?

JS: Yes. One. One site out of thousands.

DP: See that? Thanks to the Internet, you were able to home in on precisely the information you needed.

JS: Not quite. That site was under construction. And you needed the beta version of Netscape Navigator 7.0 to read it.

DP: Well, surely you must have turned up *something* else that was useful.

JS: Ah, yes. Perhaps you're referring to the Official Fantasy Island Interactive Trivia Game and Video Clip Archives Home Page.

DP: There you go.

JS: I plan to visit often.

DP: That's the beauty of the Internet.

JS: Anyway, my point is that a trip to the public library would have taken two days *less*, plus I would've gotten some exercise and interacted with actual, breathing human beings — including a helpful librarian.

DP: Well, what the heck are oligonucleotides, anyway?

JS: Look it up on the Web.

And how do you know how to fill in these control-panel blanks? Either you consult your ISP's Web site, or you call the ISP's tech-support line and let the agent walk you through the process. (Or you use the Internet Setup Assistant, as described earlier in this chapter.)

Here's how to set up a new Open Transport-equipped Mac for Internet access. (If you're not sure whether or not you have Open Transport, look in your Control Panels folder. Do you have a control panel called AppleTalk? Then you have Open Transport. If you have a control panel called Network instead, you don't. In that case, see the sidebar "Getting online without Open Transport.")

Step 1: The Modem control panel

In the Modem control panel, specify the precise brand and model modem you have (see Figure 25-1).

Figure 25-1: Choose your weapon in the Modem control panel.

Technically, the pop-up menu in this control panel does nothing more than list your System folder's *modem scripts.* A modem script is a text file that explains your modem's features to your Mac — speed, compression, and other parameters described in Chapter 24. You can edit the list of modem models in the control panel's menu by adding to, or taking away from, the files in your Modem Scripts folder (which is in your Extensions folder).

If you don't see your exact modem listed in the Modem control panel, then there's no script in your Modem Scripts folder for it. You have four options:

- Hunt through the disks that came with your modem in hopes of finding a script for your model. If you find one, put it into the Modem Scripts folder (which is in the Extensions folder, which is in the System folder).

- Call the modem maker's tech-support line, or visit its Web page, in hopes of finding a modem-script file for your model.

- Download Apple's Modem Script Generator from www.apple.com. At this writing, you'll find it at this address: ftp://ftp.info.apple.com/Apple_Support_Area/Apple_Software_Updates/US/Macintosh/Unsupported. This

little program generates modems scripts automatically — *if* you know the technical parameters to type into it. And *that* information must come from your modem's manual or tech-support line.

■ If all else fails, choose one of the basic Hayes scripts from the list and hope for the best; it often works.

Step 2: The Remote Access (PPP) control panel

OS 8.5 PPP stands for *point-to-point protocol* — yet another bit of arcane Internet terminology that you'll never need to understand. In the Remote Access control panel (Mac OS 8.5 and later) or the PPP control panel (previous systems), you specify three morsels of information provided by your ISP: your account name, password, and the local phone number your modem is supposed to dial.
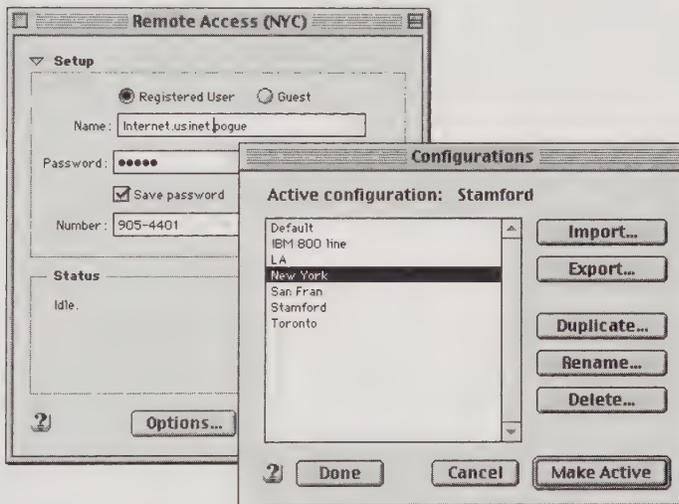
Figure 25-2: The Remote Access (formerly PPP) control panel stores your account name, phone number, and password (left). If you plan to have more than one of those — alternate phone numbers for different cities, for example — press ⌘-K to open the Configurations dialog box (right).

If you sit at home and use the same Mac all day, you're done. If, however, you travel with your Mac, or you have more than one ISP, get used to choosing Configurations (⌘-K) from the File menu. (This useful command is available in *all* the Open Transport control panels, by the way.)

Now you're offered a list of prepared PPP (name/password/phone number) setups, as shown at right in Figure 25-2. If you're smart, you'll clone your original one (using the Duplicate button) and set up additional ones for each city you visit. You switch among them by opening the PPP control panel again, pressing ⌘-K, and double-clicking a different configuration.

Step 3: The TCP/IP control panel

You'd think that Apple could have simplified the geekiest Internet terminology of all, TCP/IP (which stands, unhelpfully enough, for *Transmission Control Protocol/Internet Protocol*). Instead, Apple decided to honor the geeks of the Net by not only preserving the term, but enshrining it in this control panel (see Figure 25-3).
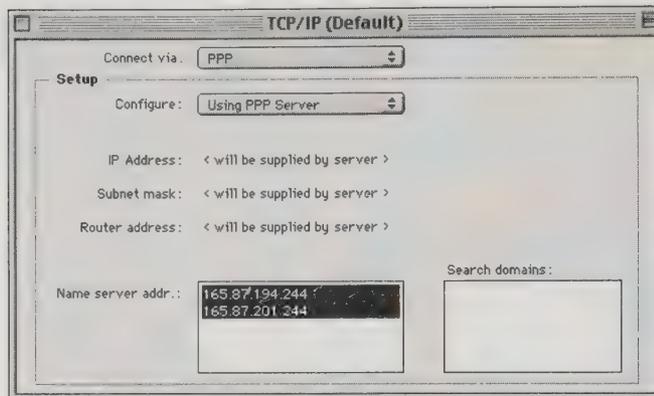
Figure 25-3: The TCP/IP control panel lets you store the DNS (domain name server) codes for your ISP.

Anyway, you have two tasks in this control panel. First, choose PPP from the "connect via" pop-up menu at the top of the control panel. (If PPP isn't a choice, you need to reinstall the Open Transport/PPP software from your system-software CD, or re-download this installer from Apple's Web site. And if you're in an office, you may be instructed to choose Ethernet from this pop-up menu instead, so that you use the office's existing Internet connection.)

Second, you have to type in the *DNS numbers* — one or two long numbers broken up by periods, as shown in Figure 25-3.

Here again, if you switch among different ISPs, you can press ⌘-K to open the Configurations window, where you can add, duplicate, delete, or make selections among different TCP/IP setups.

That's it — you're ready to go online!

Getting online III: Dialing

When you launch an Internet program — such as Netscape Navigator, Internet Explorer, Outlook Express, Claris Emailer, Fetch, Newswatcher, or any program where blue, underlined, hyperlink text sometimes appears — your Remote Access (or PPP, or FreePPP) control panel springs into action. It seizes control of your Mac, throws up the status message shown in Figure 25-4, and dials your modem. After 30 seconds of negotiation and modem-hissing, the status message goes away. You're now connected to the Internet.

MACINTOSH SECRET

Getting online without Open Transport

The software suite known as Open Transport is by far the best software for dialing up the Internet. It's fast, it's ultra-reliable, and it's fairly comprehensible.

If you're using a very old Mac, however, or helping out somebody who is, you won't find the usual suite of three Open Transport control panels. Instead, you'll find *one* control panel—called MacTCP. It's the predecessor to today's TCP/IP control panel, although the older MacTCP is far more complex. You must fill it in while you're on the phone with your ISP's tech-support staff.

But what about the Modem and Remote Access (or PPP) control panels? If you don't have Open Transport, you don't have them. Instead, you're expected to use a third-party program like the popular FreePPP, which is included on the CD-ROM with this book. You use *it* to enter your modem type, password, local access phone number, and so on.

FreePPP even comes with a handy extension called PPP Menu that puts a tiny icon up on your menu bar. Click this icon to view a menu of handy commands, such as Connect and Disconnect.
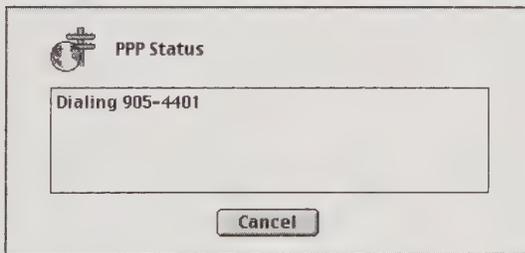
Figure 25-4: The all-too-familiar Open Transport status window takes over your Mac for a minute or so while it connects to the Internet. (If you have Mac OS 8.5 or later, it says Remote Access Status instead.)

This system makes it *look* like your Internet program has just dialed up the Internet. What's actually happened, though, is that your Internet program has said to the Mac: "I'd like to go online now. Please open up an Internet connection." Your Internet software doesn't actually dial; your Remote Access (or PPP) control panel does! That's why you see the same status message shown in Figure 25-4 no matter which program is dialing.

Mac Basics

That control panel's job is to construct a bridge between your Mac and the Net. Once that connection is made, you can run as many Internet programs as you want over that bridge—simultaneously. You can be downloading a program with Internet Explorer, checking your mail with Emailer, and chatting in an America Online chat room, all simultaneously, and all over the same Internet connection.

What gets weird is that once you quit all those programs, the remote access/PPP connection remains open! That's why, after checking your e-mail

with Eudora and then quitting the program, you can now launch your Web browser and instantly start to surf — and the Mac *doesn't dial.* And no wonder — you're still connected, your phone line is still in use, so there's no dialing necessary.

Getting offline: Hanging up

Now then: what if you *want* to hang up? What if you've quit your Web browser — and now you want to use that phone line to make a voice call, for example?

There are several ways to break a PPP connection:

■ Open the Remote Access or PPP control panel again. Click the Disconnect button. The deed is done, but that's a lot of steps for something you'll be doing every day.

■ Wait. If you wait long enough, the control panel will eventually detect no activity on your Internet connection and hang up automatically. (You can change this auto-hangup interval by opening the Remote Access or PPP control panel and clicking Options. There you'll see the "Disconnect if idle for __ minutes" option.)

The only disadvantage of this automatic method is that when your Mac does disconnect, your work is interrupted by the appearance of a "The connection was terminated because of lack of network activity" dialog box.

■ Use a Control Strip module. If you have Mac OS 8.5, you're all set — the Control Strip already contains a Remote Access module that lets you hang up, dial, view your time online, and so on (see Figure 25-5).

If you have any previous system, you can use the nearly identical OT/PPP Strip module, included on the CD-ROM with this book. It, too, lets you hang up your PPP connection simply by choosing the Disconnect command from your Control Strip. (See Chapter 4 for details on the Control Strip, and see Figure 25-5 to see OT/PPP Strip in action.)

CD
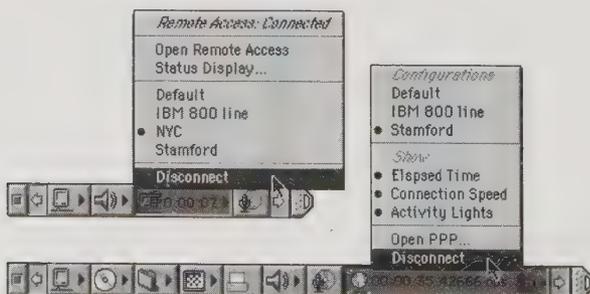
Figure 25-5: Mac OS 8.5's Remote Access Control Strip module (top) and the delicious shareware OT/PPP Control Strip module (bottom) make getting online and off extremely convenient. They also let you switch among different PPP setups without having to open the Remote Access or PPP control panel. (OT/PPP even shows your current connection speed and data-movement direction.)

- Use an AppleScript that hangs up. PPP Disconnect, for example, comes with Open Transport (it's in the Apple Extras folder); once you've stuck it into your Apple menu, hanging up is a matter of a single menu command.

Internet Connection Secrets

Switching between AOL and an ISP

For years, America Online fans had to accept the fact that they couldn't connect to both AOL and an ISP without restarting in between. (The restart was necessitated by AOL's goofy AOL Link extension.) But Open Transport changes all that; using the Configurations command in the TCP/IP control panel, you can create one setup for AOL Link and another for your ISP — and switch between them without having to restart. (Of course, it's smarter still to connect to America Online *through* your Internet account, as brilliantly described in Chapter 26 — so that you'll never *have* to switch connection methods.)

Location Manager to the rescue

There's no particular need to visit the Remote Access (PPP) control panel once you've set up various ISP connections. Consider, instead, using the Location Manager, described in Chapter 4.

Its handy, omnipresent Control Strip tile (see Chapter 4 for more on the Control Strip, too) lets you change *all* of your Internet settings — including Modem, Remote Access (PPP), and TCP/IP settings — with a single pop-up menu click.

CD

The OT/PPP Strip Control Strip module, included on this book's CD-ROM, isn't quite as comprehensive — it can't control your Modem and TCP/IP control panel settings. But the Remote Access (PPP) control panel's settings are the ones you'll most often want to change — and that's what OT/PPP Strip is great for, letting you zip back and forth between settings (AOL and ISP, or one town's access phone number to another) without ever having to visit a control panel.

Monitoring your connection speed

When you've got dialing and hanging up down to a science, you don't, under normal circumstances, ever see the Remote Access (PPP) control panel. For example, you let your Internet applications (such as your Web browser) initiate the connection, and you use your Control Strip to disconnect.

But the Remote Access (PPP) control panel is actually a fascinating place to hang out while you're on line. As data comes and goes, little light-up graphs show exactly what's going on with your connection (see Figure 25-6). Better yet, you're told explicitly how fast your connection is, in Kbps — and that's how we know, for example, that the best rate you'll get with a "56K" modem is about 43 Kbps.
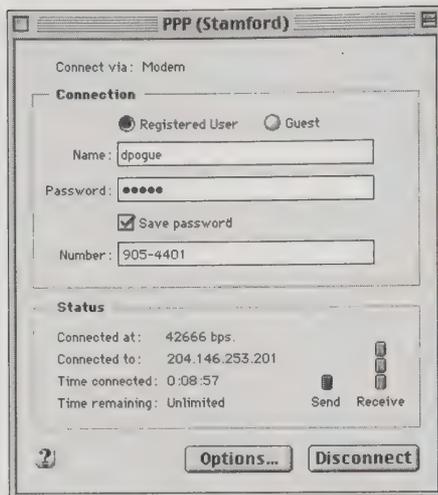
Figure 25-6: The Remote Access (PPP) control panel shows a handy set of level meters that indicate how fast your connection is and which direction the data is flowing.

Getting Around: Internet Addresses and URLs

Once you've signed up for a PPP account, set up Open Transport correctly, dialed up your Internet service provider, and established a connection, you're ready to start using the Internet. As we mentioned earlier, opening a PPP connection makes Internet services *available* to your Mac, but it doesn't connect you to any actual services — no e-mail, no Web sites, no Newsgroups. To do any of *that,* you need a program designed to interpret the particular type of Internet data you want to access: Navigator or Internet Explorer (for the World Wide Web), Emailer, Eudora, or Outlook Express (for e-mail), Fetch or a Web browser (for FTP file downloading), and so on. We'll cover these programs later in this chapter.

But all of these Internet services have one thing in common: Once they're open, you're becalmed on the Information Superocean unless you know the *address* of the particular Internet feature you want. Remember, the Internet isn't a single online service; it's a sprawling web of regional computer networks scattered all over the world, so you must tell your Mac with which one of those networks you want to hook up.

Internet addresses can look intimidating, especially if you're accustomed to the warm comfort of services such as America Online, where other users have screen names like FrogMan, or MathDude, or Bob99. Internet addresses are considerably longer because they identify more than a specific *person.*

Out of the thousands of computer networks plugged into the Internet, they must pinpoint a particular *protocol* (the type of data being transferred), a *host* (the actual file server you're connecting to), and a *domain* (the location of the file server). In the case of Web and FTP (downloadable software) sites, the address may also specify a particular folder, subfolder, and document on that distant hard drive.

The address of an Internet resource is called its *URL* — Uniform Resource Locator. (Most people pronounce it "U. R. L.," although a few, apparently under the impression that the Internet is run by European noblemen, pronounce it "Earl.") You must know a site's URL if you hope to connect to it. Here's a typical URL, along with an explanation of what all the parts mean:

http://research.whirlygig.com/flight/notes.html

   A   B   C   D   E

A. The first part of a URL always specifies the *protocol* — the type of data transfer required to interpret information from a given site. Each feature of the Internet — FTP, Web, Telnet, and so on — uses its own protocol. In this example, the *http* protocol (which stands for HyperText Transfer Protocol) indicates that this URL points to a World Wide Web page. The protocol part of a URL is always followed by a colon and two slashes. Other examples: `ftp://`, `Telnet://`, and so on.

B. The next part of a URL identifies the *host* computer to which you're connecting — in this case, *research*. This computer might be at some huge corporation, like Boeing, or it might be in a teenager's living room in Hackensack, NJ.

C. After the host name comes the *domain name* — the actual location of the host computer. In this example, the domain is `whirlygig.com`. The components of the host and domain names are always separated by periods.

The `.com` tag at the end of this domain name indicates that this is a *com*mercial institution. Other domain names may end in `.edu` (a school or college), `.gov` (a government agency), `.org` (a non-commercial organization of some type), `.mil` (a branch of the military), `.net` (a network of some type), and so on. Sometimes the final tag on a domain name indicates the *country* in which the host is located: uk = United Kingdom; se = Sweden; jp = Japan; and so on.

D. The slash mark after the domain name means the next bit of information in the URL pinpoints a specific *directory* (folder) on the host computer. *Flight* is one directory (or folder) on the host computer.

E. Finally, the item *notes.html* is a specific *document*, in the directory *flight*, on the file server. Using this URL would take you directly to this document and open it up in your Web browser.

MACINTOSH SECRET

The Internet address nobody knows

The type of URL we've discussed in this chapter is called a *domain name*. Domain names are somewhat descriptive and easy to remember. Underneath the surface, though, each computer on the Internet has *another* address — its IP Address (IP stands for Internet protocol).

An IP Address is a number that identifies a specific site on the Internet. The address number is generally represented by four strings of numbers separated by dots, like this: 165.87.201.244. (Techies gleefully refer to this as a *dotted quad*.) You may remember having to type this kind of number into the TCP/IP control panel when you set up your Internet account (see Figure 25-3).

Thankfully, you don't have to know a site's IP Address to connect to it. When you attempt to connect to a valid address, a host computer in the domain you're trying to connect to compares the name you've typed (or *clicked*, if the URL is a hypertext link on the Web) with a database of all the names within the domain. The host computer (a *Domain Name Server*) finds the numeric IP Address corresponding to the domain name you've requested, and uses the IP Address to connect you to the appropriate server on the network. (Whew.) This process accounts for the bizarre "DNS (Domain Name Server) entry not found" message Netscape Navigator and Internet Explorer sometimes give you; that message means that your browser can't find any Web page IP address corresponding to the Web address you typed.

As you can see, URLs can be quite specific, pointing you to one particular file, on one computer, at one location. (Not all do, however. Many URLs simply point to the host computer; from there, you navigate, by clicking, to the particular directory and documents you want to view.)

In the case of e-mail addresses, a URL also specifies a *user*. The user's name is always included at the beginning of the address, followed by an @ (which means *at*) and the host and domain name. A guy named Schorr who works at the company used in the previous example might have an e-mail address of schorr@research.whirlygig.com.

By the way, these Internet addresses aren't something you just make up. Imagine the chaos that would erupt if several people all over the world chose the same Internet address. No, when you want to establish a new Internet address, you must pay to register that address with the Network Information Center (NIC). (You can do so by visiting the NIC's Web site, www.internic.net.) It costs $35 per year, at this writing, to have your own "domain name," such as *davidpogue.com*. Once you're registered, you have what's called a Fully Qualified Domain Name that no one else is using.

Where to Go on the Internet

No matter how you get onto the Net, you're going to be overwhelmed. As we said before, there's no hierarchy to the Internet, no welcome screen, no

logical organization. Therefore, the best secret we have to offer is to suggest a few typical, interesting, or famous places to go once you're out there.

Newsgroups

A *newsgroup* is like a bulletin board, in which one person responds to the previous message, someone else responds to *that,* and so on, for months. There are about 16,000 different topics available, from Mickey Mouse fan clubs to left-handed golfers. To access these groups, you need (as always) some commercial or shareware program dedicated to the task, such as Newswatcher or Outlook Express. You'll immediately understand the layout: you simply double-click a topic to see a list of messages, double-click a message to read it, and use the Next and Prev buttons to move through the discussion.

A word of caution: Internet regulars hold a seething hostility for newcomers — and especially for people who connect via America Online. So before you chime in with your own thoughts, read that newsgroup for a while to get the feel of it. Figure 25-7 lists some newsgroups.


```
New Groups
1381 groups
alt.fan.actors.dead
alt.fan.anna-nicole-smith
alt.fan.anna.nicole.smith
alt.fan.arun-kishan
alt.fan.bagelboy.hairballs.eehh.ack.cough
alt.fan.beatrix
alt.fan.bipolarbear
alt.fan.brad.allison
alt.fan.british-actors
alt.fan.chris-randall
alt.fan.chris.tarrant.troll.troll.troll
alt.fan.dan.melchione
alt.fan.eddie-izzard
alt.fan.electric-asp
alt.fan.ernst-zundel
alt.fan.forged.ja.email
alt.fan.fred-penner
alt.fan.gary-oldman
alt.fan.gg-allin
alt.fan.harrison-ford
alt.fan.head-librarian
alt.fan.inspector-morse
alt.fan.jester
alt.fan.jodie-foster
alt.fan.joseph-askew
alt.fan.juliwuli
alt.fan.jwalt
alt.fan.kenya-moore
```

Figure 25-7: There are newsgroups (BBS topics) of every possible description — tens of thousands of them. Here's a tiny few in the *A*s.

You might sometimes open a particular newsgroup message and find no message at all — instead, there's some button to click to begin a *download* (see Figure 25-8). True enough; despite the mixed metaphor, you can post files in a newsgroup message. In fact, in the dozens of groups whose names begin `alt.binaries ...`, you'll find *mainly* downloadable files. That's where you find things to download like FAQs (Frequently Asked Questions documents — download and read so you'll know what's going on), Mac shareware, and the photographs that have had Congress and many parents worried.
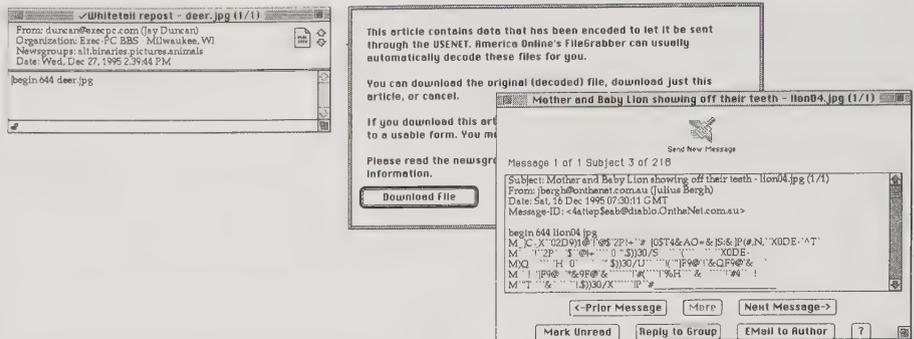
Figure 25-8: What it looks like to download a file from a newsgroup if you're using a true Internet message reader like NewsWatcher (left) — click the icon to download the file — and America Online (right). The America Online message looks like the front image here — a bunch of text gibberish — but fortunately, the America Online program offers to translate it into a real file for you.

Every discussion name seems to begin with one of these prefixes:

>   *alt.* — an alternative newsgroup hierarchy
>
>   *bit.* — duplicates of mailing lists (see Chapter 27)
>
>   *comp.* — computers, programming, operating systems
>
>   *k12.* — education
>
>   *misc.* — miscellaneous
>
>   *news.* — about newsgroups themselves
>
>   *rec.* — recreation (games, pets, sports)
>
>   *sci.* — science, medicine
>
>   *soc.* — society, culture
>
>   *talk.* — general conversation, politics

After this prefix comes a bunch of other abbreviations separated by periods. Eventually you'll be able to understand what's going on just by looking at the name of a newsgroup. For example, for humor, there's rec.humor.funny; the arts are filed under topics like rec.arts.theatre and alt.fan.letterman; scientists hang out at sci.astronomy, sci.environment, and so on; there's endless political discussions at alt.politics, personal ads at alt.personals, music talk at rec.music.classical or alt.music (-dot anything), and Mac talk by the bookful at comp.system.mac.graphics, comp.system.mac.apps, comp.system.mac.games, and so on. (Chapter 27 of this book's 4th Edition, available in electronic form on your 5th Edition CD-ROM, contains a long list of specific newsgroup titles.)

CD

(To visit a newsgroup from America Online, use keyword newsgroups.)

FTP sites

FTP refers to software that you can download. (It stands for *file transfer protocol.*) For example, `ftp.support.apple.com` is Apple's primary outlet for new and updated Apple system software and utilities. And you'll occasionally be directed to some company's private FTP site when you're trying to locate a special file or updater.

You can use a dedicated FTP program, such as the shareware Fetch, to access these and similar sites — or you can use your everyday Web browser instead. In fact, these days, true FTP is taking a distant second place to downloading files directly from Web sites, such as `www.shareware.com`.

(To visit an FTP site from America Online, use keyword *FTP.*)

Mailing lists

A mailing list is an e-mail-based discussion group; see Chapter 27 for a complete discussion.

Internet Relay Chat

Most of the Internet, if you really think about it, is like a giant answering machine or bulletin board: People leave messages now, with the hope that other people will get them later.

Internet Relay Chat (IRC) is different: It's live, real-time, typewritten conversations between people online right now. Just as in the chat rooms on America Online, most of the conversations that take place on IRC "channels" are insufferably boring, filled with inside jokes, smileys, {{{{{hugs!}}}}}, and so on. Here and there, though, IRC carries online games, instant world-crisis news, or even the occasional organized discussion.

Once you have an Internet account (or America Online 3.0), you need only two things more: an IRC shareware program (such as Homer, Ircle, or GlobalChat) and the address of a good IRC *server* (host computer). Here are some IRC server addresses in the U.S., each with many separate channels of conversation:

> `irc.bu.edu`
>
> `irc.colorado.edu`
>
> `mickey.cc.utexas.edu`

Once you've found an IRC channel, you'll be asked to make up a nickname and select the particular channel you want to join. In the little window where your typing shows up before you press Return to send it into the great electronic conversation before you, you can type various codes to gain some control over your experience (see Table 25-1).

Table 25-1:   IRC Control Codes

Code	Description
/help	Brings up a more complete list of commands than this one, with explanations.
/list	Shows you a list of channels available. The ones that begin with a # symbol are the public channels.
/join #hottub	Lets you join the conversation called #hottub (always a popular one); obviously, you can substitute the name of any existing channel.
/names -min 20	Shows you a list of people on any channel with more than 20 people participating.
/Quit	Ends your IRC session.

The World Wide Web

The most popular part of the Internet — the part you couldn't avoid hearing about if you tried — is the World Wide Web. We know third graders who run around urging schoolmates to "check out" their Web pages. Web addresses are showing up everywhere — on business cards, in print ads, even in TV commercials. (Have you noticed www.sony.com or www.ford.com flashing by at the end of recent movie ads and car commercials? Those are Web sites.)

The Web has become incredibly popular for one simple reason: It *isn't* like the rest of the Internet. It looks friendly and familiar to Mac and Windows users. When you connect to a Web file server, you don't encounter streams of UNIX code or view lines of monospaced text. Instead, information is displayed with a completely graphic interface — formatted text, pictures, color icons, and interactive buttons (see Figure 25-9).

Mac Basics

Navigating the Web requires little more than clicking buttons and colored, underlined text phrases known as *hypertext links* (shown at the bottom in Figure 25-9). You're automatically transported from one Web page to another, even one file server to another — without having to type in a single Internet address. You can also download text, pictures, sounds, movies, and other documents to your computer with the click of a button.

When you connect to a Web site, you're actually logging into a *file server* (hard drive) on a remote computer network. Each document that you access on that server is called a Web *page*. No matter how tall a particular document is, it still constitutes one *page* on the Web. The hypertext links embedded in the page can transport you to a different location in the document you're currently viewing, to a different document on the same file server, or even to a file server located in a different country. That's the beauty of the Web — by clicking on hypertext links, you can jump seamlessly from a file server in Show Low, AZ, to another in Florence, Italy. You can weave your way across the globe, jumping from link to link, to track down the information you want — that's why it's called the World Wide Web. The URL information your Mac

needs to make those jumps is all embedded in the hypertext links. As far as you, the customer, are concerned, linking to a Web site down the street is no different than linking to one in Tanzania.
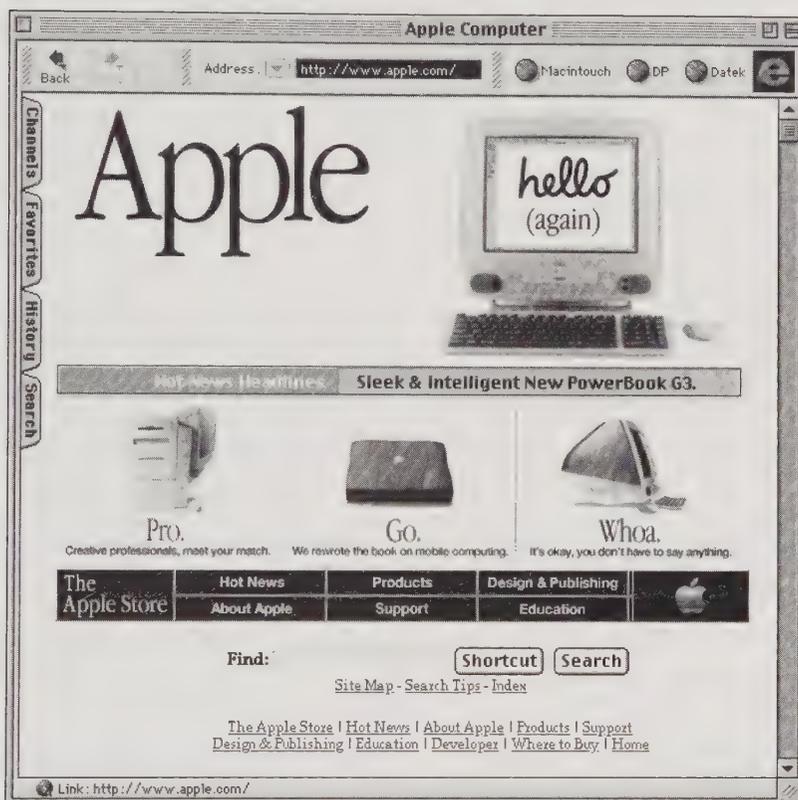
Figure 25-9: A typical Web page as it appears when viewed in Internet Explorer. Just click things that look interesting. It's like a multimedia elevator: Push a button to get where you want to go.

A World Wide Web warning

All of this amazing online multimedia stuff stresses your modem nearly to the breaking point. Even with a 56 Kbps modem (see Chapter 24), you still wait about 10 seconds, or more (if it's a fancy page), for *each* Web page to float onto your screen. (If you connect through America Online, the wait is even longer for each page.) Don't even try connecting to the Web with a 9,600 bps (or slower) modem.

People who get seriously Web-addicted — and many do — wind up spending huge amounts of money to install special high-speed phone wires (such as T-1 or ISDN; see Chapter 24) that bypass the modem altogether. For them, downloading software from Web pages is nearly instantaneous.

Strange But True

Even they, however, wind up waiting for Web *pages* to appear on their screens — they, too, are at the mercy of the *other* end's modems, network software, and wiring speed. Getting frequent busy signals (in the form of "that URL not available" messages) when trying to access favorite pages is a fact of Web-surfing life.

In any case, remember that you *don't* have to wait for a page to finish arriving on your screen. You can go ahead and click whatever *part* of it you can see — such as the Back button in your Web browser, for example — if you're impatient. You can even start downloading a file and then jump to a different Web page; your file merrily continues downloading in the background.

Web browsers

Viewing Web pages requires a special program called a *browser,* such as Netscape Navigator or Microsoft Internet Explorer. A browser interprets information transmitted over the Internet and displays it on your screen as graphics. The actual information your Mac gets — and that the browser translates — is coded text. It's in a computer language called HyperText

DIALOGUE

Navigator vs. Explorer

JS: What's this about Microsoft Internet Explorer being faster and more stable than Netscape Navigator? Did you write that?

DP: Happens to be true. Hate to break it to you, fans, but I can't use Netscape Navigator for more than about five minutes without its unexpectedly quitting.

JS: You're obviously using a version before 4.0.5, which is rock-solid. And besides, Navigator is so much faster than Explorer!

DP: Maybe, but Explorer 4.01 is 35 percent faster than 4.0 —

JS: — which makes it *approach* the speed of Netscape

DP: — but much as I hate to say this, Explorer's features wipe the floor with Netscape.

JS: What am I hearing!? This, from the guy who wrote a book called *The Microsloth Joke Book?*

DP: Believe me, I lose sleep over this.

JS: Well, what features are you talking about?

DP: It's got a pop-up menu of sites you visited every day in the last couple of weeks. No more, "What was that site I visited last Tuesday?" It auto-completes URLs for you; you just type the first few letters. It lets you block those incredibly annoying animated GIFs on Web pages!

JS: OK, *that's* pretty cool.

DP: And it needs 4 megs of RAM. Not 7 or 8, like Netscape.

JS: You're thinking of the entire Communicator package. Navigator itself only needs 4 . . .

DP: And plus, you can customize the toolbar! You can make a toolbar of your favorite Web sites; one click, and you're there.

JS: Netscape has that too!

DP: You're kidding.

JS: Yeah, I just saw it in the online help the other day . . . let's see, sure, here it is. You can add your own favorite pages to the Personal Toolbar; simply drag and drop a Web page's handle onto this toolbar.

DP: Really?

JS: (Note: This feature is not available on Mac OS systems.)

DP: Ah.

JS: But come on, David — *Microsoft?* You're gonna sit here with a straight face and tell me you prefer the Microsoft alternative?

DP: Hey — at least they didn't get any money out of me.

Markup Language (HTML), which can transfer formatted text and graphics, the distinguishing characteristics of the Web. (It's sent over the Internet using a protocol called HyperText Transfer Protocol, which explains why every Web address starts with *http*.)

As you browse the Web, the browser keeps track of each Web page you visit. You can instantly jump back to a site you've already been to during your online session by choosing its name from the Go To menu — or by clicking the Back button in the browser window.

We'll cover Netscape Navigator/Communicator and Microsoft Internet Explorer later in this chapter. For a discussion of Apple's abandoned Cyberdog, see the electronic edition of *Macworld Mac Secrets, 4th Edition* (on the CD-ROM that came with this book).

CD

Helper apps and plug-ins

Because Web sites can contain links to such a wide variety of media, most browsers are designed to work with *helper applications* — little supplementary programs that handle the display of specific kinds of media. One helper may play QuickTime movies, another can play back AIFF sounds, a third can open JPEG images, and yet another plays QuickTime VR movies. When the browser encounters a specific type of data, it automatically launches the appropriate helper application. If your Mac has the RAM available, that helper program displays or plays back the picture, movie, or sound in a new window of its own. (You can download a complete collection of helper apps and *plug-ins,* described next, from Netscape's own home page, www.netscape.com. Then specify which little program you want to use for which media type using your browser's Preferences command.)

Helper apps are not to be confused with *plug-ins.* True, plug-ins accomplish many of the same tasks as helper apps — serving as little multimedia SimpleTexts and Movie Players for incoming Web data. But plug-ins make the show appear to take place right *on* the Web page, rather than in a window of its own. For example, MacroMedia's Shockwave plug-in shows animations right on certain Web pages. This kind of add-on makes the Web's multimedia offerings appear to be better integrated with the Web, but the cost is RAM; the more plug-ins you have installed, the more RAM your browser needs to run.

Netscape Navigator/Communicator

At one time, the vast majority of Web surfers used a browser called Netscape Navigator. At one time, it cost $50; today, it's free (from www.netscape.com, among other places).

Netscape Navigator is not to be confused with the sprawling, multimegabyte affair called Netscape Communicator. Communicator incorporates many Internet features for which you used to need separate programs; it can read your e-mail, let you design Web pages, read newsgroup messages, and so on.

Fortunately, a standalone Web browser — Netscape Navigator — is still available separately, and it's still considerably faster than Internet Explorer.

The meteor shower on my Mac

Q: Sometimes when I'm Web surfing, there's a little N logo (or E logo) in the upper-right corner of the screen. It looks like it's getting bombarded by meteorites or something. What's that about?

A: The N is for Netscape; the E is for Explorer. (Even America Online 4.0 has that — an A, of course.)

Whenever this little logo is spinning, or moving, or has meteorites, your browser is trying to tell you that it's *working.*

For example, suppose you click a link, but nothing seems to be happening. A quick glance at that N or E logo tells you whether or not the Mac has crashed (no animation) — or is just trying to get a Web page from a particularly slow file server somewhere (animation).

Microsoft Internet Explorer

If you know anything about Microsoft, you know it's not about to sit back and let any company have 80 percent of *any* market. So how did Microsoft strike back at Netscape? By whipping together a rival browser program of its own and giving it away free. To the astonishment of Mac fans, Microsoft Internet Explorer was more richly featured than Netscape Navigator. (Thousands of people, in fact, are using Explorer without even realizing it: it's the browsing software built into America Online 3.0 and later.)

Cyberdog

CD

Several years ago, Apple came up with a browser of its own: a rather remarkable technology called Cyberdog. Based on the company's abandoned Open Doc software-component technology, Cyberdog was designed to serve as Web browser, e-mail program, FTP software, Telnet software, Gopher program, URL manager, newsgroup reader, and more. It was all integrated into a single, consistent, elegant, drag-and-drop software suite. You'll find our write-up in the electronic edition of *Macworld Mac Secrets, 4th Edition* (on the CD that came with this book).

Web Browser Secrets

The golden typing shortcut

Speed Tip

The most important shortcut we can possibly communicate: If you're entering a URL that's in a standard company's format, such as `http://www.sony.com` for Sony or `http://www.adobe.com` for Adobe, you can omit everything except the company's actual name. That is, in your Web browser's Go To: field, you can type only *sony* or *adobe*; Navigator or Explorer will add the rest of that junk — `http://www.` and `.com` — for you. This works with any URL that starts with `http://www.` and ends with `.com` — and thousands do. In every case, just type the company name that appears in the middle of the address!

ANSWER MAN

The inevitable Java sidebar

Q: For three years straight, I haven't been able to turn my head without seeing a screaming headline, book title, or worldwide cult about Java. What is it, do I want it, and how come I don't get it?

We're with you, pal. We can't remember so much hype about a technology that impacts our lives so little.

Here's what you need to know: Java is a programming language developed by Sun Microsystems. The idea was nice enough: the exact same Java programs can run, unmodified, on any kind of computer — Mac, PC, whatever. Think of the time savings! The simplicity! The sales!

It didn't work out that way, despite all the headlines, books, and cults. Nobody wound up writing Java programs — standalone, marketable, meaningful programs. In general, that's because Java programs are slow and clunky.

About the only impact Java has had on our lives are the tiny Java thingies called *applets* that you'll run across on the occasional Web page. By embedding a bit of Java, Web page creators can jazz up their sites with little interactive games, miniature programs, and more annoying animations. On the other hand, a few Java applets are kind of neat; we like the real-time sports-score ticker on ESPN's SportsZone (espn.sportszone.com), The Trip.com's real-

time flight tracker, which shows you exactly where your family's plane is at this exact moment (flight.thetrip.com/flightstatus), and Microsoft Expedia's "click to select a seat on the map of this plane" thing (expedia.com).

If you do, in fact, encounter a Web page that requires Java, you'll see nothing at all unless your Web browser is set up with a *Java virtual machine* — a Mac program that can run Java programs (usually inside your Web browser window). You've got a choice of three: Apple's own Mac OS Runtime for Java (MRJ), which is probably sitting in your System Folder at this very moment, plus the Java engines that come with the Big Two Web browsers (Netscape Navigator and Internet Explorer). (Both of those programs are included on the CD with this book.)

If you use Netscape Navigator 4.0x, you have to use the Netscape Navigator Java software. If you use Microsoft Internet Explorer, however, you can choose to use either Apple's or Microsoft's much faster Java software. (Make your selection in the Preferences dialog box. Click the Java pane, then select either Microsoft Virtual Machine or Apple MRJ. Be sure to turn on the *just-in-time (JIT) compiler* option, a technical scheme that makes Java programs run faster.)

Actually, that advice may not even be current as you read this; Apple and Microsoft announced in early 1998 that they're working on merging their Java "virtual machine" efforts.

Nor do you have to include the http:// (or ftp:// or gopher://, and so on) when typing an Internet address. Navigator is smart enough to examine each address, figure out what type of URL it is, and then add the appropriate protocol prefix itself.

Similarly, you can even skip the *www.* and *.com* when specifying a specific location or document *within* a Web site. For example, to reach www.odysseus.com/goddesses/calypso/, all you have to type is odysseus/goddesses/calypso/.

Make the World Wide Web wider

Strange But True

The point of the Web is that it's a *visual* experience. It blows our minds, therefore, that Netscape and Microsoft seem hell-bent on *eating up* our screen real estate with toolbars, directory buttons, a status line, scroll bars, and so on.

If you want to fill your browser window with as much of a Web page — and as little of your browser software — as possible, use your browser's View menu to turn off all those ridiculous toolbars and strips.

Speed Tip

You can even hide the box where you type in new URLs. You can still enter new URL addresses even when the location bar is hidden; just press ⌘-L to open the URL window, type the address you want (or just a part of it, as explained in the previous Secret), and hit Return.

In Explorer, consider dragging your various toolbars *on top* of each other, as shown in Figure 25-7; you can always drag the little "grip-strip" dividers horizontally when you need to see more or less of one of these toolbars.

In Netscape Navigator (but not, alas, Version 4.0 or Communicator), a series of ingenious Control-Option keystrokes let you go even farther. As readers Greg Brume and Alberta Draves point out, you can make Navigator fill your monitor *completely,* even obliterating scroll bars, menu bars, and the window edges. To make this work, hold down Control-Option along with one of these letters:

A— Fill the screen completely, resulting in an expansive, unobstructed view of the Web

H— Hide all scroll bars

J— Bring back scroll bars

K (or Page Up) — Show only the vertical scroll bar

L (or Page Down) — Show only the horizontal scroll bar

W— Go to the White House

M— Go to the Fish Cam

If all of that seems a bit extreme, then at least consider compressing Navigator's gigantic icon pictures. To do so, choose Options ➪ General Preferences ➪ Appearance tab ➪ Text.

Scrolling without scrolling

Contest Winner

Whether your scroll bars are hidden or not (see the previous secret), you can still scroll without using your mouse. As free book winner James Muspratt discovered, you can press the Space bar to scroll down the current Web page in both Navigator and Explorer. (This works only when your cursor isn't in a text field, such as the address strip at the top of the screen — after all, *then* pressing the Space bar makes a space!)

He further notes that in Microsoft Internet Explorer, you can press Option-Space to scroll back *up* the screen. We hasten to add that in Netscape Navigator, you can also press ⌘-up or ⌘-down arrow to scroll the page.

The RAM-disk acceleration trick

Speed Tip

In Chapter 9, you can read about the exhilarating joy of running programs from a RAM Disk, a scheme that treats a portion of your Mac's available RAM as a virtual hard disk — a very, very fast virtual hard disk. Few applications benefit so dramatically from a RAM disk as Web browsers.

No, the RAM disk won't speed up your modem or improve the quality of your phone connections. But it will accelerate your browser's ability to process the incoming data, scroll through pages once they've been transmitted, and display graphics.

The idea here is to train your browser to store its Cache Files — the hundreds of scraps of text and graphics that make up a Web page — on a RAM disk. Once it's finished downloading these components, the browser doesn't have to read the hard drive for them in order to compose the finished page; it grabs them from *RAM,* where they're instantly accessible.

CD

First, create a RAM disk. You can use the Mac's built-in Memory control panel for this function, or ShrinkWrap (included on the CD-ROM with this book), or any of the other methods described in Chapter 9; you'll need a RAM disk of between, say, one and five megabytes.

Now all you have to do is train your browser to deposit its cache files onto the RAM disk:

Navigator 3 and earlier: Choose Options ➪ Network Preferences ➪ Browse ➪ Desktop.

Communicator/Navigator 4: Choose Edit ➪ Preferences ➪ Advanced ➪ Cache ➪ Choose ➪ Desktop.

Internet Explorer: Choose Edit ➪ Preferences ➪ Advanced ➪ Change Location ➪ Desktop.

No matter which browser you're using, you now wind up looking at the contents of your desktop. Click the RAM disk and select it as the new location for your cache files.

Now start browsing. You'll be absolutely thrilled with the speed increase.

The no-graphics, no-advertisements speed tip

We're quietly astounded at the number of Mac fans we meet who aren't aware that they can *quadruple* the speed of their Web surfing activities — by turning off graphics. Yes, we realize that graphics are what make the Web look so compelling. But we also know that graphics are 90 percent of what takes Web pages so darned long to arrive on our screens! You owe it to yourself to try, just for a session or two, turning graphics *off*.

You still get fully laid-out Web pages; you still see all the text and headlines, in their correct fonts and styles. But wherever a graphic would normally be — wherever you would have had to wait for eight seconds — you'll see an empty rectangle containing a generic "graphic goes here" logo, as shown in Figure 25-10. If the Web-page designer has done a decent job, you'll even see text (inside the box) that identifies the graphic that would have been there. (Note to the HTML-savvy: You use an ALT tag to create this graphics caption.)
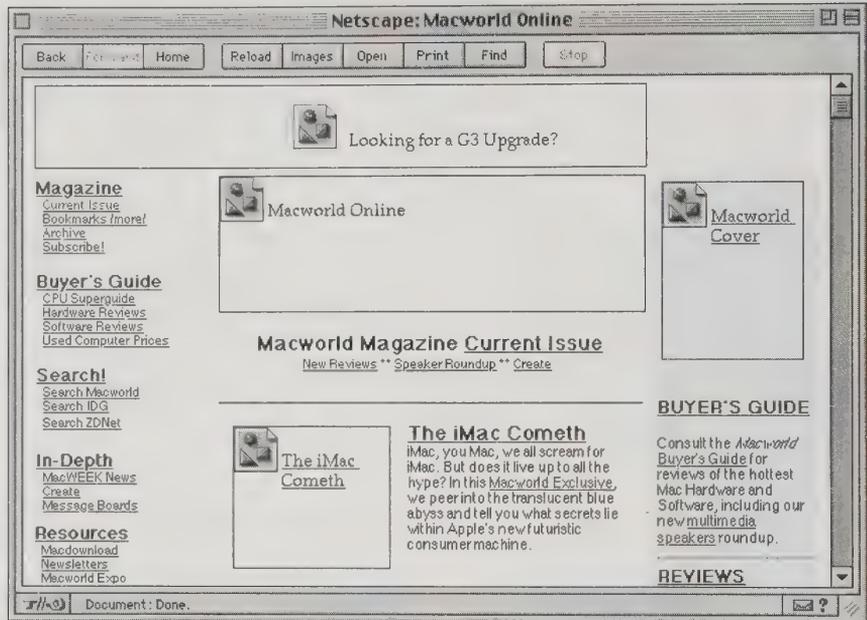
Figure 25-10: The *Macworld* Web page without graphics — and ads. It loaded in *one second.* Now, this isn't so bad, is it?

If you like the sound of this arrangement, here's how to make it so:

Netscape Navigator 3: Choose Options ⇨ Auto Load Images, so that it's no longer checked.

Netscape Communicator/Navigator 4: Choose Edit ⇨ Preferences ⇨ Advanced ⇨ Automatically Load Images.

Internet Explorer: Choose Edit ⇨ Preferences ⇨ Web Content ⇨ Show Pictures.

The speed you gain is incredible. If you ever *do* want to see a graphic that's missing, just hold the mouse down in the empty rectangle and choose Load This Image (or Load Missing Image) from the pop-up menu that appears. (You can also load *all* the images for the page you're on by choosing Load Images or View Images from your browser's View menu.)

ANSWER MAN

Such slow downloading!

Q: I don't believe it! I spent all this money on a 56K modem, but when I try to download something from the Web, Netscape Navigator tells me I'm downloading at 4K per second, tops! Where did the remaining 52K per second of speed go?

A: Well, you obviously haven't read our masterful expose of the 56K-modem myth in Chapter 24. There you'll learn that *no* 56K modem gets much higher than, say, 43K per second; static on the line, the modem on the other end, and other factors further reduce that throughput.

Q: 43K per second? I'd give my right eyeball for 43K per second! But I'm not getting anything close to that — I'm telling you, Netscape says I'm getting 3 or 4K, not even in the double digits!

A: Would you let us finish?

It turns out that Netscape's little download window is telling you how many kilobytes (K) per second you're getting. K are what you're used to — they're what you measure files with in the Finder, they're how you measure a floppy disk, and so on.

It's the *modem* measurement that's goofy. In the case of your modem, the *K* doesn't stand for kilo*bytes* — it stands for kilo*bits* per second. Because there are eight bits in a byte, your 56K modem is actually only a 7K modem if you're measuring in the familiar kilobytes.

So a download rate of 4K per second is about right. If you're lucky.

Set your own home page

When you first launch your browser, it's configured to transport you — where else? — to your browser company's (or your ISP's) home page, where you can purchase all manner of products, accessories, and action figures.

If you're tired of starting every one of your online sessions with a visit to the Netscape or Microsoft site, you can change your startup page to any other site you want.

Netscape Navigator: Choose Options ➪ General Preferences ➪ Startup.

Netscape Communicator: Choose Edit ➪ Preferences ➪ Navigator. Type your preferred home-page address into the blank.

Internet Explorer: Choose Edit ➪ Preferences ➪ Home/Search.

In all cases, you should now see the Home Page Location field. Replace the address there with the URL of your choice (see Figure 25-11).

And what would make a better home page? Consider using www.macintouch.com, a daily summary of developments in the Mac universe; www.apple.com, Apple's Web site; www.macsurfer.com, a daily list of headlines about the Mac industry from around the world; your favorite newspaper's site; a search page like www.yahoo.com; or, of course, your own Web page.
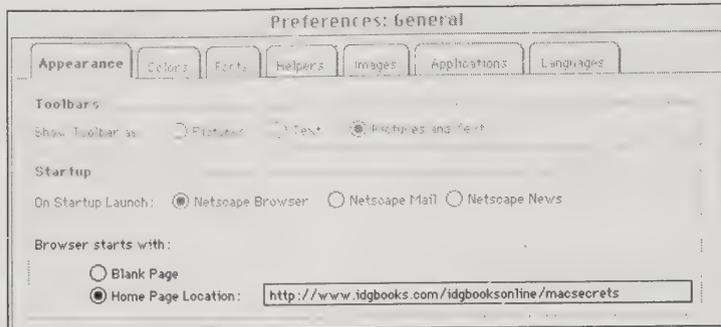
Figure 25-11: Start surfing on the Web page of your choice. Just type in the URL you want in the Home Page Location field.

Turn your bookmarks into your home page

Here's a great variation on the previous secret: Set your Home Page Location to your own *bookmarks* list.

Start by opening the little-known bookmarks Web page that lies deep within your hard drive:

Netscape Navigator: Use File ⇨ Open File. Open your hard drive ⇨ System folder ⇨ Preferences ⇨ Netscape ⇨ the file called Bookmarks.html.

Netscape Communicator: Use File ⇨ Open ⇨ Page in Navigator. Open your hard drive ⇨ System folder ⇨ Preferences ⇨ Netscape Users ⇨ (Your Name) ⇨ the file called Bookmarks.html.

Internet Explorer: Use File ⇨ Open File. Open your hard drive ⇨ System folder ⇨ Preferences ⇨ Explorer ⇨ the file called Favorites.htm.

When the file opens, you'll see its location listed in the URL address strip at the top of the window. Copy the text in that box, and paste it into the Home Page Address field (as described in the previous Secrets).

From now on, when you launch your browser, the first thing you'll see is a page containing your own bookmarks. Clicking on any of the bookmarks will take you directly to that site.

Knowing about the secret bookmark Web page can lead to all kinds of juicy possibilities. For example, you could upload that bookmarks document to your *own* Web site (see Chapter 28) — and thereby have your favorite bookmarks available *on the Web,* accessible to you no matter where you go or what computer you use to get online.

Worth Learning

Launch your browser without dialing

You're probably used to launching your Web browser and immediately hearing the modem dial. Both Netscape and Internet Explorer assume that if you're launching the browser, you intend to go online.

But that isn't always what you have in mind. Maybe you want to re-open a Web page you've saved onto your hard drive. Maybe you want to see how *your* Web page looks — the one you've designed but haven't yet uploaded to the Web. Maybe you're writing a chapter about Web browsers and want to test out some tip or trick without actually dialing.

If you use a page of bookmarks as your startup page, as described in the previous secret, you're already enjoying this delightful situation. If not:

Netscape Navigator: Choose Options ⇨ General Preferences ⇨ Appearance ⇨ Blank Page.

Netscape Communicator: Choose Edit ⇨ Preferences ⇨ Navigator ⇨ Blank Page.

Internet Explorer: Choose Edit ⇨ Preferences ⇨ Home/Search ⇨ Use None.

That's all there is to it. You can now safely launch your browser without actually connecting to the Internet — until you type in a URL and press Return (or choose one of your bookmarks).

(If you want to launch your browser only *occasionally* without going online, drag a saved Web page or HTML document onto its icon, instead of making the semi-permanent changes listed above.)

Bookmark secrets

If you keep adding Web sites to your Bookmarks or Favorites, you'll eventually end up with one huge, unwieldy menu. Fortunately, both Netscape and Microsoft have made it easy to rearrange this menu.

Netscape Navigator 3: Choose Window ⇨ Bookmarks.

Netscape Communicator/Navigator 4: Choose Bookmarks from the weird little menu-bar icon (that's two menus to the right of the Go menu).

Internet Explorer: Choose Favorites ⇨ Open Favorites.

The window that now opens looks a lot like a Finder window, with all your bookmarks displayed in a list view. Here are some of the things you can do to impose order on a chaotic list:

■ Create folders in your Bookmarks window (using the New Folder command — its location varies by browser) to sort your bookmarks into logical groups. Give each folder a name reflecting a particular category — Search Engines, Research, Concerts, and so on — then drag the appropriate bookmarks into these folders. When you're finished, your Bookmarks menu will be transformed into a nicely-organized hierarchical menu (see Figure 25-12).
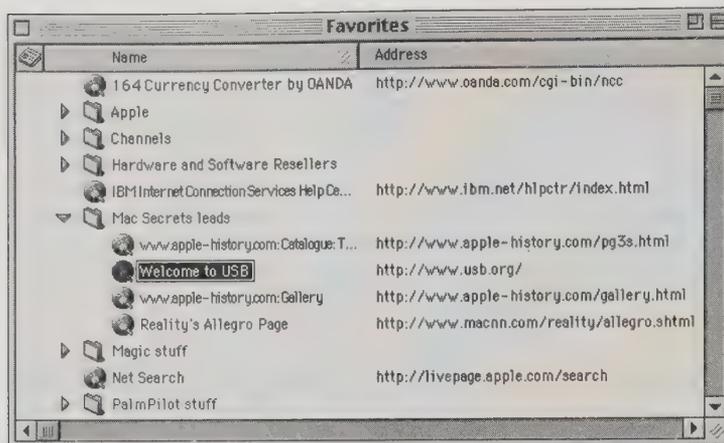
Figure 25-12: Adding folders to the Bookmarks window makes for a more organized, hierarchical Bookmarks menu.

- Use the Insert Separator or New Divider command to add separator lines to your Bookmarks menu. To add a separator, first click on the item in the Bookmarks window just *above* where you want the separator line to appear, then choose the command.

- Drag bookmarks, folders, and separators in the Bookmarks window to arrange them in any order you want.

- Press ⌘-X or ⌘-Delete to delete a selected bookmark, folder, or separator.

- Netscape only: Click a folder in the Bookmarks window, then choose Set to Bookmarks (or Set as Bookmarks Menu Folder) from the Items or View menu (depending on your version of the program). Now, your Bookmarks menu will contain only the bookmarks contained in that one folder. If you have dozens of bookmarks stored, this is a perfect way to temporarily filter out bookmarks you know you aren't going to need during a given online session. To restore your complete Bookmarks menu, click on the top Bookmarks folder, then choose the Set to Bookmarks Menu command again.

The cheapskate's bookmark manager: the Finder

If you get serious about bookmark editing, all kinds of desktop-based Web-address managers are available, from commercial programs to shareware.

Remember, though, that the world's least expensive bookmark manager awaits: your own desktop. You can drag a bookmark or favorite *out* of the Bookmarks or Favorites window directly onto your desktop, where it turns into an icon. In fact, you can even drag a highlighted *URL* out of the address

strip at the top of the window — not necessarily a bookmark — to the desktop, too. (Reader Mark Cannata drags them, in fact, directly into his Stickies desk accessory: the ultimate low-rent URL manager. And how does he launch them from Stickies? Simple: He's installed the extension called IceTe — part of the Internet Config freeware suite — which launches your favorite browser whenever you ⌘-click a URL in any program that respects Apple's text-processing guidelines.)

Dragged-to-the-desktop icons can be filed into folders, inserted into your menu, launched with QuicKeys, and so on. From now on, leaping directly to a certain Web site is only a mouse click away, no matter what program you're using.

The Mac-wide bookmark manager: Mac OS 8.5

In Mac OS 8.5, you can go the previous secret one better. That trick involves dragging Bookmarks or Favorites out of your browser to the desktop.

But in Mac OS 8.5 and later, you can highlight a Web address (or any other kind of Internet address) in *any* program that supports drag-and-drop editing (see Chapter 1). Drag the highlighted text to the desktop, and you create an *Internet Location Document,* which you can thereafter double-click to revisit the address it lists. Figure 25-13 should make this clear.
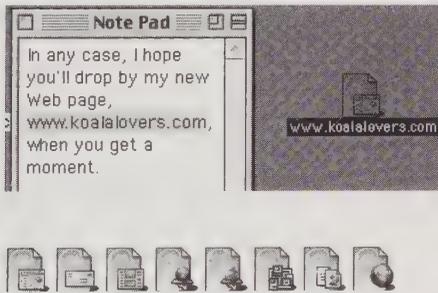
Figure 25-13: Drag a highlighted Internet address out of any drag-and-drop program (top) to the desktop to create an Internet Location Document. The various kinds of documents you may create are shown at bottom: from left, Web pages, e-mail addresses, newsgroups, FTP sites, AppleShare serves and zones, HTML files on your Mac, and miscellaneous Internet addresses.

The Mac instantly recognizes eight different kinds of Internet addresses, as shown in Figure 25-13, and adds an icon to match. These kinds are:

- **Web pages** (`http://www.apple.com`)
- **e-mail addresses** (`mailto:John@mail.apple.com`)
- **newsgroups** (such as `news:news.apple.com`)
- **FTP locations** (such as `ftp://ftp.apple.com`)

ANSWER MAN

Netscape's famous About: URL

Q: Hey! I e-mailed you with a cool Netscape secret, and I didn't win anything!

A: You and everybody else, pal. These are, apparently, the most popular secrets in Mac land.

Still, if you've got a lot of time to kill, here's what you do: Click in the URL strip at the top of the window. Instead of the usual *http://www.* stuff, simply type *about:* and then one of the following words:

Mozilla, nothing, anything, news, plugins, authors, javalogo, rsalogo, logo, ari, atotic, blythe, chouck, dmose, dp, ebina, hagan, jeff, jg, jsw, jwz, karlton, kipp, marca, mlm, montulli, mtoy, paquin, robm, sharoni, terry, timm. (The last bunch are the programmers' home pages.)

A few of these little surprises stopped working when Navigator was upgraded to Communicator. Still, there's enough still working to make you realize you've stumbled onto a veritable Easter egg factory.

- **AppleShare servers** on your office network (such as `afp://at/Software Development:IL6 4th`)

- **AppleTalk zones** on your office network (such as `at://IL6 4th`)

- **actual Web files** on your Mac, stored as a path name (such as `file:///Macintosh HD/Desktop Folder/Web Pages/index.html`)

- **nonstandard Internet addresses** (such as `<unknown URL type>://why.not.com`)

Double-click a Web page, and your browser launches and begins dialing that site. Double-click an e-mail address to open a new, blank, pre-addressed message to that person in your favorite e-mail program. And so on.

Cool, huh?

The mouse-click contextual menu

See a nice graphic you'd like to have as your very own? Find a page whose URL you'd like to e-mail a friend?

Mac Basics

That's why both Netscape and Microsoft's browsers have contextual menus — pop-up menus that appear at your cursor tip — listing such commands as Save Image to Disk, Open URL in New Window, Copy Link to Clipboard, and so on.

Drag-and-drop multimedia

While we're on the topic of "basics" that surprise a lot of people: don't forget that you can drag pictures, QuickTime movies, and sounds directly out of

your Internet Explorer or Netscape browser window *onto the desktop*, where that multimedia scrap now appears as an icon. Cool! (Even cooler: In a Netscape browser, add the Option key as you drag a picture, and it turns into a picture *clipping* file on the desktop instead of a GIF or JPEG.)

Strange But True

Reader Greg Brume's interesting observation about this trick: if you drag a *link* from a Web page to your desktop, you don't get a little clipping file of that URL — instead, you get the entire text of the Web page to which that link leads!

Internet Explorer Secrets

Internet Explorer 4 keystroke power

Speed Tip

One of Explorer's juiciest features is its auto-completion of URLs. If you start typing a Web address that the program recognizes (because you've visited it before), it fills in the rest of the address automatically. If it guesses right, just press Return, and you're done. If it guesses wrong, either keep right on typing — or press Control-up arrow or -down arrow, which cycle through the other URLs the program knows about that begin with the letters you've typed so far.

The Control key is also handy in editing your URL. In conjunction with the right- and left-arrow keys, the Control key lets your cursor leap from chunk to chunk of the address you're typing. Even if the address strip is completely blank, pressing Control-right arrow fills in `http://www` for you.

And one more awesome keystroke: ⌘-clicking a link instantly opens that link in a new window. You'll love that one!

Ingenious searches in Internet Explorer 4

Internet Explorer Version 4 offers some highly snazzy search shortcuts. For example, without even having to go to Yahoo or InfoSeek, just type *go* or a question mark into the usual address strip at the top of the window, followed by what you want to search for — and then press Return. For example, you could type *go Electric Light Orchestra* to do a search for "Electric Light Orchestra," even without going to a search page!

Equally cool: Click the Search tab at the left end of the window. Type in what you're looking for; the results appear in the left-hand pane of the browser, as shown in Figure 25-14.

But *that* part everybody knows. The best part is when you point to each of the "hits." As shown in Figure 25-14, a pop-up balloon shows you the first couple of paragraphs of each found Web page — instantly, without your even having to go to that page, wait for it to download, and so on. There's no better way to weed through a search engine's list of found Web pages.
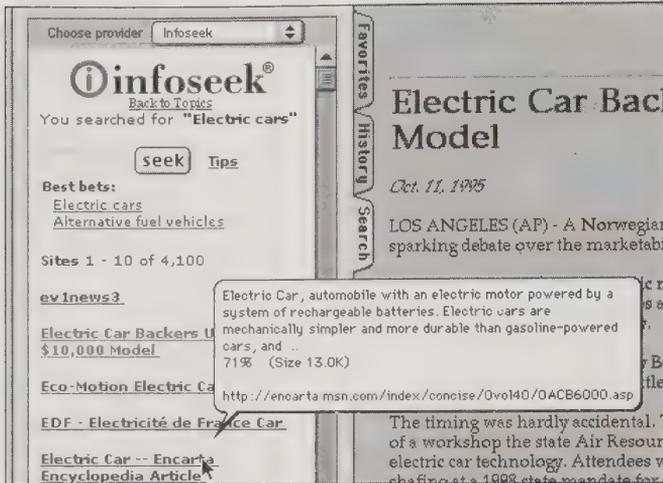
Figure 25-14: In Internet Explorer 4, just point to each search result. The balloon lets you peer into the future, showing what would be on that page if you were to actually click its name.

Netscape Secrets

Quick search in Communicator

As reader John Malm points out, it isn't only Internet Explorer that's got a cool quick-Web-search mechanism. In Netscape Communicator/Navigator 4, if you type a multi-word phrase into the "Location:" strip at the top of the browser window and press Return, you'll be taken directly to a page of search engines — with your phrase already filled in as the search phrase. Try it with, say, *Apple Computer* or *cookie monster dolls.*

Stifle the animations

As we've noted earlier in this chapter, one of Internet Explorer's most attractive features is its preference option that lets you suppress animations on Web pages (or allows them to loop only once). If you find those annoying ads as wildly distracting as we do, that feature's worth quite a bit.

Few people realize that Netscape Navigator, too, can squelch those animations. Just press ⌘-period. (For best results, wait until the text you want has already loaded — otherwise, you'll cut short the entire Web-page-loading process.)

Back to the previous site

Speed Tip

Short but very sweet: If you *Option*-click the Back button, Navigator takes you back to the previous Web *site,* not page, you visited.

Get Info comments that are actually useful

Almost nobody we know really types comments in a file's Get Info box — the window that appears when you select a file in the Finder and choose Get Info from the File menu. In fact, we've always thought of the old Comments field in the Get Info window as somewhat useless.

Worth Learning

Navigator, however, does something meaningful with the Get Info box, as reader Russ Stotyn discovered. Whenever you save a Web page as text, using Navigator's Save As command, the program automatically types the page's URL into the Get Info comments box of the saved file. If you later forget where on the Web you found your saved file, a quick look at the Get Info box will tell you. (And, of course, with System 7.5.3 and later, those comments are preserved, even when you rebuild your Desktop.)

Where to Go on the Web

All right: you're on the Web. Now what? Where do you find good Web URLs? From friends, from articles, on television, and so on. Look for "http" at the beginning of the URL — a guaranteed sign that the address points to a Web page. (Most Web URLs' domain name includes *www,* but not all of them.) Here are a few to get you started.

Ways to search for a particular page

Each of these Web pages offers a vast searchable index of *other* Web pages — not every Web page in existence, but a darned impressive percentage of them. (We'll leave off the *http://* prefix from each of these, because you don't have to type it anyway into any Netscape or Microsoft browser.)

- www.yahoo.com — **Yahoo!** has been accepting submissions from Internet sites since the beginning of it all. There's an editorial filter at work here — not every college student's home page makes it into the directory.

- www.infoseek.com — The layout of the found items at **Infoseek** is cleaner than Yahoo, and you get to see the first paragraph or so of each found Web page's text.

- www.hotbot.com — One magazine study showed that this search page comes up with the fewest redundant and irrelevant "hits" when you search.

- `altavista.digital.com/` — **Alta Vista** offers compact or detailed searches through what the company claims is the largest Web index — it knows about 8 billion words filling 16 million pages. It also provides a full-text index of more than 13,000 newsgroups.

- `www.excite.com/` — This is the **Excite** database, which contains more than 1.5 million Web documents, covering 40,000-plus Web sites.

- `www.lycos.com/` — This is the **Lycos** Web searcher, which features a database with millions of link descriptors and documents; updated daily. The index searches document title, headings, links, and keywords it locates in these documents.

For a list of fun Web sites to visit, check out Chapter 27 of the electronic edition of *Macworld Mac Secrets, 4th Edition* (on the CD-ROM that came with this book). Also check out the *Mac Secrets* Ultimate Bookmark List, provided on the CD with this book in both Netscape Navigator and Microsoft Internet Explorer formats.

CD

ANSWER MAN

Privacy and paranoia

Q: I'm worried about my privacy! What about cookies? What about the Global Cache file that tracks everywhere I've been on the Net? What about my credit-card numbers?

A: If you ask us, you're paranoid.

It's true that some Web sites, especially those for which you customize or create a password, leave a preference file on your hard drive called a *cookie.* However, no other Web site can access that cookie — only the original site you visited. Frankly, we're not quite sure why that's anything to worry about, especially because every modern Web browser alerts you shrilly before a cookie is stored on your Mac, giving you the chance to decline (f you've set your Preferences up that way). Of course, that means you decline the chance to use that Web site's customization options, too.

It's true, too, that Netscape Navigator stores a trail of URLs, documenting the most recent Web sites you've visited, in a file on your hard drive. (Using a program like CanOpener or Microsoft

Word's *all files* opening feature, open your hard drive ⇨ System folder ⇨ Preferences ⇨ Netscape ⇨ Global history. There it is.) This file is where Netscape records which links you've clicked, so that it can display them on your screen in the correct "you've already been here" color instead of the "you've never clicked here" blue.

Again, our question is: so what? Are you worried that your spouse is going to stumble onto this file and find out what you've been doing on the Net? In that case, if you'll excuse us, you've got more urgent issues to work out than an extra preference file on your hard drive.

As for credit cards — again, forget it. You're 100 times more likely to get ripped off by giving your credit-card number over the phone (to mail-order companies) or throwing away your carbons (at gas stations) than you are of having your credit-card number being intercepted online. And even so, your credit card company, not you, pays for any fraud.

The bottom line: Relax and surf!

Chapter 26

Getting the Most Out of America Online

So you use America Online, eh? Well, you and 14,999,999 other members can't be wrong. Power users sneer, but like it or not, AOL is now the biggest Internet access provider in the world. To the horror of TCP/IP nerds everywhere, AOL's members represent *40 percent* of Americans on the World Wide Web, and its membership continues to grow.

Of course, this online population explosion is not without its drawbacks: in many cities, AOL can't add local access numbers fast enough to keep up with the demand for service. Busy signals and bump-offs are an everyday occurrence for most AOLaholics. Furthermore, in any group of 12 million people, you're going to find a few bad apples; savvy users nowadays have to watch out for viruses, password-grabbing scams, and annoying jerks in chat rooms. And let's not forget spam, the endless avalanche of junk e-mail that spews from Internet accounts into your AOL mailbox.

Well, you're saying to yourself. *Now that you mention it, AOL is a living hell, isn't it?* Actually, AOL became as popular as it is for some solid reasons. It's much easier to configure than a genuine ISP account (see Chapter 25), offering e-mail, Web, FTP, newsgroups, and many other Internet features in a single consistent program. It lets you pick up an aborted download from where you left off (let's see you implement *that,* Netscape!). For worried parents, AOL offers far more control over what kids see than the Internet itself does.

This chapter will help make your AOL experience more pleasant. Whatever its faults, we can say one thing for sure about America Online: it's a seething

rat's nest of secrets. (Except where marked, the secrets in this chapter apply to both AOL 3.0 and 4.0.)

Mastering the Basics

When it comes to figuring out how to work the thing, America Online isn't what you'd call rocket science. Still, our AOL secrets presume that you're familiar with a couple of essential AOL features at the very least: *keywords* and *Favorite Places* (known to the rest of the Internet world as *bookmarks*).

Making it past the busy signal

Let's face it: trying to sign on to AOL can be frustrating. Listening to your modem dial your local access number, only to get a busy signal over and over, can make you pig-biting mad. Our best advice:

- **Keep trying.** Lame but effective, this one. At the Sign On window, click Setup. Click the arrow next to "Try _ time(s)" to have AOL dial each access number up to five times before giving up.

- **Try another access number.** Even if both of the local access numbers you've chosen are busy, there may be another access number in your area that's less busy. To see a list of access numbers (if you can *get* online), go to keyword: *access* and follow the instructions there.

  And if you can't get online at all through your regular numbers, choose Select Screen Name ⇨ New Local # at the Sign On window. AOL dials a toll-free number and displays a list of access numbers for your area code — a list that may well include newly added numbers you don't know about.

  If you can't find a non-busy access number in your area, you may have to try a number in a nearby area code (and pay the long-distance charges) or resort to one of AOL's 800 numbers to sign on: 800-716-0023 or 888-245-0113. These numbers cost 10 cents a minute, but at least they're a way on in case of emergency. (To use an 800 number, choose Select Location ⇨ 800 Number at the Sign On window.)

- If you're really desperate (and who isn't sometimes?), sign on **using a 2400 bps access number** (follow the steps just described to see a list of numbers in your area). Almost nobody uses such ridiculously slow connection speeds these days, so those old incoming AOL lines go virtually unused. If you absolutely have to check your e-mail for an important letter, for example, this may be the way to go.

- If possible, **sign on during non-peak hours** (better known as "the middle of the night"). If you don't keep late hours, let AOL do the dialing for you with an Auto AOL session (choose Mail ⇨ Set Up Auto AOL). With Auto AOL, you can instruct AOL to sign on while you sleep to send outgoing mail, collect incoming mail, download files you've earmarked for later downloading, and send and collect newsgroup postings.

■ **Use Claris Emailer** to fetch your America Online mail in the middle of the night. Not only is it a much better e-mail program, but it means you'll never lose a piece of e-mail that "scrolls off" into the AOL old-mail ether after two weeks — all your e-mail will be on your hard drive.)

Surf AOL via the Internet

What if we told you that for an extra $8 a month, you could use AOL without ever hearing another busy signal?

Strange But True

This is the greatest AOL tip of them all: you can, if you wish, dial into America Online *through the Internet*. That is, sign up for an ISP account (see Chapter 25), such as EarthLink, MindSpring, IBM.net, or whatever. Set up your account exactly as described in Chapter 25. Then, on the America Online sign-on screen, choose Location ⇨ TCP/IP for LAN or ISP. From now on, you'll dial into AOL using the *ISP's* access number, avoiding the ever-unpopular AOL busy signals.

America Online, Inc. will be so delighted that you're *not* using AOL's phone numbers that they'll actually pay you $12 a month in gratitude! To cash in on your new $10-per-month AOL rate (instead of the usual $22), go to keyword: *BYOA*. (It stands for the Bring Your Own Access plan.) There, and at keyword: *billing,* you can switch your account to the $10-a-month, I-promise-to-dial-in-through-the-Internet payment plan.

Your total payments: $20 per month to your ISP (or whatever it charges), and $10 to AOL. You're now paying a total of $8 more than you did for AOL alone. But the quality of the service can't be beat — and now you have America Online *and* a full-fledged Internet account.

You'll also reap several bonuses:

■ You can use America Online at staggering speeds, 57 Kbps or higher, if you have a high-speed line (such as an ISDN phone line) that the Internet can handle, but AOL can't.

■ If you live in an area where there's no local AOL phone number, you avoid long-distance charges — because now you're dialing in through your ISP's local number. (And, of course, you carefully chose an ISP on the basis of its *having* a local number, as described in Chapter 25.)

■ Browsing the Web is much faster and less troublesome when you use Internet Explorer or Netscape Navigator *directly* over the Internet (instead of via AOL).

As long as you can swing that extra $8 per month, this having-your-cake-and-eating-it-too secret is worth its weight in gold.

Elevator buttons: Keywords

Keywords are like elevator buttons that you push to be transported directly to specific features or areas of America Online, without having to navigate

through a bunch of screens. To use a keyword, make sure the toolbar (AOL 3.0 or 4.0) is on the screen. (If it's not, choose Window ⇨ Toolbar.) Click the Keyword button. Or, if you're a speed freak, just press ⌘-K. Either way, a dialog box appears. Type the keyword you want into the box, and press Return. (Spaces and capitalization don't matter.)

So how do you know what keyword takes you to a particular feature? Easy: It's typed at the bottom of almost every screen (see Figure 26-1).
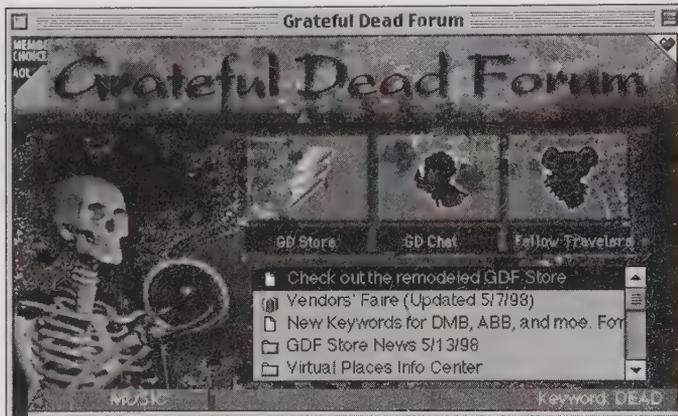
Figure 26-1: The keyword for every America Online feature that has one appears at the bottom. See it in the lower-right corner?

But there's another way to get a hang of keywords: Most people aren't aware that there's a list of all America Online keywords. To see it, use — what else? — keyword: *keyword*.

The Favorite Places management guide

Mac Basics

AOL's Favorite Places feature is like the bookmarks feature of a real Web browser. Whenever you're viewing a Web page or AOL screen you might like to visit again later, bookmark it by clicking the red heart at the upper-right corner of the window. A dialog box offers you the chance to make it a Favorite Place.

Thereafter, you can view your list of "favorite places" by choosing Go To ⇨ Favorite Places (or by clicking the Favorite Places icon on the toolbar). You can even drag-and-drop Favorite Places icons into an e-mail, where they appear as clickable launch pads for your recipient's enjoyment.

But there are even quicker ways to access your favorite places. For example, you can specify a keystroke (such as ⌘-2) to launch a Favorite Place. To do so in AOL 3, choose Edit ⇨ Edit Go To menu; in AOL 4.0, choose the Toolbar's My AOL ⇨ Edit Shortcuts. Now the Edit Go To Menu window appears (see

Figure 26-2); specify your name for this favorite place on the left side, and type the keyword or Web address on the right side. From now on, you can zip to that screen or Web page by pressing the keystroke combination listed at the far right.

```
═══════════ Edit Go To Menu... ═══════════

        Menu Title              Keyword          Key

    [Horse Forum        ]   [Horse           ]    ⌘1

    [Cigar Aficionado   ]   [Cigaraficionado ]    ⌘2

    [Myst               ]   [Myst            ]    ⌘3

    [Apple              ]   [http://www.apple.com]  ⌘4

    [Stock Quotes       ]   [Stock           ]    ⌘5

    [Big Twin Magazine  ]   [Harley          ]    ⌘6

    [Birdwatchers Chat  ]   [Birders         ]    ⌘7

    [Research & Learn   ]   [Reference       ]    ⌘8

    [Entertainment      ]   [Entertainment   ]    ⌘9

    [Grateful Dead Forum]   [Dead            ]    ⌘0

    ( Use Defaults )         ( Cancel )  [ OK ]
```
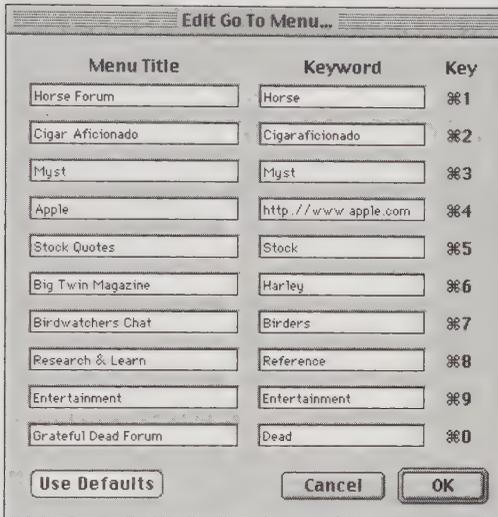
Figure 26-2: Edit your list of ten keystroke-able AOL locations, including Web pages.

Another way: Instead of *clicking* the red heart at the corner of a window, you can *drag* it to the desktop. There it becomes a "favorite place" icon, which you can double-click, file away in a folder, stash in your menu, or otherwise organize just as you would any finder document.

In AOL 4.0, you can even add a few Favorite Places to the Toolbar and access them simply by clicking an icon. Start by getting rid of the three starter Favorite Places icons at the right end of the toolbar (Quotes, Weather, Exclusives) by Option-dragging them to the Trash can on your desktop.

Then open one of your favorite locations and drag its heart icon onto the Toolbar. The Icon Selector window appears (Figure 26-3). Type a label (up to 9 characters — ooh, how generous!), choose an icon from the scrolling list, and click OK. From now on, you can hop to the location by clicking the icon on the Toolbar.

Speed Tip

One last trick about Favorite Places: clever reader Jordan Matthiesen discovered that your friends' *e-mail* addresses can also be Favorite Places. Choose Go To ⇨ Favorite Places and click New. As the Name, type your friend's name; as the Address, put *mailto:* followed by your friend's e-mail address. From now on, when you double-click this Favorite Place, you'll open a pre-addressed e-mail window to that person. There's no time to waste!
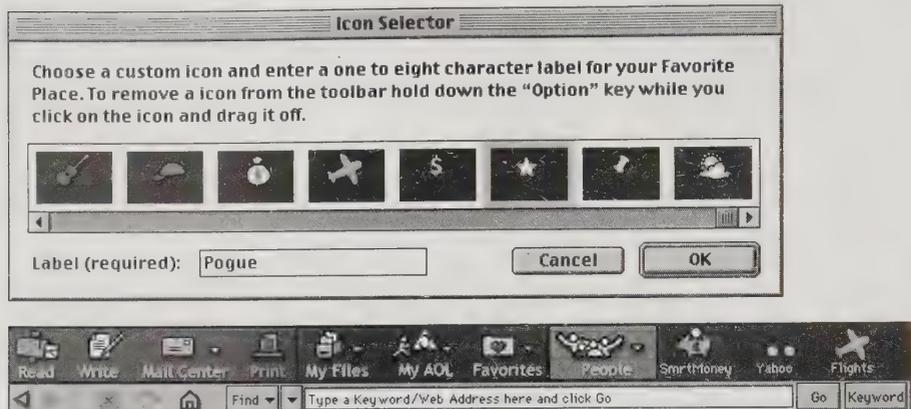
Figure 26-3: The Icon Selector window (top) lets you specify which icon you want to represent each new Toolbar button you create (bottom).

America Online Secrets

Your FREE! graphics viewer and file-unstuffer

Strange But True

The America Online program — the contents of those disks that arrive weekly in your mailbox — is a terrific tool for managing files you encounter online. You don't need to be online to perform any of the procedures in this secret — indeed, you don't even need to be an AOL member!

For example, this program can actually open and display every major online graphics format — PICT, GIF, and JPEG — beautifully, which is perfect for checking out pictures you've downloaded. (Just drag the graphic file's icon onto the AOL application's icon. Alternatively, launch the America Online program and use File ➪ Open; then locate and open your graphics file.)

The AOL program is also terrific for compressing and decompressing StuffIt files (when you're caught without StuffIt Expander, of course). To unstuff something, use the AOL File menu's Open command; open your *.sit* file; and save the decompressed file wherever you like.

To stuff a file, choose Compose Mail from the Mail menu. Click the Attach button; select the file or folder you want to compress; click the Compress Files check box; click Attach; and click Save. The result is a compressed StuffIt file that takes much less time to send by modem.

Just say no to pop-up ads

Welcome to the Nuke Pop-Up Ads Secret. You're about to learn a secret that easily covers the price of this book.

You know those pop-up ads that fill your screen every time you sign on? Of course you do. You *hate* them. But you've accepted them as a part of AOL culture; after all, you've read in the newspaper that AOL makes much of its money these days from advertising. But *we know how to turn them off!*

Worth Learning

Go to keyword: *Marketing Prefs*. In the "Tell Us What Your Popup Preferences Are" area, you'll see the options for turning off not just the pop-up ads, but also junk e-mail, junk postal mail, and junk phone calls. Depending on your version of the software, you'll probably be asked to confirm that you're willing to sacrifice all that wonderful promotional material — AOL doesn't comprehend why somebody might not want it! — but persevere.

By way of gratitude tokens, we accept flowers, new PowerBooks, and cashier's checks.

Shortcut to any Internet site from AOL

How would you get to a Web page from AOL 3.0? Probably you'd click the Web button on the toolbar, wait, type the Web page's address (URL) into the strip at the top of the window, and press Enter.

Speed Tip

Why bother? Just press ⌘-K to make the Keyword box appear. You can now type a complete Internet address into the Keyword blank — be it Web page, FTP site, whatever — and press Return; you're teleported directly to that Internet site!

Don't sign off if you can help it (AOL 4.0)

Once you've made it past the busy signals onto AOL, you probably won't want to sign off and sign on again if you can help it. But what if you want to check a different one of your five e-mail accounts?

Fortunately, AOL 4.0 lets you switch screen names without signing off. Choose Sign Off ⇨ Switch Screen Names, and then choose the next screen name you want.

Keeping your secrets safe

There you are, late at night, surfing the Web with AOL's built-in browser. You stop by the Fetishes On Parade Web site, then call it a night. You sign off, confident that your spouse will never find out about your online adventures. Silly you!

If you've stored your password, your spouse — or anyone else with access to your computer — can sign on to your AOL account and find where you've been. (Why store your password? So that you don't have to retype it every time you sign on. You do so by choosing Members ⇨ Preferences ⇨ Passwords. *If* you don't have snoopy family members, that is.)

The savvy spouse will first take a stroll down the History Trail, which is hidden in AOL 4.0 behind the unassuming little unlabeled arrow to the right of the Toolbar's Find button (see Figure 26-4). When you click this arrow, a list of the last 25 places you've been — AOL areas or Web sites — appears, even if you've quit AOL. Simply select an item from the list and you're whisked to that site. The jig is up!
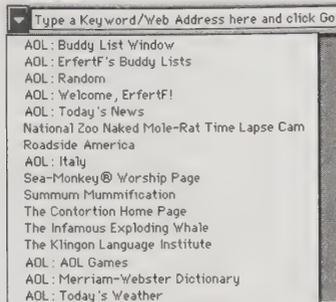
Figure 26-4: The History Trail shows the last 25 places you've been, including Web sites. If you want to cover your tracks, you can delete the History Trail.

To delete the telltale History Trail, choose My AOL (on the Toolbar) ➪ Preferences. Click the Toolbar icon, then Clear History Trail Now, then OK. Your tracks are obliterated.

Keeping your secrets safe, part deux

While we're on the subject of security, suppose you've just sent out a series of e-mail invitations to a surprise birthday party for your spouse. Obviously, you don't want your spouse seeing what you've been sending.

Strange But True

Your first thought is probably to go to the Mail Center, click the Sent Mail tab, select the names of the messages you've sent, and click the Delete button. But unbeknownst to you, there's an additional copy of every e-mail you've sent stored in your Personal Filing Cabinet (if you've set your Filing Cabinet Preferences to store your outgoing mail). That Filing Cabinet is accessible, online or off, to anyone who knows your AOL password.

To delete the e-mail in your Personal Filing Cabinet, choose (in AOL 4.0) My Files (on the Toolbar) ➪ Personal Filing Cabinet. (In AOL 3.0, choose Window ➪ Your Filing Cabinet.) In the Mail You've Sent tray, select the items you want to delete (Shift-click to select multiple items) and click the Delete icon.

Your secret is safe — at least until one of the invitees spills the beans about the party.

Us versus spam

E-mail is a wonderful invention, but junk e-mail (spam) is the scourge of the earth. See Chapter 25 for our tips on wiping out spam; but in the meantime, if your online mailbox looks like Figure 26-5, heed these additional AOL-specific anti-spam tips.

First, keep your *e-mail* screen name out of the public eye. Use a separate screen name when you go into chat rooms, post to message boards or newsgroups, join a mailing list, put up a Web site, fill out a member profile, or do anything that makes your screen name available to the public. (Go to keyword: *names* to set up an additional screen name.)

Figure 26-5: AOL is overrun with junk mail. Something must be done!

Second, use AOL's Mail Controls (keyword: *mailcontrols,* available only when you sign on with your master screen name) to block certain types of e-mail. For example, the option labeled "Allow mail from AOL Members and addresses listed" means you can receive mail from anyone with an AOL account, and from the Internet addresses you type in. This will drastically reduce the amount of spam you receive, since most spam comes from Internet accounts. (Unfortunately, this option also drastically cuts down on e-mail from *friends* with Internet accounts. If you prefer, you can take the opposite approach, *blocking* mail from specified Internet addresses.)

Third, report spammers to screen name TOSSpam (for Terms of Service: Spam). Open the junk mail, click Forward, type *TOSSpam* in the address blank, and click Send to report the offender. If you get a message saying the TOSSpam mailbox is full, try TOSSpam1, TOSSpam2, and so on until the message gets through.

Checking your AOL e-mail — without AOL

Let's say you're traveling and get a hankering to check your e-mail. If you can find *any* computer — Mac, Windows, whatever — that has the AOL software on it, you can sign on as a Guest and check your mail. (At the startup screen, choose Guest as the screen name. After the modem dials, you'll be asked for your name and password.)

Furthermore, thanks to *AOL NetMail*, you can even check your AOL e-mail from any Windows machine (the kind you're most likely to find while traveling) in the world – *without* having the America Online software. Using Microsoft Internet Explorer, go to www.aol.com; there you'll see the NetMail button. In minutes, you'll be reading your AOL e-mail at a Web site! (For details, go on America Online to keyword: *Netmail.*)

No downtime while downloading

We're hoping you already know this, but if not, you'll thank us: Just because you're downloading something from America Online doesn't mean your Mac is tied up. You can do other things online — read mail, send Instant Messages, and so on — while you're downloading, of course, but you can also switch completely out of America Online to do other work on your Mac. The cheerful "File's Done!" guy will announce the end of the download even if the AOL program is in the background.

Mac Basics

The Find In Top Window command

Meet one of the handiest — and least utilized — AOL features: the Find In Top Window command. This command (in the Edit menu) is ideal for finding items that are buried in a sea of data.

Suppose you're looking at a Travel Channel message board that deals with Italy. You're interested only in messages about Rome, and don't relish the thought of scrolling through hundreds of messages, looking for the word "Rome" in the subject line. Just choose Edit ⇥ Find In Top Window, type *Rome,* and click Find. The first Rome-related message is highlighted. Click Find Next to find the next message. The Find In Top Window command works in other areas as well, including e-mail messages and Web pages.

Worth Learning

A voice crying out in cyberspace

An online service might be the last program you'd expect to have Macintalk speech features (see Chapter 23). But as free book winner Danilo Campos (among others) discovered, if you hold down the Control key and place the cursor over various buttons — Toolbar icons, message board buttons, Compose Mail window buttons, Buddy List, and so on — a MacinTalk voice tells you what each button does.

Contest Winner

But wait, there's more. If you visit an AOL chat room, choose Edit ⇨ Speak Text. Your Mac starts *speaking* what everyone's saying in the chat room. It even says "grin" when it sees the standard smiley punctuation — :) — and "wink" when it sees this symbol — ;) — which we think is pretty smart.

Turn off the Channels window (AOL 4.0)

When you sign on to AOL you'll see the Welcome! window and the Channels window. You will soon grow weary of watching the Channels window load, graphic by graphic by graphic.

Fortunately, you can make the Channels window go away by choosing My AOL (from the Toolbar) ⇥ Preferences. In the General tab, uncheck the box labeled "Show Channels Screen at sign on," and click OK. (Even without the Channels window, you can still get to the channels by choosing Go To ⇨ Channels.)

Seizing control of your buddy lists

As anyone with an AOL account and time to kill can tell you, the Buddy List is a fascinating feature. No matter what you're doing online, you can watch a list of your friends and colleagues, spotting them the moment they come online. (Once they're on, you can chat with them via Instant Messages.) You control which buddies you want listed—and *prevent* people from watching *you*—at keyword: *buddy.*

Strange But True

What's especially cool about Buddy Lists, if you use them, is that you can even add *non*-AOL members—general Internet surfers—to your Buddy List. As with AOL members, you'll get notified then they're online, and you'll be able to chat with them in real time, via Instant Messages, over the AOL/Internet boundary. To pull this off, however, you need to (a) persuade your Internet friends to *register,* thus agreeing that they're willing to be bothered, and (b) persuade them to download and install special software (AOL Instant Messenger) that makes them Buddy Listable. Go to keyword: *Instant Messenger* for information.

Playing sounds in chat rooms

You can play AOL sound files ("Welcome!", "Good-bye," and so on) in chat rooms by typing {S name of sound (for example, *{S Welcome*) in the text-entry box and pressing Return. Everybody else in the chat room, wherever they may physically be in the world, hears the sound you just played.

Unfortunately, your fellow chattees can hear the sound you played *only* if that sound file is installed on their computers. The pre-installed ones are pretty limited: Welcome, You've Got Mail, Goodbye, File's Done, BuddyIn (a door creaking open), BuddyOut (a door slamming), and IM (the tinkly chimes you hear when you receive an Instant Message). (Why you would want to say "File's Done" in a chat room is beyond us, but whatever.)

You can play sounds other than the ones that come with AOL, but the people you're chatting with need to have the sound files on their hard drives. If you're using AOL 4.0, adding sounds that can be played online is easy: drop them (in standard System 7 sound format—see Chapter 23) into AOL's Sounds folder, which is in Online Files folder.

Note: Playing sounds in chat rooms gets old fast. (And playing the "You've got mail" sound is a cruel joke for those waiting patiently by their e-mailboxes.) Fortunately, you can turn off chat room sounds if you get tired of hearing them. Go to keyword: *Preferences,* click the Chat icon, and uncheck the box labeled "Play chat sounds sent by other members."

Installing new AOL sounds

If you tire of that guy's voice—the one who says *"You've* got *mail!"* and *"Good-*bye!*" and *"Wel*come!"—feel free to replace him with a sound of your own choosing. You might elect to replace these quips with your own voice, for example, or with silence. All you need is ResEdit. See Chapter 21, where you'll find step-by-step instructions for getting ResEdit and replacing America Online 3.0's sounds.

Replacing sounds in AOL 4.0 is much easier. To replace a sound, open the America Online folder ⇨ Online Files folder ⇨ Sounds folder. You'll see AOL's canned sounds: Welcome, Goodbye, BuddyIn, BuddyOut, and so on.

Let's say you want to replace "Welcome!" with a bit of dialog from *Godzilla* that you downloaded. First, drag the original Welcome sound to a different folder. Change the Godzilla sound's name to Welcome, and drag it into the Sounds folder. Next time you sign on, you'll be greeted by the giant lizard, rather than the little AOL "Welcome!" man.

CD

(P.S. — Mac owners rarely envy Windows users, but let's face it: AOL's software libraries have a lot more *.wav* files (Windows sounds) than *.snd* (Mac "System 7" sounds). No problem: just drag them onto Brian's Sound Tool, included on the CD-ROM with this book, to convert .wav files instantly into Mac files.

Turn Instant Messages off (and back on)

When you're in a hurry, there's nothing more disrupting than getting Instant Messages (IMs) from other AOL members. Here's the tactful solution. Send an Instant Message to the screen name *$im_off* (and you have to type *something* into the message area, so just type a couple of spaces or something there).

Now, if someone tries to send you an Instant Message, they'll be told politely that you can't receive it at the moment. And they won't hate you for ignoring them.

To receive IMs again, send an IM to screen name *$im_on*. (To turn off Instant Messages from *specific people,* go to *keyword:* Buddy, click Privacy Preferences, add the screen name of the person you don't want to hear from. Check "Buddy List and Instant Messages" at the bottom of the window, and click Save.)

Keep your hands on the keyboard

Reader Sean Lewis notes that the America Online software violates every possible Macintosh interface guideline. For example, default buttons (ones that can be "clicked" by pressing the Return key) aren't surrounded by a thick black border, as in normal Mac programs.

Speed Tip

Yet despite the absence of the thick outline, you can indeed trigger the most important button in each window — the Send button on an Instant Message, for example, or the Send or Reply button in the e-mail window) — just press Enter.

Keywords for the profoundly bored

Not only is there a keyword for almost every America Online screen, but there's certainly a keyword for everybody. Reader Michael Huang, for example, found the bizarre, clicky, sound-enhanced smiley face at keyword: *aol://1391:41-29468*. (We prefer the more colloquial Smile4u — but that doesn't sound so much like a secret.)

Then there's keyword: *Random* (Figure 26-6). Spin the wheel and you'll be whisked to an AOL area at random. Round and round she goes . . .where you'll wind up on AOL, nobody knows!

Figure 26-6: Spin the wheel of AOL keywords when you just don't know where you want to go today.

Gambling in chat rooms

Do you feel lucky? In a chat room, type this:

```
//roll ·2-6
```

(Substitute any numbers you wish for the 2 and 6 — or don't specify any numbers at all to roll two normal dice.) Press Return. Then, in front of everybody in the room, AOL prints:

```
OnlineHost: SkiBunny rolled 2 6-sided dice: 4 1
```

(Of course, your screen name, not SkiBunny's, will be displayed.) Everyone in the chat room will be suitably impressed and/or baffled.

We suspect this feature was part of America Online's early design, when the programmers imagined that games of chance would play a role.

Postcard from the edge

Bored? Then you've come to the right place: America Online is one of the world's greatest time-killers. For starters, click the AOL logo on the Welcome screen. You'll be whisked to a secret window called AOL Delights, featuring a selection of digital postcards you can send with a single click to your online friends. (Correction: you can send them with a single click *and* a screenful of credit-card information. The weasels have the gall to charge you $10 for sending one of these glorified e-mails!)

Also on this daily screen, you can check your horoscope or a digital fortune cookie — for free, fortunately. (Note: We can't vouch for the accuracy of the latter: it predicted that one of your cheerful but nonathletic authors would "have good luck with sports, especially track!!!!!!!!!!" Being wrong is one thing, but being wrong with ten exclamation marks is unforgivable.)

Strange
But True

Drag-and-drop joys

As with any self-respecting e-mail program, you can attach files from your desktop to an outgoing e-mail — without having to encounter an Open File dialog box. Just drag an icon *from your desktop* to the tiny Files tab of your outgoing e-mail (see Figure 26-7) — or click the Files tab to expand your drag-and-drop target.
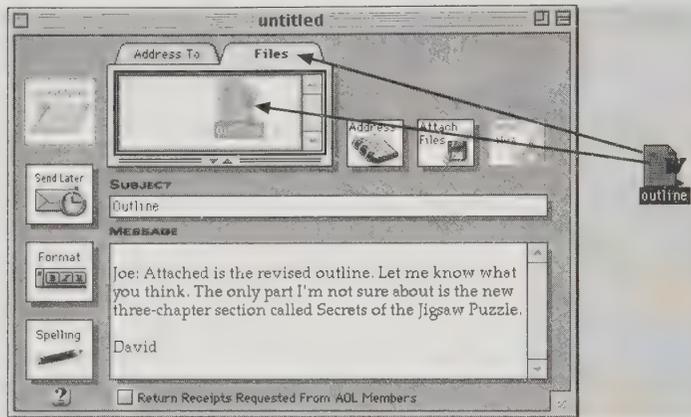
Figure 26-7: Drag files directly from your desktop into an outgoing e-mail message — either onto the Files tab or into the little white Files *window*.

And speaking of drag-and-drop: Don't forget that AOL supports it. For example, a quick way to save a portion of an e-mail message is to highlight the text and drag it onto the Desktop to create a clipping file. Later, you can open the little nuggets you've dragged-and-dropped without having to sign onto AOL.

And while we're on this drag-and-drop roll: you probably know that you can drag an address from your AOL Address Book into an e-mail note's Send To field. But as free book winner Leigh Blankenship discovered, you can also drag an address *from* an e-mail note into your Address Book. In fact, you can also drag an address from one note to another, making it easy to add a CC, for example.

Chapter 27

Everything E-mail

Believe it or not, the World Wide Web isn't the most popular feature of the Internet; e-mail is. Nothing has revolutionized communications like e-mail.

Why do we adore e-mail so much? Because:

- It's free. Even if you don't have an Internet account, you can get a free e-mail-only account from Yahoo or Hotmail.

- It's delivered as instantaneously as the telephone — but you answer it at your leisure, like U.S. mail. Nobody gets up from dinner to answer their e-mail. (Well, OK, a *few* people do that. If you're one of them, get a life!)

- E-mail forces people to be concise. And even when they're not concise, you can scroll down to the nitty-gritty. (It's too bad telephones don't come with a scroll bar.)

- E-mail gives you a written record of what was said. Unlike the phone, transactions and communications aren't based on both parties' *recollections* of what was said.

Bottom line: We'd hate to go back to a pre-e-mail era. And we wish more people would contact us by e-mail instead of phone (which requires that we be present), U.S. mail (which requires postage), or fax (which we can't copy out of).

Anatomy of an E-mail Message

Every e-mail message has recognizable parts. Each is the key to some fascinating inner personality traits of a typical message. Figure 27-1 shows the breakdown of a typical incoming message.
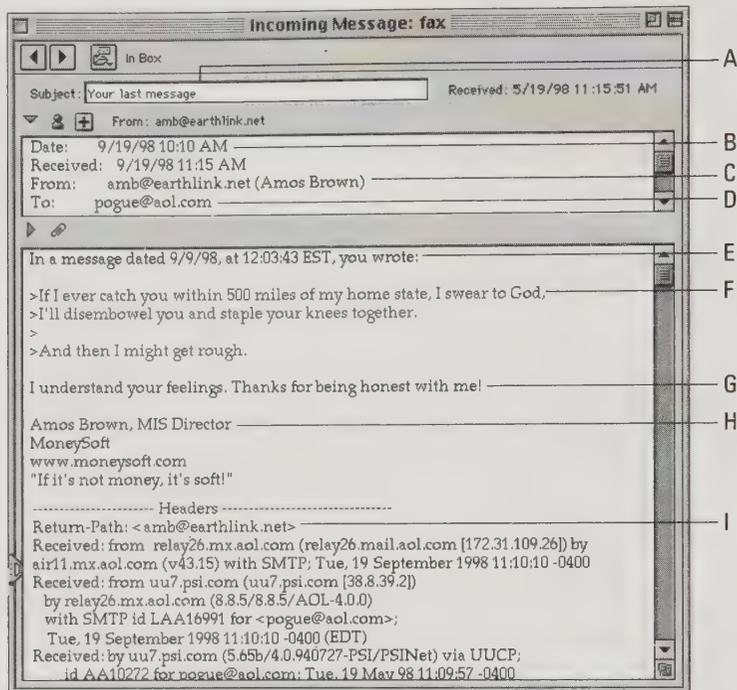
Figure 27-1: The anatomy of an e-mail message (shown here in Claris Emailer).

Here's what you'll find in a typical piece of e-mail:

A. This is the subject line. (Hint: If you don't want your message to be automatically thrown away by your recipients' anti-junk-mail filters, don't put into the subject line anything with multiple exclamation points, multiple dollar signs, or the words "MAKE MONEY CARVING TOOTHPICKS AT HOME!")

B. The date this e-mail was sent and received. Got some weirdness here, like receiving this e-mail before it was sent? Then either you or your correspondent never bothered to set the computer's time zone. (Do that in your Date & Time control panel, as described in Chapter 4.)

C. This information identifies the sender of this e-mail (unless it's junk e-mail, in which case it's fake). Depending on the program that sent this mail, you may see the sender's plain-English name appearing in parentheses, as shown here.

D. This line shows who the e-mail is addressed to. It may say "To." It may say "CC:," which means you're getting a copy of the e-mail that's intended to the primary addressee — who, by the way, *knows* that you got a copy.

    If you see "BCC" (blind carbon copy), on the other hand, you got a copy of this message *secretly*. People whose names are listed in the "To:" and "CC:" don't know that there were additional recipients. (Now you know

why most of the junk e-mail you receive has your name listed as a BCC: recipient — the junk mailer doesn't want you to know how many thousands of people got this same e-mail!)

E. This line was stamped onto the message automatically by the sender's e-mail program.

F. These brackets indicate that the sender is *quoting back* something you wrote to him. That's the polite thing to do; now you'll know what on earth he's referring to in his message.

G. This entire white typing area is the *body* of the message.

H. See this blob of text? It's called the *signature*. It was stamped onto this message automatically by the sender's e-mail program, complete with the annoying quote.

Automatic signatures can sometimes have hilarious results, since the person sending the message never actually sees the completed e-mail before sending it. You may get a note that says: "I can't possibly tolerate one more exchange with such an empty-headed, culturally bankrupt moron. Stuff a sock in it, loser" — but ends with a merry little sign-off like "Cheers, Jeffrey."

I. This blob of Unix codes is called the *header*. In the olden days of 1996, this information appeared at the *top* of your e-mail — thus the term "header." Since it's so annoying and so irrelevant, though, most e-mail programs now put it down *below* the body (if they show it to you at all).

It's essentially a bunch of computer codes that document the route this message took to reach you. It may have bounced all over the world, computer to computer — that's the genius of the Internet's design — but eventually, it arrived at your machine.

But there's more to e-mail than the format; more important is the content. Read on.

The *Mac Secrets* Guide to E-mail Etiquette

When you're online, you're technically in a public place where your every word and thought are read and judged by thousands of people all over the world — but don't let that faze you. That's the glorious thing *about* being online. It's the only human interaction where you're judged purely by your thoughts. Your age, race, looks, disabilities, insecurities, hair status, accent, height, weight, and even hygiene don't make any difference to anybody online. We've heard more than one story of love born via e-mail (or during live chat sessions).

However, presentation counts in our society, and that's still true in the electronic anonymity of online communications. Here's how to make a good impression — and by pleasing your correspondents, create more effective messages:

MACINTOSH SECRET

How to set up your e-mail account

To everyone's great horror, the Macintosh came many years too late to have any effect upon the underlying geekiness of the Internet. Remember that this mother of all computer networks was never intended for you, the Normal Human Being; it was originally designed by a bunch of 1960s government and university nerds for the purpose of exchanging military data.

As a result, to this day, you can't get online without filling out a bunch of patently user-hostile blanks labeled things like SMTP Host, POP Server, Login name, and so on. The various e-mail programs in your life don't even call these morsels by the same names — that's how screwed up the terminology is.

In general, you have no choice but to sit on the phone with your ISP's tech-help line and ask them to help you fill in the blanks. Here's the basic rundown of what you'll be asked to fill in:

Account Name: This can be whatever you want. Name it after your Internet access company, if you want, such as "EarthLink account."

User Name: In this box, put everything in your e-mail address that comes *before* the @ symbol. If you've been told that your e-mail address will be kelly@earthlink.net, then your user name is *kelly.*

Email account (Emailer), **POP server** (Outlook Express), or **Incoming mail server** (Eudora): This item identifies the computer that dishes out messages from the Internet to your Mac. It usually looks like everything *after* the @ symbol — with the addition of *pop3* or *pop5* in front of it. For example, yours might be *pop3.earthlink. net* or *mail.earthlink.net.*

Outgoing mail server (Eudora) or **SMTP Server** (Emailer, Outlook Express): This code identifies the Internet computer that *sends* your mail. It usually looks like *smtp.earthlink.net* or, again, *mail.earthlink.net.*

Stay on hold with your ISP long enough (or cruise your ISP's Web site long enough) and you'll eventually get these blanks filled in. And don't be discouraged — hey, it's your tax dollars at work.

- **Don't type in all capitals.** All-caps writing is hard to read and has a special meaning in the soundless realm of online speech: It means YOU'RE SHOUTING. Reserve it for when you really *are* shouting.

- **Online, no one can hear you smile.** In cyberspace, there's no body language, no raised eyebrows, nothing but your cold, hard words on everybody else's screens. Therefore, be aware of your tone when writing online. Take care to consider what possible misinterpretations lie in the way you phrase things.

  A common trick toward solving this pitfall is the use of the smiley face. You make this little grinning face by typing a colon and a closing parenthesis, like this — :) — which, if you turn your head 90 degrees to the left, looks like smiling features. This little face is supposed to indicate that *you* were smiling when you wrote something. There are hundreds of similar faces:

  :(Unhappy

  ;)   Sly wink

: *	Kissing
8-)	Wearing shades
:p	Sticking out tongue
8-p	Drooling
:0	Shock

But there are also thousands of people who find these faces insufferable.

■ **Learn the lingo.** You're likely to be befuddled unless you at least know the following handful of abbreviations you're likely to see people typing online:

LOL	Laughing out loud
ROTFL	Rolling on the *floor* laughing
BRB	Be right back
BAK	Back at the keyboard
MORF	Are you male or female?
FYI	For your info
OIC	Oh, I see
RTFM	Read the f@ * #! manual
IMHO	In my humble opinion
IMNSHO	In my not-so-humble opinion
GMTA	Great minds think alike
@$#*&!!	Golly

■ **Quote the relevant part before responding.** If we send you an e-mail that says only, "No, we don't think so," you'll smite your forehead in frustration, having forgotten completely what the original question was. It would have been more polite of us to *quote back* what you originally asked in *your* e-mail. Generally, people use brackets to show the original message, most often like this:

```
> Hey, Pogue and Schorr: Is online etiquette very hard to master?
>Nobody can give me a straight answer. I'm a little nervous
>about going online for the first time.

No, we don't think so.
— David and Joe
```

Claris Emailer, Outlook Express, America Online 3.0 and later, and most other e-mail-related programs offer an automatic quoting feature that saves you the trouble of copying, pasting, and adding the brackets. Just highlight the portion you want to quote and click the Reply button. (A corollary: It's not necessary to quote back the *entire* message, which is simply wasting your correspondents' time. Quote back the *relevant* portion. And what if you want to quote back two separate parts of the

same message? You have no choice but to highlight the entire message, click the Reply button, and then manually delete the excess when it appears in the new outgoing e-mail.)

■ **Send it in the message, not as an attachment.** As you can read later in this chapter, file attachments on e-mail are a never-ending source of headaches. Even if your recipient can decode and uncompress what you sent, and even if she's got the necessary program to read it, she must still locate the file, figure out how to open it, and then figure out how to reply to you (since she can't just hit a Reply button). If you have something to *send,* then OK — send it as an attachment. But if you just have something to *say,* type it in the body of the e-mail message.

Mailing lists

A mailing list is like a subscription to an e-mail-based discussion group. (You don't need a separate program to use mailing lists; your regular e-mail program collects the messages.) You're automatically e-mailed a copy of everything other people have to say about a particular topic. Sign up for these sparingly; they can fill your e-mail box with dozens or hundreds of messages a day.

For a more complete list of mailing lists, read the Publicly Accessible Mailing Lists list, available in the *news.lists* newsgroup. (See Chapter 26 for details on newsgroups). Also visit the Web address `www.yahoo.com/Computers/Internet/Mailing_Lists` for still more information about mailing lists.

Generally, you subscribe to one of these free e-mailings by sending an e-mail to its sign-up computer. To make it work, the receiving computer inspects what you've put in either the *body* or the *Subject* line of the e-mail to see if you typed out the correct code. (What you put in the other field generally makes no difference.)

DIALOGUE

JS: I certainly am happy to be writing the Fifth Edition of *Mac Secrets*. Time has marched on, hasn't it? I mean, the computing world has gotten so much better!

DP: I'm not quite sure where you're going with this, but whatever.

JS: Well, just look at all the cool things we're writing about now that didn't even exist when we did the last edition!

DP: Such as...the death of OpenDoc? The death of the Newton? The death of Macintosh clones?

JS: Very funny. No, I mean technology. Look at QuickTime 3.0!

DP: Oh, you mean the one you have to pay $30 for?

JS: And Microsoft Internet Explorer 4, which lets you save entire Web sites onto your hard drive with a single command!

DP: As long as you're willing to surf the Web at one-third the speed of the previous version...

JS: I can even remember writing a Secret that told our readers how to simulate graphics in America Online e-mail. Today, of course, anyone can have fonts, sizes, colors, or yes, even pictures, in their e-mail!

DP: Oh, no you don't —

JS: All thanks to the miracle of HTML mail.

DP: Are you missing entire *lobes* of your brain!? HTML mail is the most disgusting, tacky, bandwidth-clogging waste of human effort ever devised!

For example, to sign up for a daily list of jokes by e-mail, you send e-mail to `listserv@uga.cc.uga.edu` with **subscribe humor Bob Smith** in the body of the message. These days, mailing lists are getting easier to get onto; for example, to subscribe to **TidBITS**, Adam Engst's weekly magazine about the Macintosh and the Internet, you can either send e-mail to `tidbits on@ tidbits.com` (nothing special is required in the subject or body) — or just visit `www.tidbits.com` and fill out a form there.

Note: When you've been added to the mailing list, you'll receive e-mail confirming your subscription. Be sure to save that message — it contains instructions for *unsubscribing* from the list. That information may be useful when you discover exactly how hard it is to keep up with 100 messages per day! Alternatively, consider signing up for the *digest* option of most mailing lists — instead of receiving every little message as it's written, you get a single, e-mail compilation each day containing all the individual written transactions. (If you need help with a mailing list, or if you forget how to unsubscribe, send e-mail to the mailing list with the word HELP by itself in the body of the message.)

E-mail programs

To view your e-mail, you need an e-mail *program*. America Online, of course, has its own built-in mail-reading feature; see Chapter 26 for details.

But for regular Internet e-mail, you need Claris Emailer, Microsoft Outlook Express, or Eudora. There are other e-mail readers, such as the one that's built into Netscape Communicator, but the Big Three are by far the most popular and richly featured.

JS: I resent that remark about my brain. You asked *me* to write our section on e-mail attachments, you may recall.

DP: Joe, nobody uses HMTL mail except the nosepicking, flatbottomed scum of the earth we call *junk e-mailers*. The instant I see <HTML> at the beginning of a message in Claris Emailer, I instantly delete it. I know it's spam.

JS: Ah. Well, that explains a few things.

DP: What does?

JS: You're using Emailer. A program that doesn't *do* HTML mail. You can't even see what you're missing!

DP: I don't care — at least I'm not waiting five seconds for every HTML mail message to appear on the screen, like you have to in Eudora or Outlook Express.

JS: Uh-huh. He's using a four-year-old program whose company doesn't even exist anymore, and he's complaining about HTML mail...

DP: It so happens that Emailer is the only e-mail program that can get my messages from America Online, smartypants.

JS: Oh! — it gets better?! You not only use a passé e-mail program, but you use it to get mail from a passé online service! That's rich!

DP: Listen, I *have* to maintain that AOL account. I published that *pogue@aol.com* address in five editions of *Macs for Dummies*. I can't turn it off now — I'd strand thousands of my readers!

JS: Should've thought of that before you wrote a bestseller, my friend.

E-mail Software Secrets ────────────────────────────── ■

How to make an e-mail answering machine

If you're going to be away from home for awhile, but don't want your e-mail to pile up unanswered (thus making your correspondents think you're antisocial), consider setting up your e-mail program to answer each incoming message automatically with a "Got your message, but can't respond until next week" reply.

To do so in Claris Emailer, for example, choose Mail Actions from the Schedule menu. Click Add; type a name (such as "out of town"); choose All Mail from the pop-up menu; click "Auto reply to message," and click Edit Reply. Then just set up Emailer to log on automatically, as usual, and the rest is taken care of!

On behalf of the Internet's millions of users, however, kindly unsubscribe yourself from any Internet mailing lists — described earlier in this chapter — before doing so. Otherwise, your "I'm on vacation" e-mails will bounce back to the mailing-list computers, causing untold irritation directed at you. (Another solution: Use e-mail filters, as described later in this chapter, to funnel incoming mailing-list messages into their own folder *before* the "answering machine" mail action filter is applied, as shown in Figure 27-2.)
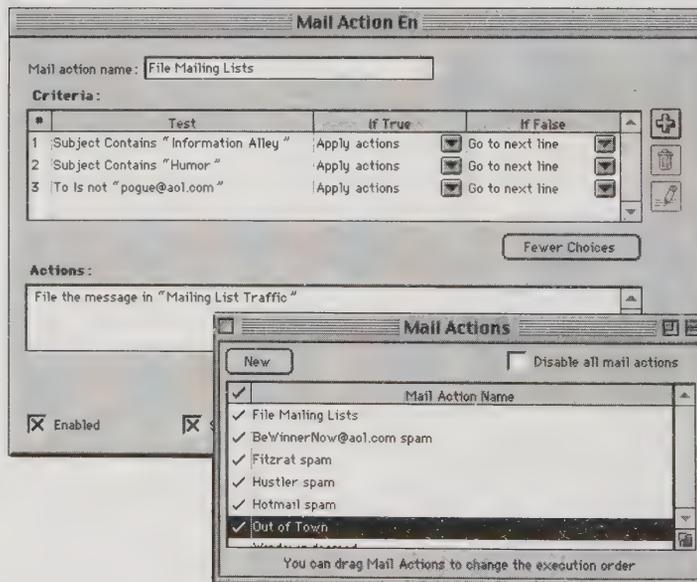
Figure 27-2: If you're going to set up an e-mail answering machine, use mail filters to handle incoming mailing-list and spam messages before your answering-machine filter kicks in. Here, you can see that one Claris Emailer "mail action" (left) has been set up to file mailing-list traffic and check for spam. The auto-reply mail action doesn't kick in until after the mailing-list screen has been applied (lower right).

Maximize drag-and-drop power

All three of the major Mac e-mail programs offer Macintosh drag-and-drop. As you can read in Chapter 17, editing is a snap with drag-and-drop; just highlight a blob of text in an incoming or outgoing piece of e-mail and drag it to a new location (instead of copying and pasting). Option-drag to make a copy of the selected text instead. Drag-and-drop is especially handy in preparing e-mail, since you can (for example) drag-and-drop addresses from the body of the message into the To: blank; in Outlook Express, you can even drag the opposite direction, highlighting an address in a message you're reading and dragging it directly into the address-book window.

You can even drag text *files* from the Desktop, in the form of text clippings (or, in Emailer, even text files). Your cheerful authors keep an "e-mail excerpts" folder on the Desktop whose sole purpose is to store text clippings dragged out of Emailer. (You can also keep a folder full of text clippings that contain standard *responses,* which you can drag into outgoing e-mail messages whenever you like.)

Speed Tip

Drag-and-drop is especially handy — and often overlooked — when it comes to enclosing file attachments with your outgoing mail. Don't bother with the Attach File menu command, navigating through your folders to find the file you want to send, and so on. Instead, just drag an icon *from the desktop* into the outgoing mail. In Eudora and Outlook Express, drag the outgoing icons anywhere into the mail-composition window. In Claris Emailer, you can drag icons onto any *gray* area (see Figure 27-3). (Emailer and Eudora also let you drop icons onto the rolled-up *title bar* of your outgoing message — a fantastic trick, since you have to "windowshade" your outgoing e-mail window in this way to see your Finder icons to begin with.)

Either way, your file attachment is ready to roll.
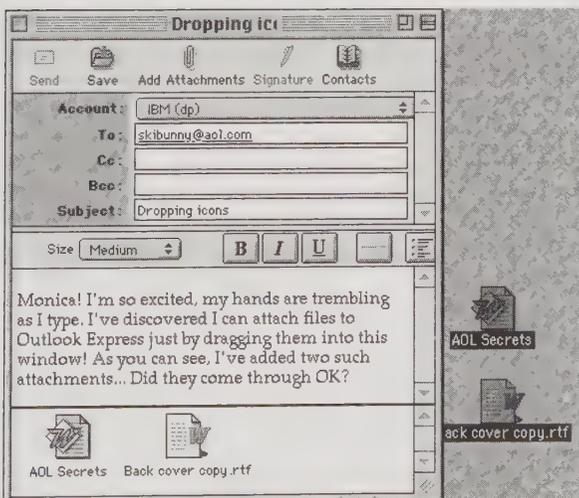
Figure 27-3: Drag icons from the desktop directly into an e-mail window (Outlook Express, shown here, or Eudora) or onto the gray parts of an e-mail window (Claris Emailer) to attach them.

Speed-dialing numbers for frequent correspondents

All three major e-mail programs — Emailer, Outlook Express, and Eudora — have address books. Store the names of your correspondents in this list. Thereafter, when it comes time to address a new piece of outgoing e-mail, you have but to type the first few letters of the recipient's name — *bea,* for example — and the program will automatically fill in the rest of the name (*Beauregard Jason McGillicuddy,* for example).

Trouble is, as address books fill up, it takes more and more typing to specify key correspondents. Pity poor David Pogue, for example. His e-mail address book contains listings for Joseph Sclar, Joseph Schulman, and Joseph Schmidt — in addition to his frequent correspondent Joseph Schorr. Whenever he wants to send a note to Joe, he must type all of this: *Joseph Sch* — before Claris Emailer figures out who David intends to write. Life's rough.

Free book winner Ronald Leroux solves half the problem with his suggestion to start typing the *last* name — or, indeed, *any* part of the name, such as "orr" in Joseph Schorr's case — into the Recipient box instead (Claris Emailer only). As soon as you press the Tab key, the actual name appears.

But free book winner Martin Durand came up with a strange, low-tech, but instantly fruitful suggestion that we now can't live without: In your address book, put numbers in front of your most frequent pen pals (in the "real name" or "nickname" fields). Call them "1 Joseph Schorr," "2 David Pogue," "3 Bill Clinton," and so on. (Print out a cheat sheet, if you're so inclined, to tape to the side of your Mac until you've got them memorized.)

From now on, addressing an e-mail to one of your top 10 (or 20, or however you care to remember) takes only one or two keystrokes, no matter how many similarly named people are in your address book. (Your recipient will, alas, *see* that number attached to his name when he receives your message. Your adoption of this technique boils down, then, to the size of your address book vs. your tolerance for bewildering your friends.)

Who are you, anyway?

Most e-mail programs let you enter your real name as well as your e-mail address. Instead of knowing you simply as *SkiBunny384@earthlink.net*, your correspondents will see that you're really *SkiBunny384@earthlink.net (Barbara Smythe).*

As reader Stephen McCabe points out, however, it's perfectly possible to set up multiple "real names" for the same Internet account, just as America Online fans get five different names per account. Just create multiple Accounts (in Claris Emailer), Personalities (in Eudora), or Users (in Outlook Express). Make them identical in every respect except for your "real name" alias.

Now you can be "Big Babs" when writing your sister, but "Barbara T. Smythe, PhD, MD" when writing your fellow faculty members.

Claris Emailer's secret keystrokes

What *is* it about this book's readers and Emailer keystrokes? It sometimes seems as though a full 10% of the entries to this edition's Secrets contest pertained to Emailer and its keyboard shortcuts. Let us honor the diligence of the submitters—especially free book winner Ronald Leroux—by summarizing those useful shortcuts in one handy place.

First, you should know that you can trigger practically anything in Emailer— buttons, tabs, check boxes, and so on—from the keyboard. And how do you know what the keystrokes are?

Just press and hold the ⌘ key; the names of the buttons, tabs, and check boxes all change to reveal their secret keyboard equivalents.

All right then: Fingers ready? Here's the list of lesser-known keystrokes:

Enter	Triggers the Close, Save, or OK button. (⌘-Return does the same thing.)
⌘-[or]	Moves on to the previous or next message.
⌘-Option-[or]	Moves on to the previous or next message—and trashes the one you were just looking at.
⌘-Option-F	Files this message in one of your user-defined "folders" (type the first letter or two of the folder's name to select it from the keyboard).
⌘-Option-K	Connects to your usual e-mail accounts without displaying a confirmation box first.
⌘-D	Deletes the currently open (or, in a list view, highlighted) message.
⌘-F	Opens the Find dialog box, already filled out to find whatever text was highlighted when you pressed ⌘-F.
⌘-Option-R	Opens a reply window that's automatically addressed to everyone who got this message (if it wasn't just you), *or* opens a reply addressed to the original sender only— whichever is the *opposite* of your current reply-default setting in Setup ⇨ Preferences ⇨ Reply. Your savings: one confirmation dialog box.
Tab	Jumps you from pane to pane of the main window. From there, you can type letter keys to select a folder, or the up/down arrow keys to select a message.
⌘-click	If you've got Internet Config correctly installed, you can ⌘-click an e-mail address within a message to open a new, ready-to go e-mail window, addressed to that person. Or ⌘-click a Web address to launch your Web browser and visit that site.
Option-click	Option-click any window's close box to close all windows except the Browser.

ANSWER MAN

The Mac OS 8 E-mail-launcher icon

Q: When I bought my new Mac OS 8 Mac, there was an icon on the desktop called E-mail. When I click it, it launches a copy of Emailer Lite. Isn't there any way to make it launch, say, Eudora instead?

A: But of course! Would we have honored your question with its own *Mac Secrets* sidebar if there weren't a good answer?

First of all, this icon (and the Browse the Web one) are just conveniences; you can safely trash them (as most experienced Mac fans do) if you prefer to just double-click your favorite e-mail and Web program icons directly.

Anyway, to answer your question: these alias-type icons launch whatever e-mail or Web programs are listed in Internet Config, a little freeware program that came with your Mac.

Choose   ⌘ ⇨ Find File and search for Internet Config. Open it. Click the button labeled Helpers. In the list that appears, click the item that begins "http:" (to change your default Web browser) or "mailto" (to change your preferred e-mail program). In the Open File box that appears, navigate to, and double-click, the browser or e-mail program you prefer.

Quit Internet Config, saving changes as you go, and be glad you read *Mac Secrets* so these darling icons wouldn't go to waste.

And speaking of deletion: if the confirmation box is getting on your nerves every time you try to delete something, either turn off the warnings (by choosing Setup ⇨ Preferences) — or drag the selected e-mail items directly into the Deleted Mail folder.

Outlook Express's secret keystrokes

Outlook Express isn't quite as rich in tweaky little secrets and undocumented features as its rivals; as a program that only sprang into existence in 1998, it hasn't been around long enough. But having been designed by the same guy who did Claris Emailer, it does offer a few neat keystrokes — and a few good habits to get into:

⌘-Option-Delete	Delete an e-mail without getting a warning box.
up- or down-arrow	Highlights the next folder (if you're in the folder list) or e-mail (if you're in the e-mail list). The latter is especially handy, since the lower pane shows you the opening sentences of each message as you flick through them (without your actually having to open any new windows).
⌘-up arrow	Hides all but the currently highlighted folder in the folder list. (⌘-down arrow restores the full list.)
⌘-Y	Shows only unread messages. (Press ⌘-Y again to show all messages, with unread ones in bold.)

Worth Learning
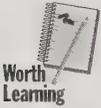
You should also know that ⌘-clicking the name of any window (in the title bar) produces a popup *list* of open windows — a great way to burrow directly to the window you want without having to move, close, resize, or windowshade any of them.

Outlook Express's address detective

Every now and then, Microsoft really does try to help; checking for errors in your e-mail addresses is one way that really works. Whenever you address a piece of e-mail, the program underlines that address if you've got it *right*.

If, on the other hand, you've put in an address that couldn't possibly work — you put in two @ symbols, you didn't put *any* @ symbol, whatever — you'll see a colored underline or none at all. That's your cue that Outlook Express foresees disaster; it's trying to spare you the wasted time of a bounced-back, undeliverable e-mail.

If you see a green wavy underline, you're sending mail to somebody who's got multiple e-mail addresses in your Outlook Express address book. Control-click to specify which address you want to use.

A *red* wavy underline means that you've typed a person's real name ("Chris Wilcox") for whom you've got duplicate entries in your address book. Again, Control-click to choose the one you really mean.

Eudora's secret keystrokes

Eudora Pro has zillions of secret keystrokes, too. Lots of them are astronomically tweaky (option-double-click a Web address to choose a different default Web browser, for example). A few, though, are worth learning.

For example, ⌘-clicking is a fruitful exercise in editing Eudora's toolbars. ⌘-click between two toolbar buttons to insert a new button; ⌘-click *on* a button to change its function; and ⌘-drag a button into the Trash (on your Finder desktop!) to remove the button entirely.

You should make good use of your space bar, too. Tapping it scrolls a long e-mail downward, or opens a selected message in a list view, or closes the current message (if you're looking at the bottom of it).

Eudora message selection

Speed Tip

The Option key is your shortcut to highlighting all the messages in your In Box, Out Box, or homemade mailboxes that match a certain criteria. For example: Option-click one message from Harold Higgenbotham, and *all* messages from him are now highlighted and listed together, ready for deleting or filing. Option-click the date or subject lines of an e-mail to highlight *all* messages with that subject (or "Re:" that subject) or date.

Eudora tab manipulation

Most of Eudora Pro's windows are *tabbed* (see Figure 27-4) — and yet you can drag tabs from window to window, rearranging them any way you see fit, combining or separating them exactly as you can with today's Adobe-software palettes. You can tear a tab (and its associated panel) clear out of a window, which sets it up as a new window with only a single panel; or you can go to the opposite extreme, dragging all the tabs into a single mega-window. Let your innate interior-decoration skills be your guide.
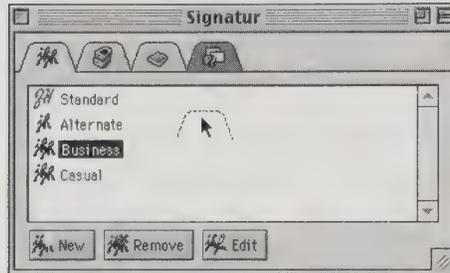
Figure 27-4: Drag a tab away from a Eudora window to create a new window that has only one panel.

The wittiest balloons on earth

Eudora's balloon help was written by some of the punchiest, funniest writers in programmerdom. To join in the hilarity during your off-hours, you *could* turn on balloon help (press the Help key to turn it on and off in Eudora) and start pointing to things. Or you could use the direct way, using ResEdit (see Chapter 21) to open the Eudora Help file (and then to double-click the STR# icon). As shown in Figure 27-5, you're in for hours of whole-family entertainment.
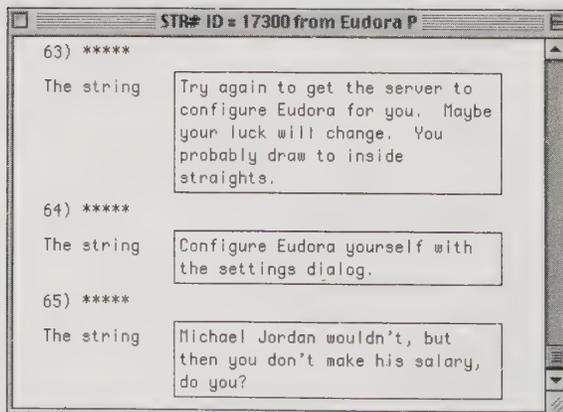
Figure 27-5: Eudora's balloon help messages are a stand-up comedy routine.

The Attachment-Nightmare Guidebook

Fortunately for those of us who write books for out-of-state publishers, you can send more via e-mail than what fits in the Outgoing Mail window itself. With a click on a special button, you can also *attach* a file from your hard drive — a graphic, a program, a Microsoft Word document, or whatever — and send that along for the ride with your typed message.

If you're on America Online, and sending e-mail *to* someone on America Online, all of this goes smoothly. Your copy of the AOL software automatically compresses the outgoing mail (using StuffIt, described in Chapter 22), and your recipient's copy of AOL automatically decompresses it.

Strange But True

The Internet, unfortunately, isn't nearly as well designed. Weirdly enough, the Internet can't actually handle Mac files at all. You or your e-mail software must first turn it into the one thing you *can* send: a stream of plain old ASCII text, which can travel intact across any file server, through any mail gateway, and into any e-mail program, Mac, Windows, or anything else.

Why you can't open attachments

To convert an attachment into a text stream for the Internet, various e-mail programs use encoding schemes called things like *MIME* (Multipurpose Internet Mail Extensions, also known as *Base64*); *UUencode; BinHex;* and so on. When you receive an encoded file, it's up to your e-mail program to convert the file back into its original binary (Mac file) form. That's what usually happens, behind the scenes, without your even knowing about it.

Occasionally, however, your e-mail program can't understand the "accent" of the sender's encoding software. The result is a file on your hard drive that you can't open.

How to fix It

CD

Fixing a file that arrives in its encoded state is usually a simple drag-and-drop affair. Use the freeware StuffIt Expander (included on the CD-ROM with this book) to open BinHex files (often tagged with the *.hqx* suffix) and StuffIt (*.sit*) files. If you also install the companion shareware clunkily called DropStuff with Expander Enhancer (also included on the CD-ROM with this book), your decoding/decompressing options multiply: you can now handle UUencoded files (usually tagged with a .uu suffix), as well as a number of compression formats, including *.zip, .z, .gz,* and *.ARC* files.

Another great attachment decoder — this one free — is Laurent Hagimont's *uucd*. Just drag the mystery file on top of these programs to set them in motion.

Attachment-Opening Secrets ─────────────────────■

Persistence pays

If your decoding effort fails, don't be too quick to conclude that a file is corrupted; you may be using the wrong decoding tool. There's more than one kind of UUencoding, for example, and a number of MIME variations. You may have to run a file through several different utilities that all claim to do the same thing to find one that offers the particular flavor of decoding you require.

Be a Code Detective

If an attempt to decode a file doesn't work, open the file with your word processor and read the header at the beginning of the code. It reveals the type of encoding that the sender used.

For example, in Figure 27-6, you can see three file attachments that have been opened into Microsoft Word. The first begins with a clear message that the file must be converted with BinHex. MIME (Base64) files, like the middle document, always contain a line at the top that says so. The third contains the letter M at the beginning of every line. That's your clue that it's a UUencoded file.
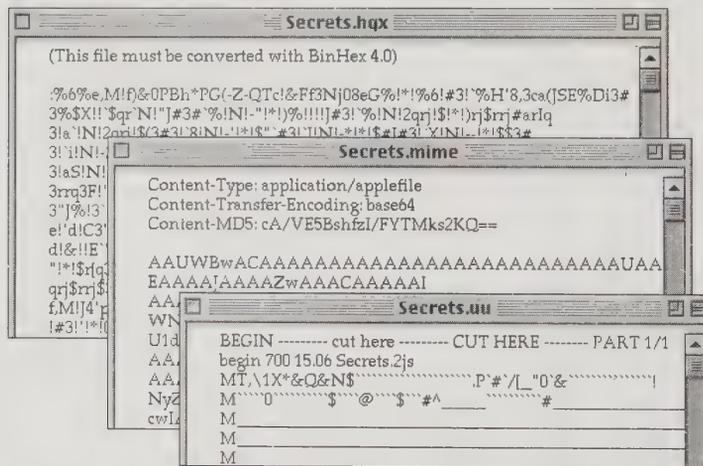
Figure 27-6: A tale of three encoded files, all of which could be decoded with StuffIt Expander and its Expander Enhancer add-on. From top to bottom: BinHex, MIME, and UUencoding.

It's not over till it's over

Many e-mail file attachments have been both compressed (using StuffIt, for example) *and* encoded (converted into Net-friendly text streams). In such cases,

you may well have to run the attachment through a decompressing utility (like StuffIt Expander) *twice* — once to decode, and again to decompress.

If you double-click Expander, in fact, you'll be offered the option to perform such double-restorations automatically, as shown in Figure 27-7.

Don't count on double-clickability

If a file still won't open after you've successfully decoded it, try opening it from within the application that created it, using the Open command. UUencoded files, in particular, tend to lose their *type and creator codes* (see Chapter 15) in transit, arriving as documents with generic icons.

Opening the files from within the appropriate application solves the problem. In other words, if you've received a word processing file, launch your word processor; then choose Open from the File menu.
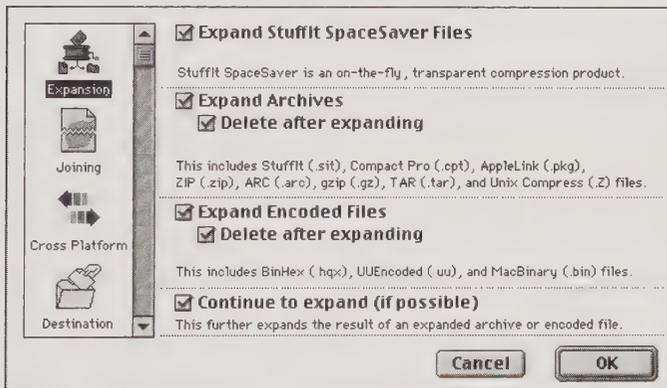
Figure 27-7: Double-click StuffIt Expander, and then choose Preferences from the File menu. Among the useful options: the ability to "Continue to expand" (bottom), in the event your file has been both encoded and compressed. Also: the option to specify a Watch Folder — your Downloads folder, in other words — in which every incoming file will be automatically decoded and expanded.

The AOL-to-Internet Conundrum

How much more simply can we put this? Sending file attachments between America Online and the Internet at large is asking for disaster. AOL's mail system doesn't use the standard Internet e-mail protocol; as a result, unopenable files called things like Unknown.bin are a fact of life when sending or receiving e-mail that crosses the AOL boundary. You have no alternative but to ask the sender to re-send the file, perhaps using a different compression method.

Spam and How to Nuke It

No doubt about it: unsolicited junk e-mail, better known as *spam,* is the ugly underbelly of e-mail paradise. If the names and addresses were ever published of the lowlife scum that sends out the billions of "MAKE EZ MONEY AT HOME!" and "HOT XXXXX TEENS" come-ons each day, the problem would take care of itself—the Internet population would drive over to the spammers' homes and rip apart each cell of their miserable little bodies.

But that's the thing—spammers hide. Their e-mail doesn't include a phone number or postal address; you're generally expected to visit a Web site or respond by e-mail. (Please don't do it! You'll only encourage them.) Meanwhile, our e-mail boxes fill up with useless crud that makes it harder to find the *real* messages among them.

Until Congress gets in on the act, you'll have to live with junk e-mail. You can, however, enormously reduce its volume. Just follow the steps in our Spam-Killing Secrets below.

Filtering

One of the most effective ways of purging spam e-mail from your life is to use an e-mail program that has *filtering.* That's a special feature in which the program analyzes the name, subject, body, or other attributes of each piece of incoming mail. In a fraction of a second, it routes the message into one of several folders you've set up in advance, and then begins to analyze the next message.

Every major e-mail program—Emailer, Outlook Express, Eudora, and so on— offers a filtering feature. They're called Mail Actions in Emailer, *rules* in Outlook Express, and *filters* in Eudora, but the idea is the same. (America Online's own software doesn't offer filtering, but you can use Claris Emailer to handle your America Online mail and thereby add filtering.) Figure 27-2, for example, shows the filter dialog boxes from Emailer.

Set up filters that analyze incoming mail for telltale spam clues. Route them into a spam folder within your e-mail program, thus leaving your In Box folder dramatically cleaner. Here are some filters that can screen your incoming mail:

- Create a two-step filter, as shown in Figure 27-8. First, the filter checks to see if the message is from any Internet mailing lists (discussion groups) you've subscribed to. If so, the message should get filed into your Mailing List folder.

  Next, the same filter should check to see if your e-mail address is in the *BCC* ("blind carbon copy") field of the e-mail—a common tactic of both Internet mailing lists and spammers. (That's why you had the filter weed out legitimate mailing-list messages first.) Don't necessarily route this spam to your Deleted Mail folder; it's conceivable that a legitimate message could be sent to you using the BCC field (see "Anatomy of an E-mail," earlier in this chapter). File it instead into a "Spam?" folder that you can

check every couple of weeks, thus giving yourself one last chance to catch real mail before it heads to that great Internet in the sky.
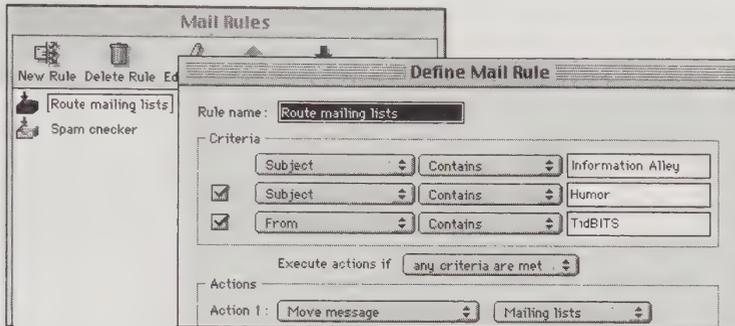
Figure 27-8: In Outlook Express, you can see that the mailing-list Rules safely put the mailing-list traffic away in its own folder *before* the anti-spam filter kicks in. (In the window at left, mail rules higher on the list get executed first.)

- Create a filter that examines the message's *header* for the phrase "-0600 (EST)." That scrap of data indicates the sender's time zone, expressed as a number of hours from Greenwich mean time. But EST (Eastern Standard Time) *isn't* six hours from Greenwich mean time. The only headers that contain this phrase are junk mails (thanks to a bug in one popular spam-sending program).

- At this writing, most *HTML mail* (e-mail that's been formatted with fonts, pictures, colors, and so on) is spam. You could create a filter that searches for, for example, "<HTML>" in the body of the message and flags it as potential spam, filing it into a folder to be inspected later (see Figure 27-9).
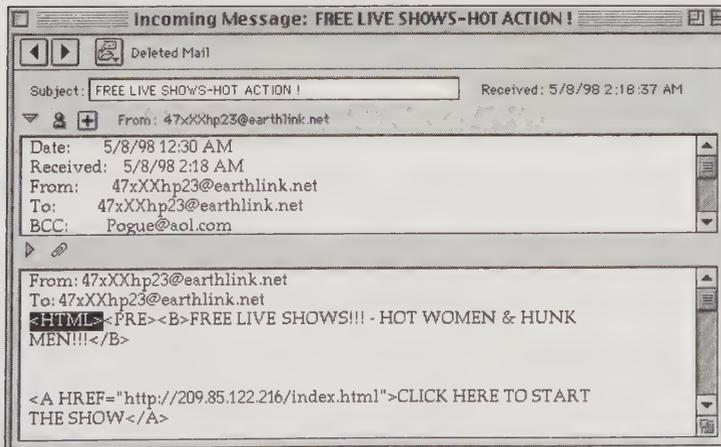
Figure 27-9: If you set up your e-mail program's filters as we've suggested, this piece of spam never would have made it through alive. It contains both <HTML> in the body and your e-mail address in the BCC: line alone.

- Have your filter screen out e-mail in which the word *you* or *friend* appears in the "To:" line of the message (unless, of course, your e-mail address actually contains one of those words).

- Your filter should flag any messages containing the phrases "Extractor Pro Bulk E-mail" or "This message is being brought to you by EMAIL BLASTER 2.5." (Those spam-sending programs advertise themselves in everything they send.)

- If you're really motivated, you can add filters that block any e-mail from lists of known spammers. These lists are published online, at `www.public.usit.net/nwcs/Spam/Spam.html` and `www.fogcity.com/em_utilities2.0.html`, for example. Unfortunately, spammers nowadays simply switch to different bogus addresses just to thwart the compilation of such lists.

You can also build such lists yourself, spam by spam, by setting up filters that block all e-mail from repeat offenders. Note, however, that most spam is *forged*—the address listed on the "From" and "Reply-to" lines are fake. To spot the actual address (the one you'll want to block), read through the header/routing information that appears in a block of codes at the bottom of each message. See the "Return-Path" line? That's the name to block.

For best results, in fact, filter out that entire *domain* (everything after the @ sign, such as the boldface part of PermanentHairRemoval **@quickscam.com**). Of course, don't block that entire domain if it's a legitimate, well-known Internet provider (IBM, AT&T, MCI, Earthlink, Netcom, MindSpring, Concentric, and so on)—because then you'll also block e-mail from legitimate senders.

Spam-Killing Secrets ▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬■

Don't get onto the e-mail lists at all

You may have wondered: How did you wind up on these junk lists to begin with? Obviously, once you're on them, you're doomed—the spammers sell lists of these names to other spammers, and the problem grows like ivy.

Mac Basics

Answer: They get your e-mail address from *you*. Every time you post a message on an online bulletin board, chat in a chat room, or even put your e-mail address up on your Web page, you've just made yourself vulnerable to the spammers' software robots. These little programs scour America Online, newsgroups (see Chapter 26), and the Web, looking for e-mail addresses to collect.

"But if I can never post my e-mail address," we can hear you protesting, "I'm losing half the advantages of being online!"

Not necessarily. Consider setting up a second mailbox—that is, a second e-mail address for your same America Online or Internet account. (That's easy to do on AOL; go to keyword *names* to set up a new one. If you have an Internet account, call your ISP's help line to arrange an additional mailbox.)

MACINTOSH SECRET

The Internet Address Detector

After much hassle and energy expenditure, I've finally managed to dig up Harold's e-mail address. Apparently, he's changed it to haroldp@netcomuk.com. Please make a note of it. Add it to your Address Book or something, for all

Help

haroldp@netcomuk.com ▶	Add e-mail address to Emailer address book
netcomuk.com ▶	Find eMail in FileMaker Pro
uk.com ▶	Send mail with America Online
	Send mail with Claris Emailer
	Send mail with Cyberdog
	Send mail with Eudora
	Send mail with Internet Config
	Send mail with Internet Explorer
	Send mail with Netscape Navigator

By
yo
"P
www.tourrr.com.
Hope this makes some semblance of sen
Looking forward to Kelly's birthday.

One of Apple's coolest technology successes has been utterly ignored by the press. It's the Internet Address Detector (IAD).

Once you've downloaded this software (from www.apple.com) and installed it, your Control key becomes a regular Net-savvy Sherlock Holmes. Drag sloppily through any blob of text that contains any even remotely Net-oriented address — an e-mail, Web, ftp, or other kind of address — and you get a pop-up menu filled with handy things you can *do* with that address. You can add it to your e-mail program's address book; launch your browser to visit that Web site; send an e-mail to the person whose address appears; and so on, as you can see from the example below.

Sure, the address-detecting trips over Office 98's own control-key menus, but so what? Any time Apple wants to save us time and trouble, we'll go for it!

Thereafter, the game is easy to play: Use one e-mail address for public postings, chats, and so on. Use your second, private one for e-mail only. Spam robots can't read private e-mail, so your secret e-mail address will remain virginal and spam-free.

Disguise your e-mail address

Another way to keep spammers from getting your e-mail address is to disguise it when you post messages in newsgroup bulletin boards (or when you post it on your own Web page). Many veterans have taken to signing their messages on these bulletin boards with deliberately scrambled addresses, such as *david at pogueman dot com* instead of david@pogueman.com.

This process makes life a hassle for legitimate people who want to e-mail you, of course, since it's up to them to reconstitute the appropriate address. Still, it keeps the spam robots off the trail.

Don't reply!

**Strange
But True**

Whatever you do, never reply to a piece of spam e-mail — even if the message says that you can get *off* the e-mail list by doing so! Ironically, your response to the e-mail will simply flag your e-mail address as a live, working one manned by somebody who both takes the time to *read* the stuff and is unsophisticated enough to fall for the "reply to be removed from the list" ploy.

Your name will become much more valuable to junk emailers, and you'll find yourself on the receiving end of a new wave of spam.

Chapter 28

A Web Site–Making Crash Course

If you're like many people, browsing the Web is only half the fun; the other half is making your *own* Web pages. You might want your own Web page to promote a business, post family pictures for other family members to see, or just hang your work on a refrigerator that 200 million people walk by every day.

Becoming a Web presence involves several steps:

1. **Create your Web pages.** Creating these special documents requires programming, but it's programming in one of the easiest computer languages in the world: HyperText Markup Language, or *HTML*. Every page you see on the Web has been designed using HTML, a fairly simple language of special text codes. Fortunately, as we'll explain, it's possible these days to design entire Web pages without ever actually typing any HTML codes.

2. **Arrange to get Web space.** Once you've finished designing your gorgeous Web pages, you need to post them on the Internet somehow; otherwise, you'll have to invite people over to your house to show off your handiwork. Your next task, therefore, is to find a company who's willing to store your Web-page documents and leave its computers on 24 hours a day, so that your stuff is constantly available to the Internet. (The company that provides your Internet access — whether America Online or an *ISP*, as described in Chapter 26 — generally offers this Web-hosting service at no extra charge.)

3. **Send the Web pages to that Web space.** To transfer your finished Web-page documents to your Web-hosting company, you use a program like Fetch or Claris Home Page. Behind the scenes, it uses a transmission scheme called *FTP* (File Transfer Protocol). You'll often hear Web geeks

use that acronym as a verb: "I've finished the new Web page. Now I'll FTP it to our Web-hosting company."

4. **Keep your Web pages updated.** The best Web pages are those that attract repeat customers — and the key is keeping the pages up to date and fresh.

This chapter takes you through these steps one by one.

Create Your Web Pages

Behind the scenes, every Web page is actually stored as pages and pages of textual programming codes — in the language known as *HTML*. Actual Web pages, before being posted on the Internet, are merely text files filled with these codes. (The graphics you see on a Web page aren't actually part of the text file — the HTML codes *in* that text file specify what graphic should appear where, but the actual graphics are separate files.) In other words, you can create Web pages by typing raw codes into SimpleText, or you can use a $900 program like GoLive CyberStudio — but the result is the same: text files filled with HTML code.

Welcome to HTML

Here's a typical chunk of raw HTML before being translated into something nice-looking by a Web browser like Netscape Navigator or Internet Explorer:

```
<HTML>
<HEAD>
<TITLE>The simplest HTML example</TITLE>
<H1>This is a level one heading</H1>
Welcome to the world of HTML.
This is one paragraph.<P>
And this is a second.<P>
<B>And this is boldface. </B>
<CENTER>Ohhhhh, yeah! </CENTER>
```

Figure 28-1, on the other hand, shows what that blob of code produces when viewed by a Web browser. Now you can see how the codes produce text effects on the screen.

As you can see, HTML codes determine what formatting will apply to each line. For example, the HTML tag for boldface is <B>. When your browser encounters the HTML tag <B> and then finds the corresponding closing tag </B>, it knows that the text *between* the two tag codes should be displayed in a bold font. Text straddled by the <CENTER> and </CENTER> tags is displayed with center alignment in a Web browser, and so on.

The dozens of different HTML tags can create headlines, italics, quotations, colored text, blinking text, bulleted lists, numbered lists, and other formats. A tag called <A HREF> lets you designate portions of a document as *hypertext*, linking to another specific URL; the <IMG> tag lets you place a GIF or JPEG graphics file (see Chapter 20) into the Web page.
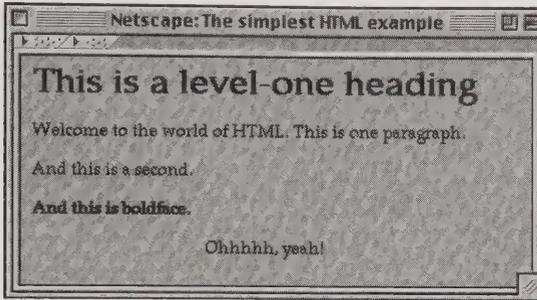
Figure 28-1: The simplest example of HTML code produces this look when viewed by somebody visiting your page on the Web.

If you'd like a complete, plain-English description of each HTML code, what it does, and how to use it, see the HTML Vocabulary program on the CD-ROM that accompanies this book. We can think of few better ways to learn the basics of Web-page coding.

WYSIWYG design programs

Obviously, then, creating your own Web documents doesn't require much in the way of specialized software. You can use SimpleText, in fact, if you know which codes to use — and you type them perfectly every time. Of course, typing codes isn't exactly a lot of fun, and it's frustrating not to know how your HTML document will really look until you open it with a Web browser.

Fortunately, the software world has rushed to our aid. A broad range of programs let you design Web pages without learning a single line of HTML codes — basic programs like Adobe PageMill or FileMaker Home Page (formerly from Claris), and expensive pro-level programs like Macromedia's DreamWeaver, GoLive's CyberStudio, or NetObjects Fusion.

All of these programs let you apply text styles the way you're used to doing it (by choosing Bold from a menu, for example). They also make adding hypertext links and graphics to your Web pages easy, and they provide a WYSIWYG view of your work, so you know exactly what your Web page is going to look like before you make it accessible to the rest of the world. You generally *can* add the occasional HTML code to the pages you design using these programs — but it's not necessary.

Designing your Web page

Web pages can look like anything, as a few minutes online will show you. Some pages look like advertisements: brightly colored photos and crisp text against a white background, laid out professionally. Others look more like computer games: red lettering on a black background. Some are utilitarian, using 12-point Courier typewriter-style lettering against a default light gray background, perhaps generated at a university or scientific institution

without much concern for design awards. Yours can look like almost anything — but make an effort to make it a *good* design for its purpose.

Why Web design is like page layout

In certain respects, the knowledge many Mac fans have acquired about good-looking page design (see Chapter 18) is instantly applicable to designing attractive and effective Web pages. For example:

■ Don't let your text run all the way across the screen. Lines of text longer than about three alphabets' width are too hard to read. If you've got an article or other longish text you want read, indent it (or put it in one column of an *HTML table*, described later) to keep its column narrower.

■ Leave some white space around the elements of your page to increase impact and legibility.

■ Like a magazine cover, your *home page* (the first page visitors see) makes a critical first impression. Good home pages are designed to fit the most important information — a logo or headline, a graphic or two, a hint of what's to come — all on *one screenful*, so your visitor doesn't have to scroll to know what your site is all about.

Why Web design isn't like page layout

Unfortunately, designing for the Web poses its own restrictions that you don't encounter when designing for paper:

■ Graphics aren't necessarily good in Web design. Every graphic makes your page take longer to appear on your visitor's screen, and makes it less likely that that person will ever want to come back. Life's too short. Keep your graphics small and few!

CD

■ You don't have much control over fonts. The fonts you choose on your screen as you create the Web page won't be the fonts used on your visitors' screens. If certain fonts are particularly dear to you (such as those used in your headline or logo), you'll have to create them in Photoshop or Color It (included with this book) and save the result as a graphic image. Unfortunately, the more graphics your Web page has, the longer it takes to appear on your visitor's screen.

(You *can* insert the HTML command *FONT FACE* to specify a font — in fact, first, second, and third choices of a font — to be used *if* they're present on your visitor's computer. An example looks like this:

```
<FONT FACE="Palatino, Times, Helvetica"> Hello there! </FONT>
```

However, if your visitor's computer doesn't have one of those fonts, they'll see some random default font instead.)

■ People will be reading the text on your page on a computer screen that's several feet away. Therefore, choose fonts that are as big as, or larger than, printed fonts. Far too many Web pages today employ a crazy-making 6-point font for large blocks of text. (Internet Explorer users can click a button on the toolbar to enlarge the text on these pages — but you'll have happier visitors if you avoid tiny type at the start.)

- A Web site is harder to navigate than a paper magazine. Put a consistent string of navigation buttons or links at one consistent edge of every one of your Web pages. That way, it's impossible for your visitors to get lost.

- Every browser is different. What looks great in Netscape Navigator may have slight misalignments in Internet Explorer, and vice versa. Even different versions of the *same* browser show some Web pages differently. Test your page in as many different browsers as you can to avoid unpleasant surprises.

- The electronic nature of the Web makes possible all kinds of computery features: blinking text, animations, Java programming, and plug-ins.

  Frankly, we loathe all of it. Why subject your visitors to these distracting and time-consuming hassles? Filling your page with blinking or animations is inviting visitors to click on through to somebody else's page, if only to avoid a migraine headache. And you'd better have a *really* good reason to require a plug-in for enjoying your page. Such Web pages force your visitor to scurry off to some other page to download and install some plug-in, quit the browser, and re-launch the browser. If the payoff isn't pretty darned impressive, you'll have some angry visitors who'll never come your way again.

- Similarly, avoid the temptation of putting a complicated repeating background pattern behind your pages. (To do so, add the boldfaced HTML code to the BODY tag at the top of your document, as shown in bold here:

  ```
  <BODY BGCOLOR="#FFFFFF" background="picture.gif">
  ```

  . . . where *Picture.gif* is the name of the GIF or JPEG file you want to serve as the repeating tile.)

  Our advice: Don't do it. Underlying graphics make the text on top of it incredibly hard to read. Use a white or very light backdrop if you want anyone to read the text on your page.

The Web-Page Building Cookbook

Here's how to create some of the most common Web page effects, using either a drag-and-drop, graphic Web-page builder like Home Page — or a text-based editor like BBEdit or even SimpleText.

If you use a program like Home Page, note that some of these techniques require you to flip into HTML mode (choose Window ⇨ Edit HTML Source) and type a couple of HTML commands. Don't panic; a little bit of manual programming is good for you.

And one more thing: For best results, unless you really know what you're doing, keep all the pieces of your Web page — the HTML (or Home Page document), the various graphics files, and so on — in the *same folder* on your hard drive. You'll save yourself acres of typing and hours of headache later, since a graphic that's moved from its original folder is a graphic that, on the Web itself, doesn't even show up on your Web page.

Similarly, don't use spaces in the names of your HTML documents or graphics files. Use underlines in place of spaces, or no spaces at all. The result: Web pages that can be happily viewed by all kinds of computers, not just Macs.

Creating a table

Tables are among the most useful helpers in Web page design. Don't necessarily think of tables as visible grids; instead, think of them as *invisible* grids, like the Guides in a page-layout program. A huge percentage of professionally designed Web pages, in fact, rely on tables to create their magazine-like look (see Figure 28-2).
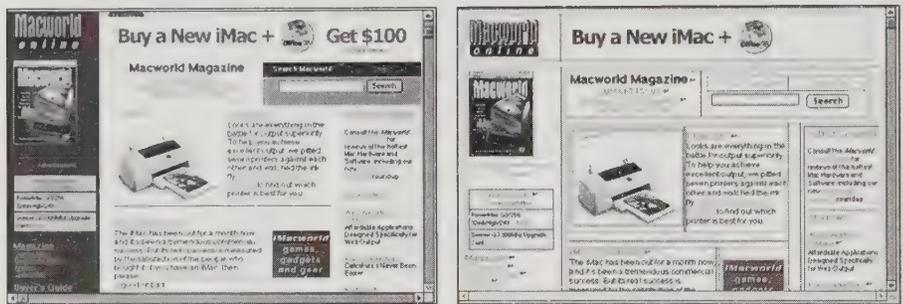
Figure 28-2: The *Macworld* magazine site (left) doesn't look like a table, but that's what it is. You'll find that out if you save the page (as "HTML Source") to your hard drive and then open it in a program like Home Page (right), observing the gray table lines.

As in a word processor, the beauty of tables is that they're stretchy; as you add more text or a larger graphic to one cell of a table, it grows automatically, keeping everything in the subsequent rows correctly aligned.

Creating a table in a program like Home Page is as easy as choosing Insert ⇨ Table. (We won't even attempt to explain how to create tables using raw HTML. God help you.) Set Home Page's Border box to 0 (or use the BORDER=0 HTML command) to make the actual table lines invisible, if you want.

Create a link

The "Web" part of the name World Wide Web, of course, derives from its ability to link one HTML document with another — when you click the blue underlined text *hyperlinks* or similarly linked clickable graphics. (See Chapter 25 for much more on this topic.)

To create a text link in Home Page, highlight some text; this will become the blue, underlined, clickable hyperlink. Now choose Window ⇨ Open Link Editor. A floating window appears, into which you can type the destination

Web address. (If you want the hyperlink to open another one of *your own* Web pages, instead click the Browse Files button and locate the other HTML document in your Web Page folder.)

If you're using raw HTML, a link looks like this:

```
<A HREF="products.html">Click here for our product list. </A>
```

As you can probably figure out, what's between the quotes is the hyperlink's destination document. What's before the *</A>* is the text that actually appears on your Web page — text that's about to become blue, underlined, and clickable.

Add a graphic

Prepare the graphic as a GIF or JPEG file, as described in Chapter 20. The key here is to *end the file name* with *.gif* or *.jpg*, so that all the differently abled computers of the world (such as Windows machines) will understand your graphics when they visit your Web page. Remember: use GIF for solid colors or cartoons for fastest loading. Use JPEG for photos.

Then drag the graphic image directly into the Home Page window to place it. If you're using raw HTML, use the IMG tags like this:

```
<IMG SRC="headshot.jpg">
```

If you want to align the picture with some text, create a table, as shown in Figure 28-2. Put the picture in one cell, the text in another.

Add a color panel down the left side

A common Web page design (shown in Figure 28-3) features a colored panel down the left side of the screen. Not only does it let you make a narrower, more readable main column of text, but it gives you a magazine-style "sidebar" in which to list the main links of your page, news of the day, or other info.

To create this effect, make a GIF graphic that's about 30 pixels tall — but as wide as the widest screen. Paint a color on the left couple of inches, as shown at top in Figure 28-3. Save this GIF file into your Web-page folder. In this example, suppose it's called *background.gif*.

Flip into HTML mode (if you're not already there). Near the top of your document, you'll see a BODY tag; after the BGCOLOR command, if there is one, add the command shown in bold here:

```
<BODY BGCOLOR="#FFFFFF" background="background.gif">
```

(If that sounds like the same command we discussed earlier with reference to creating a repeating *tiled* graphic, you're right. But this graphic is so wide, it has no room to repeat itself *horizontally* — so it repeats vertically instead, thus creating the colored-stripe effect.)
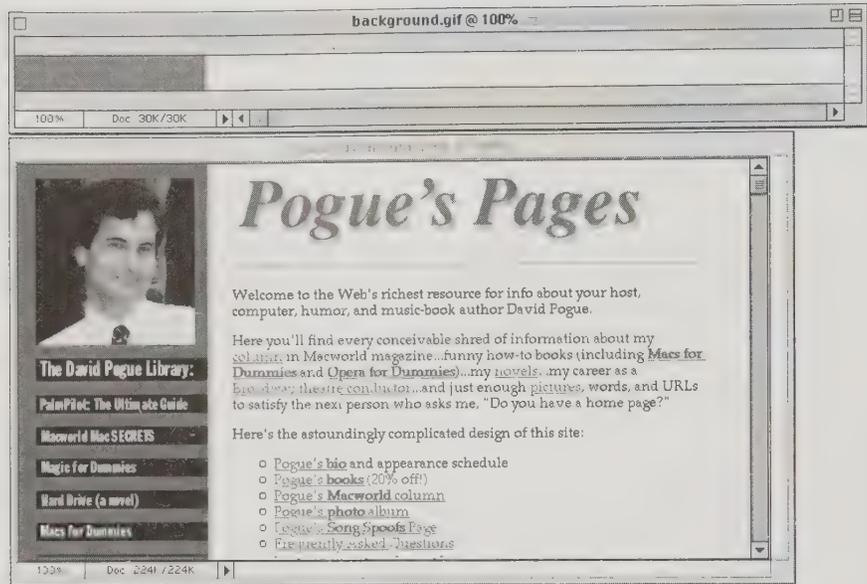
Figure 28-3: Create a horizontal strip of GIF (top), which features a colored-in left couple of inches. When repeated down your Web page, it creates a colored *vertical* strip at the left edge of the page (bottom).

Bulleted lists

Creating a bulleted list is easy in programs like Home Page — just choose Format ⇨ Bullet List. In a raw HTML editor, use the UL and LI codes, like this:

```
<UL>
  <LI> Here's a bulleted list!
  <LI> Look—a second item!
  <LI> Whoa baby—three in this list!
</UL>
```

Life gets trickier, however, if you want to create a second paragraph *within* a bulleted item. The solution: Hold down the Shift key as you press Return. The effect is to create a new paragraph, but *without* creating a new bullet.

Adding a counter

We're not exactly sure why society tolerates "number of visitors" counters on Web pages. Sure, we love seeing how much traffic our Web pages get, too — but we make our counters invisible, so that we don't appear to be flaming egomaniacs. (Besides which, there's no telling what these counters are actually *counting*, as you can read in the upcoming Answer Man sidebar.)

In any case, creating a counter isn't easy; no one HTML code can do it. However, whoever's hosting your Web site (see "Secure Web Space," later in

this chapter) can provide you with the correct instructions. That's usually your ISP (Internet service provider). For example, if America Online is your service, use keyword: *My Place* and click the Help button to learn that the necessary HTML code is:

```
<img src="/cgi-bin/counter?screenname">
```

Wherever that line appears in the text of your HTML code, the number of visitors will appear as a number. (Put your AOL screen name, of course, in place of the word *screenname.*)

HTML Secrets

Make Web pages the easy way

When you're trying to design your own Web pages, don't knock yourself out trying to re-invent the wheel. Get into the habit of borrowing code and ideas from any Web page that you decide you'd like to adapt.

Worth
Learning

To do so using Netscape Navigator, choose View ⇨ Source. You're immediately shown the HTML commands, in a new window, that created whatever amazing graphics you just saw (see Figure 28-4).
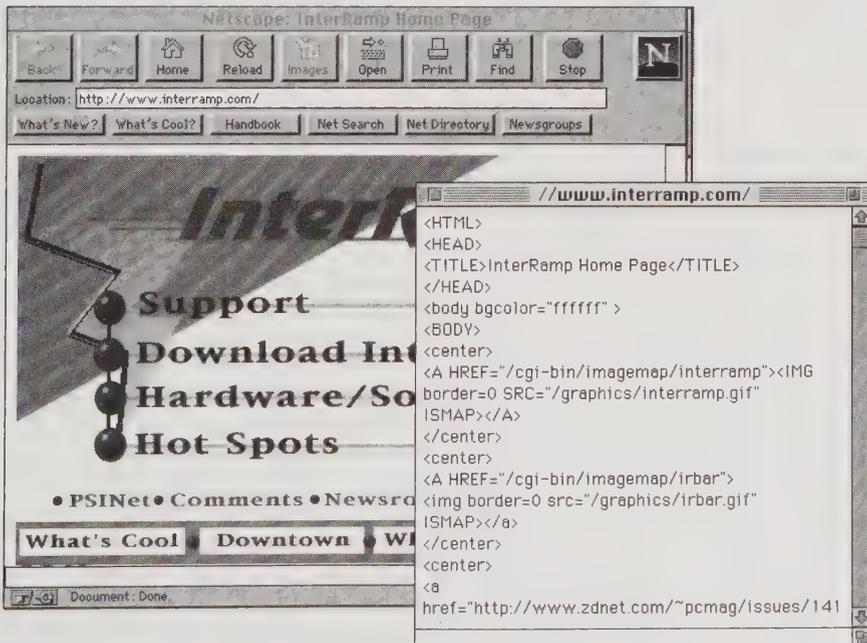
Figure 28-4: A Web page (left) and the underlying HTML source code that created it (right). By studying the HTML stuff — or copying and pasting it — you can make leaps in your own HTML coding.

HOW many hits?

Q: My buddy put up a simple little Web page called "The Teletubby Loathing Club." He claims he's getting 2,000 hits a day. Come to think of it, everyone I've ever met who has a Web page says they get similarly astronomical numbers of "hits." What's going on?

A: Most of the "hits" figures you hear reported are, indeed, grossly inflated. See, the thing is, there are different kinds of hits (visits) on a Web page.

Some counters simply tally the number of times requests for data are made at your Web page. These counts include HTML files, GIF files, and so on. If your Web page has six graphics on it, then one person visiting your page actually generates *seven* "hits" (requests for files from your ISP's server).

Other counters rack up how many Web *pages* each visitor sees on your site; if I visit your site

and check out three different pages, your counter advances by three — another way in which these statistics get inflated.

That's why, when reading about these visitation numbers, you should keep your eyes out for tallies of *unique* hits (also known as *impressions*). *That's* a meaningful number; a unique hit is one visit to your home page by one person. Even if I visit your home page multiple times, I count as only one visitor that day.

In the business of selling ad space on the Web, the impression (or unique visitor) count is important for determining ad prices. But actually, advertisers are even more interested in yet another statistic: the *click-through rate*. That's the percentage of visitors to your Web page who click the ad itself.

Look smart and friendly: use ALT tags

As you can read in Chapter 25, one of the most powerful tricks available to a Web surfer is the ability to turn off graphics. By asking Netscape Navigator or Internet Explorer to display only empty rectangles where the pictures would normally be, you can cruise the Web as though your modem just got a jet engine implant — literally eight or ten times faster than surfing the Web with graphics.

As the first Web page in Figure 28-5 shows, however, the average Web site may leave something to be desired when graphics are turned off: your visitors see only empty squares where the graphics ought to be. The same page at right in Figure 28-5 is much more satisfying, because each missing image is *identified* by a tiny caption. You know what you're missing — and you know whether or not it's worth making the images appear (by clicking Navigator's Images button, for example).

So how do professional designers create those helpful little captions inside the missing-graphic rectangles? By using ALT tags. If you're using Home Page, click an image and choose Window ⇨ Object Editor; a floating window appears in which you can fill in the Alt Label box. (Whatever you type here will show up

as the missing picture's label.) If you're editing in HTML, add the text to your image code as shown here in bold:

```
<IMG SRC="BostonMap.gif" ALT="Map of downtown Boston">
```

Not only do these labels make images-turned-off Web pages more comprehensible, but they're the *only* way blind computer users can surf the Web. Special software can read Web pages out loud for the blind—but not if there's nothing to read.

Figure 28-5: An amateur Web page (top) and one that uses ALT tags (bottom) — with graphics turned off.

Graphics that fade in

The really savvy Web-page designers create *interlaced GIF* graphics — that is, pictures that seem to load onto your screen in waves. After only a couple of seconds, a blurry, grainy representation of the picture appears on your screen — enough to judge whether or not the rest is worth waiting for — and only then does the full-resolution image appear. How do they *do* that?

If you're designing your Web page in Home Page, just choose Edit ➪ Preferences ➪ Images, and turn on Make Interlaced GIFs. If you're preparing your images in Photoshop, and you save your image as "CompuServe GIF" (Photoshop's name for GIF files), you'll be offered a dialog box with two choices: Normal or Interlaced.

Either way, the result is faster-loading low-res images, which your page's visitors will appreciate.

Graphics that change entirely

Some Web pages (such as www.outpost.com) make great use of this sneaky feature: if you play your cards right, you can actually design graphic images that appear nearly instantly on your visitors' screens — in a very grainy, black-and-white form, just enough to let them know what's going on. Only after these stand-in pictures have appeared do the real, full-res, color pix load.

You can pull off this special effect using the LOWSRC command in HTML, which looks like this:

```
<IMG SRC="babypic.gif" LOWSRC="lowres_babypic.gif">
```

If you've created two separate images — called, in this example, *babypic.gif* and *lowres_babypic.gif* — then this bit of code makes the low-res one load first, to be followed by the hi-res one.

Strange But True
If you really think about this little stunt, you'll realize that the two images don't actually have to be related! The two images can, in fact, be equally hi-res — but just different. Your visitor might see, in the same spot on the screen, the first image ("Welcome to — "), followed momentarily by the "hi-res" second image ("Hamster Land!"). Yes, it's cheapo animation for the programming-challenged.

Graphics: Make 'em small!

Mac Basics
As we've tried to drum into your head, the images on your Web page should be small and few. Your visitors will thank you.

But don't just make your images small in *dimensions* — make an effort to keep them small in *file size*, too. You do that by limiting the number of colors in each graphics file. As we've mentioned elsewhere, GIF files (because they can contain a maximum of 256 colors) are far quicker to show up on a Web page than JPEG files. But even GIF files can be made smaller: before saving them, use

Photoshop's Image ⇨ Mode ⇨ Indexed Color command. In the resulting dialog box, choose Exact from the pop-up menu — or, at the very least, choose Web. The latter command limits your image to the 216 "Web safe" colors that both Macs and their color-challenged cousins, Windows machines, can display on the Web.

Secure Web Space

Of course, *writing* the HTML documents is only part of establishing your own Web site. To make your documents available to the outside world, you have to load them on a *Web file server* — a computer that's always on, always connected to the Internet, and never being used for other, potentially slowing purposes.

In other words, it's typically impractical to try to set up a machine at home for your Web site. While it can be done, you'd need an expensive, high-speed connection (such as ISDN — a standard modem won't cut it) and a machine that's dedicated to being a Web server. For most people, taking this route is impractical and very expensive.

Fortunately, most Internet service providers (ISPs) offer a certain amount of hard drive space — maybe two or five megs — to hold your Web pages as part of your monthly $20 fee. Into that space, you can upload your Web pages directly, making them available for public browsing. (If you need more space, you can generally pay extra for the privilege.) The beauty of this system is that your ISP takes care of keeping its computer up, running, and connected to the Internet 24 hours a day.

ANSWER MAN

Setting up your own domain name

Q: *Hey! I set up a Web page with my ISP, which is Concentric. I have to tell my friends that my Web page is at* http://www.concentric.net/~smithereen. *By the time I finish, they've walked away, besides which nobody knows what I mean when I say "tilde." How do I get one of the cool addresses, like* www.smithereen.com?

A: Technically, signing up for your own *domain name,* as those catchy little "dot com" names are known, costs $35 per year. You go, on the Web, to www.internic.com. There you can search to see if somebody has already taken the

name you had in mind — and if not, you can sign up to claim that name as your very own. (You must pay for two years in advance.)

Unfortunately, getting that name *wired* to your Web page is more complicated — so much that hundreds of small companies have cropped up that do nothing but perform this hookup for you. You can consult the Yellow Pages for Internet companies providing "domain hosting," for example. For about $200, they'll both register your chosen Web-page address and hook it up to your actual Web page.

If you're an America Online subscriber, in fact, you get 2MB of Web-page space *per screen name,* a total of 10 megs. Use the keyword *My Place* to read about how you can create your own page on America Online, accessible by anyone on the entire Internet. It doesn't cost anything extra. You have your choice of having a pretty simplistic page that shows nothing but your America Online profile — or designing your own page, using HTML, as we've been describing. People can even download stuff from your page, look at pictures, whatever — as long as your material doesn't take up more than 10MB of total space.

Using your ISP's free Web-page hosting offer is a nice start, but it has two down sides. First, the megabyte limit is hard and fast. If you're planning on putting QuickTime movies of your Laguna Beach vacation up on your Web site, you'll either run out of space — or get a fat bill from your ISP for exceeding your space limit.

The second downside: the Web sites hosted by AOL or your ISP won't have cool, catchy Web addresses like `www.hamsters.com`. Instead, you'll have to make do with something as unmemorable and lengthy as `http://members.aol.com/skibunny7` (where skibunny7 is your screen name).

Only by paying a special Web-hosting *service,* advertised in magazines and on the Web by the trillions, do you have the opportunity to register a Web address that's short, snappy, and selected by *you.* (See the sidebar called "Setting up your own domain name.")

Send the Web Pages to Your Web Space

You've got the space set up and you've created your pages. The next step is to test the pages locally: launch your Web browser *without* signing onto the Internet, and choose File ⇨ Open Page. Locate and open your finished Web pages, checking them to make sure they look good, all the links work, and so on.

Now it's time to send them Internet-ward. The most common method of doing so requires a special Internet technology called *FTP* (file transfer protocol). You'll probably use one of three FTP methods to send your files and graphics:

- If you're an America Online member, use the keyword *My Place* to upload your finished HTML documents to AOL's servers, where they'll be accessible by anyone on the entire Internet. (At this writing, you simply click the icon called My FTP Space — and then click the Upload button to start sending your Web-page files to AOL.)

- If an ISP or Web-hosting service is going to be your Web site's home, and if you've used a program like Home Page to create your Web pages, you're made in the shade. Use the File ⇨ Remote Save command, type in the correct addresses (provided to you by your ISP), and click Save. (See Figure 28-6.) Behind the scenes, Home Page automatically FTPs your pages to the correct folder on your ISP's hard drive — but to you, the process just feels like doing a particularly time-consuming Save As.
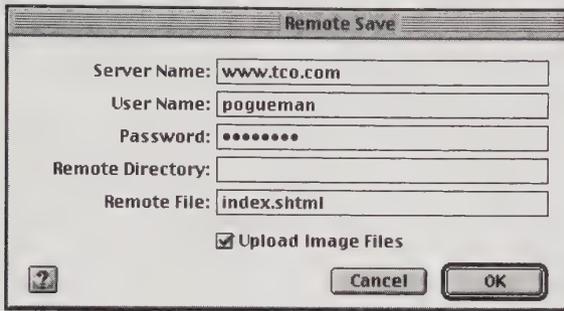
Figure 28-6: Using the Remote Save command in Home Page, you can send your newly completed Web pages to their new home on the Internet.

■ If you've done your pages the hard way, typing in raw HTML (or if you use a Web-page editor that doesn't have a Remote Save feature), you need a program like Fetch. (It's free, but only to individuals — the fine folks at Dartmouth who created Fetch declined to let us include the program with this book. You can download the program from `ftp.dartmouth.edu`, `www.shareware.com`, **America Online**, or almost anywhere.)

■ Launch the program, type in the necessary directory codes (again, only your ISP can provide them), and click OK. You'll see a directory window like that shown in Figure 28-7; at this point, you can simply drag the HTML (or Home Page) documents — and accompanying graphics files — from your Mac desktop into the list window. Fetch does the rest, sending them to your ISP.
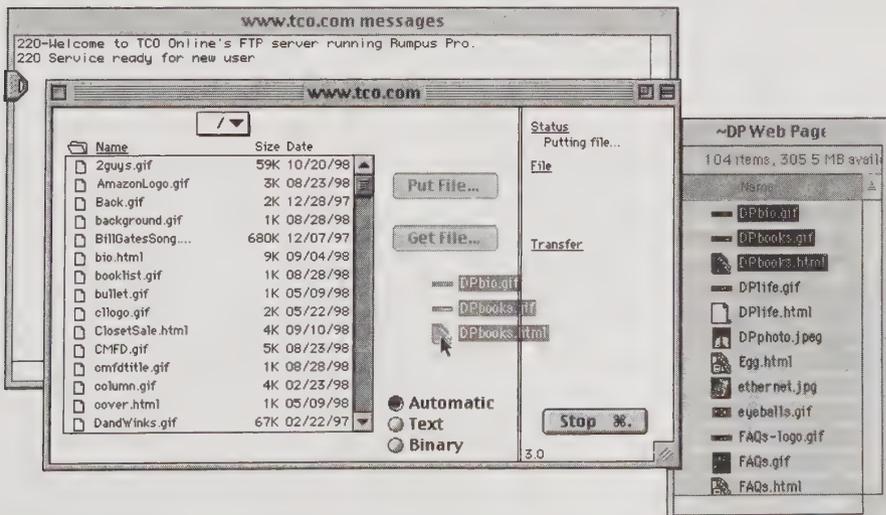
Figure 28-7: The Fetch software lets you drag HTML documents and Web-bound graphics directly off your hard drive and onto the Internet.

Regardless of the method you choose, within minutes, the HTML documents you transferred will be available to the entire population of the Internet.

Keep Your Pages Updated

This step isn't imperative — unless you want your visitors to come back again and again. If your Web site is designed to sell or promote something, generating lots of traffic is the whole point. If you're just putting up photos for your family to see, frequent updating isn't so important.

To update your page, simply edit the HTML documents on your hard drive, as indicated in big Step 2 of this chapter — and then re-upload them with the same document names, thus repeating big Step 3 of this chapter. If your Web site contains hotlinks to other pages, check them occasionally; other people's Web pages frequently move or get shut down. You don't want your own Web site to get so out of date that it's accused of being a "cobWeb site."

Part V

Attachments

Inside Fonts

For a term that's not even used correctly, Macintosh *fonts* have certainly changed the world.

For centuries, typographers used the word font to designate *one* typeface, size, and style. Times Bold 18-point was one font. Times Bold 14 was another. Even today, professional typographers (the non-Mac variety) still refer to one type style as one font: Times Italic, Times Bold, and Times Roman are *three* fonts. But in Macintosh parlance, one type family is usually called a font. Times is a font. Helvetica is a font. Monaco is a font (barely).

The only Macintosh people who still count every stylistic variation as a separate font are the manufacturers of laser printers, who can then advertise their printers as having "35 built-in fonts!"

Anyway, fonts are both a blessing and a curse on the Mac. They've always represented a technical topic. Trouble is, every time some genius gets the bright idea to improve the situation, the Mac font world gets *twice* as messy. Witness, for example, the increasing font-management nightmares caused by the introductions of ATM, TrueType, and QuickDraw GX. And it's not over yet.

We're going to do our best to make all of these competing and overlapping technologies clear. Prepare ye, though, for some tough slogging in the pages ahead; when it comes to the programmers of font formats on the Mac, too many cooks have definitely spoiled the broth.

The Evolution of Mac Fonts

When the Mac first appeared, fonts were extremely simple. There were ten typefaces (see Figure 29-1).

New York   San Francisco   **Athens**
London   *Venice*

Monaco   **Chicago**

Geneva   *Los Angeles*

Figure 29-1: The original Mac fonts. There are some pretty clever jokes going into the names of these fonts: New York is a take-off of Times (used by that prestigious newspaper); Geneva is based on Helvetica (get the Swiss connection?); London is an Old English font; Monaco is a *monospaced* font (every letter the same width); Cairo is a picture font, like Egyptian hieroglyphics; and so on. (Anyone have any good theories about Chicago or San Francisco?)

Font format #1: bitmapped fonts

These first fonts were the original Mac fonts: *bitmapped* fonts. They were designed exactly the way you'd imagine them to have been designed: by somebody painstakingly drawing each letter, pixel by pixel, in a Photoshop-like program. Each letter was composed of a *map* of dots (or bits). And that's how the Mac understood each letter: as a predefined arrangement of pixels.

Mac Basics

Of course, bitmapped fonts weren't ideal. Each letter of each font had to be drawn separately in each *size.* Because it was so much work to design a font, these fonts (then as now) came only in 9-, 10-, 12-, 14-, 18-, and 24-point sizes — if that many. Venice only came in one size (14 points); London came in one size (18 points). You knew which sizes had been predefined by looking at the Font menu of your programs (see Figure 29-2).

Size
6 Point
9 Point
✓ 10 Point
12 Point
14 Point
18 Point
20 Point
24 Point
36 Point
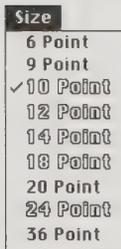
Figure 29-2: The point sizes listed in hollow type are the ones that, for this font, were created by a designer. If you choose one of the black-type fonts, the Mac will try to calculate a reasonable facsimile by extrapolating from the installed sizes.

If you chose a point size that *wasn't* predesigned by the font maker — 17-point, for example — the Mac did its best math. It examined the fonts at the sizes that had been custom drawn and shrunk them or enlarged them slightly, usually with hideous results.

Eventually, people learned to avoid noninstalled point sizes. The world became filled with newsletters featuring 24-point Helvetica and 12-point New York.

Like most Mac monitors of today, the Mac screen of 1984 was composed of 72 dots (pixels) per inch. That 72 dpi resolution happened to work well for fonts because fonts were traditionally measured in *points* — of which, happily, there are 72 per inch! A 12-point letter on the screen could be exactly 12 pixels tall.

The 72 dpi resolution also worked especially well with the Mac's printer, the ImageWriter, whose printouts in Standard mode were *also* 72 dpi. Each dot on the screen produced a corresponding dot on the page. Your printouts were WYSIWYG (what you see is what you get). (Sometimes printouts looked a *little* better than the screen — if you had a bitmapped font installed that was twice [ImageWriter], three times [ImageWriter LQ], or four times [the original LaserWriter] the size of the type displayed on the screen, the printer driver would automatically scale it down by the appropriate factor for smoothness.)

In terms of fonts, though, what you saw wasn't what you *wanted*. Text at 72 dpi may have looked OK on a computer screen, especially compared with what passed for type on the screens of other computer brands. But when it hit the page, the low quality of those 72 large square dots per inch gave the edges of each printed letter a ragged, stairstepped appearance — even with the scaling trick described in the previous paragraph. Even today, when things go wrong and text prints out jaggedly, you hear people saying, "My text printed out bitmapped."

Font format #2: PostScript fonts

The situation changed dramatically when Apple created the LaserWriter printer. Its resolution was *300* dpi, over four times as sharp as the ImageWriter's Standard mode.

The most dramatic feature of the LaserWriter, though, was a new font (and graphics) technology built into it, called Adobe PostScript. Chapter 30 has the details; in short, the result of PostScript was that text printed by a Macintosh no longer had to be crude 72 dpi bitmaps. Text still appeared on the *screen* at that resolution — and, indeed, it always will — but when printed, text printed by the LaserWriter was smooth, crisp, and fine. Furthermore, the LaserWriter could print text smoothly at any point size, no matter how jagged it was on the screen.

A new kind of font — in two parts

On the LaserWriter, those ten classic Apple fonts still printed out at exactly the same coarse 72 dpi resolution. To work its high-res magic, the LaserWriter required a whole new set of fonts: PostScript fonts (see Figure 29-3). To distinguish them from the bitmapped fonts everyone knew, these fonts had *non-city* names.

The LaserWriter meant that your screen and your printer had different resolutions. To solve this incompatibility, Adobe came up with a simple enough solution: create *two* files for every font — one for the screen and one for the printer.

Times Roman
Times Bold
Times
Times Bold

Avant Garde
Avant Garde
Avant Garde
Avant Garde Demi

Bookman Light
Bookman Demi
Bookman Light Italic
Bookman Demi Italic

New Century Schoolbook
Roman
New Century Schoolbook
Bold
New Century Schoolbook
Italic
New Century Schoolbook
Bold Italic

Palatino
Palatino
Palatino
Palatino Bold Italic

Courier Roman
Courier Bold
Courier Italic
Courier Bold Italic

Helvetica Roman
Helvetica Bold
Helvetica Oblique
Helvetica Bold

Helvetica Narrow
Helvetica Narrow Bold
Helvetica Narrow Oblique
Helvetica Narrow Bold Oblique

Zapf Chancery

αβχδεφγηιφ (Symbol)
❍❖✱✱✽✱✻ (Zapf Dingbats)

Figure 29-3: The 35 built-in LaserWriter fonts.

The screen display used the bitmapped fonts people had always used. In the age of laser printers, bitmapped fonts (also called *fixed-size fonts*) now took on a third moniker: *screen fonts.*

This was to distinguish the screen-display fonts from the PostScript half of each font: the *printer font.* This was a separate file. It was distinctive for several reasons:

■ You didn't install it into your System file, as you did a screen font. You left it loose in your System Folder.

■ Its name didn't match the screen font's name. Instead, it was abbreviated to signify that it was a printer font. The printer font for bold, oblique Helvetica Narrow was called HelveNarBolObl (see Figure 29-4).

N Helvetica Narrow

HelveNar   HelveNarBol   HelveNarBolObl   HelveNarObl

Figure 29-4: The two halves of a PostScript font: the screen font (top) and the printer font files, one for each type style.

■ There was one file for every single style variation of a font. To create an italic *bitmapped* font, for example, the Mac simply slopes the letters (offsetting each consecutive row of pixels). Technically, that's an *oblique* typeface, not italic. But a true italic typeface has a completely different design. Therefore, a PostScript font required one printer font apiece for bold, italic, and bold italic styles.

PostScript fonts did more than solve both problems (low resolution and small choice of sizes) associated with bitmapped fonts. Because PostScript was a graphics *language* and not simply a font technology, you could perform all kinds of wild text manipulations with PostScript text: stretch it, print at an angle, distort it, and so on. (We showed you a couple of these techniques in Chapter 20.)

How it works

A PostScript font is capable of all these stunts because it *isn't* a bitmap. Each character is stored as a series of mathematical equations that describe curves forming a hollow *outline* of each letter (see Figure 29-5).

Figure 29-5: How the Mac thinks of a screen font (left) and a printer font (right).

The PostScript printer simply fills in this outline with black, regardless of how many printer dots it takes. A LaserWriter fills it in with 300 or 600 dots per inch. A PostScript imagesetter (see Chapter 30) fills it with many more dots per inch.

Because a PostScript font is a set of character outlines, you can see how easy it is for a printer to enlarge or reduce your text. All it must do is multiply its little equations by 0.3 or by 3 or by 33, for example, to create text that's much smaller or much larger than normal size. That's why the screen still needs a certain font in several installed sizes, but the printer doesn't.

Despite the PostScript breakthrough, Adobe's dual-font system wasn't without its drawbacks — especially the requirement to maintain two sets of fonts in the System Folder. And then there was the screen display; PostScript screen fonts worked just as badly as the original bitmapped fonts always had.

ATM

The screen-display problem was finally solved by the invention of Adobe Type Manager (ATM) in 1989. In principle, this control panel treats the screen as just another printer. That is, it interprets those same PostScript *printer fonts,* in your System Folder, for drawing on the screen. Fonts still appear at 72 dpi, of course, but they have all the other advantages of PostScript fonts: They can be stretched, angled, and — most importantly — changed to any size without sacrificing clarity (see Figure 29-6).

ANSWER MAN

Close, but no Helvetica

Q: What exactly is font substitution?

A: Adobe Type Manager Deluxe, Adobe's enhanced version of ATM (and a descendant of the discontinued Super ATM), goes a long way toward solving an old problem: You open a document for which you don't have all the original fonts installed.

Instead of simply showing you Courier or New York in the place of the missing fonts—complete with awful line breaks that result from the different widths of these fonts—ATM Deluxe consults a database of all Adobe fonts. (As you can imagine, this database takes up considerable disk space.) It then displays a font on the screen that looks almost like the original.

The program's success at re-creating the exact look of a missing font varies from font to font; its substituted text faces look amazingly close to the absent fonts, but its display faces (espe-cially fancy ones) may bear little resemblance. You can, however, always count on ATM Deluxe to draw its substitute font at precisely the correct letter widths. Therefore, you can always count on line breaks, page breaks, and headlines looking exactly as they did with the original fonts.

ATM Deluxe's sole limitation is that it only works with Adobe PostScript fonts. It can't help your library of Bitstream or other PostScript fonts (and it certainly can't help with non-PostScript fonts, TrueType, or bitmapped fonts).

Mac Basics

With ATM, then, the Mac thinks of type as outlines, both on the screen *and* when printed. Thus, ATM provides one other important benefit: smooth, resizable text printouts on *non*-PostScript printers, such as ImageWriters or StyleWriters. Suddenly, as far as *type* is concerned, those printers got the royal PostScript-font treatment. Because of ATM, PostScript font jaggies have been banished from both the screen and every kind of printer.

Figure 29-6: A 111-point Palatino letter R on the screen — both without (left) and with ATM installed.

The latest version, ATM Deluxe, also offers font-management capabilities (like the old font-management standby, Suitcase), allowing you to open and close selected groups of PostScript and TrueType fonts easily and conveniently. ATM Deluxe also performs font substitution, creating facsimiles of fonts that aren't installed, so you can still get an idea of what a document looks like even if you don't have the required fonts. For more on font substitution, see "Close, but no Helvetica."

You do pay a small price for ATM's impressive technology — much less today than in its original incarnation, but a price nonetheless:

- ATM requires a large chunk of memory: at least 500K for itself, plus an additional amount that you can adjust in the ATM control panel (Adobe recommends 50K *per font*).

- Most people don't *have* the printer-font files for the LaserWriter's *built-in* fonts (Times, Helvetica, Palatino, and so on).

- You have to *buy* ATM Deluxe. It costs $100, complete with 30 fonts.

On the other hand, if all you want to do is scale fonts, a non-deluxe, font-smoothing-only version comes free with this book (see our secrets below). And if you have Mac OS 8.1, it's right there in the Adobe Software folder on the 8.1 CD.

ATM Secrets

Your free copy of ATM

CD

On the CD-ROM that accompanies this book is the Adobe Acrobat Installer (it's in the Mac Secrets Electronic Edition folder). Along with the actual Adobe Acrobat Reader, it installs the original $99 ATM control panel — for smooth display of any PostScript font at any size, on screen or printer. (It lacks only the font-suitcase management features of the Deluxe edition.) See the appendix for details.

Anti-aliased text on the screen

OS 8.5

As Figure 29-7 shows, ATM Deluxe introduced a curious new feature to the Macintosh, a feature later incorporated into Mac OS 8.5: *antialiased onscreen text.* "Antialiased" means "has softened, blurry edges," as shown at right in Figure 29-7. You may have seen this kind of special text on Web pages or in Photoshop artwork — but ATM Deluxe can bring it to *all* text on your screen.

LOST: *Adorable puppy*
Answers to "Bullwinkle"

Last seen wandering cluelessly near the
Stop N Shop loading docks.

LOST: *Adorable puppy*
Answers to "Bullwinkle"

Last seen wandering cluelessly near the
Stop N Shop loading docks.

Figure 29-7: Top: antialiased onscreen text, thanks to ATM Deluxe. Bottom: normal onscreen text.

Also as shown in the figure, however, at small sizes, antialiased text can actually be harder to read than sharp-edged text. And antialiased text takes time to create; open a Word document that uses many different fonts, and you may wait for several seconds while ATM Deluxe performs all of its necessary calculations.

Those drawbacks are why ATM Deluxe offers selective control over which fonts get the edge-softening treatment. In the program's Preferences dialog box, you can specify that, for example, no antialiasing should happen to fonts for which your Mac has *installed sizes,* as explained in "Why screen fonts still exist even with ATM," later in this chapter.

Mac OS 8.5's antialiased-text feature (which you can turn on and off in the Appearance control panel, as described in Chapter 4) doesn't offer the ability to turn off text smoothing for installed point sizes, as ATM does. However, it offers one enormous benefit ATM Deluxe doesn't: Mac OS 8.5's font smoothing works on TrueType fonts, not just PostScript. And TrueType, we're guessing, is what the vast majority of Mac users use most of the time.

Font format #3: TrueType

ATM and PostScript fonts made the world's graphic designers happy enough. Trouble was — as far as Apple was concerned — no one was getting rich except Adobe. Adobe made the fonts. Adobe made ATM. Worst of all, Apple was paying Adobe a royalty of close to $750 *per* LaserWriter for permission to include PostScript technology. That kept prices of laser printers high, and it kept sales lower than Apple would have liked.

So Apple came up with a brilliant scheme. It would come up with its *own* version of PostScript! Apple would own it, and, therefore, wouldn't feel beholden to Adobe Systems. The font technology Apple came up with was TrueType.

A TrueType font works exactly like a PostScript font with ATM in that you can resize, reshape, and stretch the type, and it always looks smooth and sharp on the screen and when printed. As an added bonus, it has three advantages:

- There's less file mess. One single icon on your disk represents both the screen-font information *and* the printer-font information.
- You can find out what the font looks like by double-clicking its icon.
- A basic set of TrueType fonts comes with every Mac (see Figure 29-8).

Times	Helvetica	Palatino
Courier	Σψμβολ(Symbol)	**Chicago**
Geneva	Monaco	New York

Figure 29-8: The basic set of nine TrueType fonts included with System 7 and later. Some former bitmapped-only fonts — some of the "Apple Classic Fonts" — have been converted into TrueType form, too.

For anyone who isn't a graphics or publishing professional, then, TrueType is a blessing and a hassle-saver.

Yet PostScript didn't go away when TrueType came along. Many people had invested huge amounts of money in PostScript fonts, and they weren't about to buy an entirely new library of TrueType fonts. PostScript fonts print with fewer hassles than TrueType on professional printing equipment (such as Linotronic gear), too.

Furthermore, TrueType is only a font technology. PostScript, on the other hand, is a *graphics* technology. It does much more than manipulate text, as you'll find out in Chapter 30; it does lines, shadings, and colors equally well. TrueType, which deals only with type, couldn't possibly have replaced all the flexibility of PostScript.

Font format #4: GX fonts

After years of behind-the-scenes programming, Apple unleashed QuickDraw GX upon the world in 1994. The Fourth Edition of this book (provided in electronic form on your CD) covers GX in more detail; in brief, this new printing/color/type architecture could do amazing things for fonts. Unfortunately, to benefit from all its magical intelligence, you would have had to get rewritten *programs* and rewritten *fonts*.

Neither came to the marketplace in any meaningful way; as of Mac OS 8, Apple officially abandoned QuickDraw GX, although many of its technology advances live on in, for example, Mac OS 8.5.

Working with multiple font formats

Today, then, you've got three essential kinds of fonts: bitmapped, TrueType, and PostScript (see Figure 29-9). This can be confusing, because you're quite likely to run into fonts of the *same name* in each of these formats!
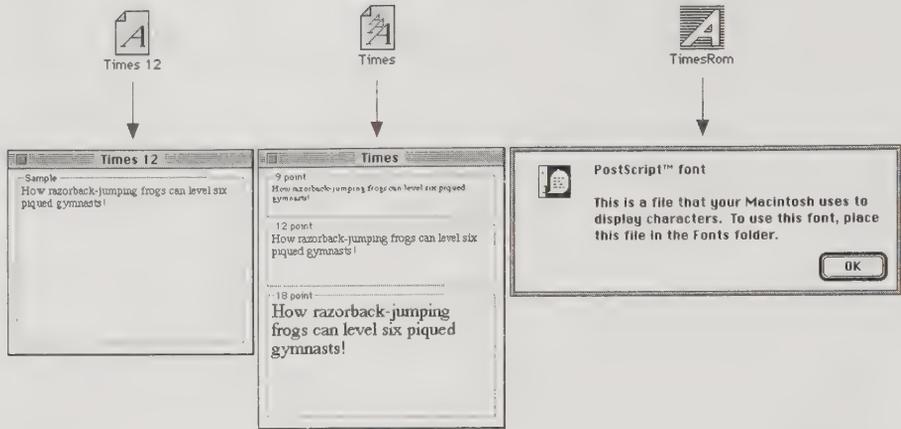
Figure 29-9: Three kinds of fonts, three reactions to a double-click. On the left, a bitmapped (screen font) icon. Double-click it (in System 7 or later) to view a window where you see what this screen font looks like in its one size and style. Middle: a TrueType font. Double-click its icon to see the type style in three sample sizes. Right: a PostScript printer-font file. Double-click it and you just get an error/help message.

Why screen fonts still exist even with ATM

If ATM consults the printer fonts to decide how to draw the characters on the screen, then you might wonder why a PostScript font has a screen-font portion at all.

The answer is that, without at least one point size of a screen font, the Mac wouldn't know that you even *have* a font. That font's name wouldn't show up in any of your Font menus. Yes, ATM can handle the display of any point size you select. But *one* point size of each PostScript font must be installed into your system just so it will turn up in the Font menus.

In fact, we can make a good argument for keeping *more* than one point size of each font installed. Whenever you display a font at a noninstalled size, ATM must kick into gear, consulting the printer-font files and drawing the text on your screen. That processing takes time — anywhere between a split second and many seconds, depending on your Mac's speed.

If you set some text in a point size for which the system contains a bitmapped font, however, ATM doesn't kick in at all. It simply throws the ready-made, predefined bitmap onto the screen. You get two advantages: speed and quality of display. (A hand-designed bitmapped font is almost always more attractive than the computer-generated approximation.)

Why screen fonts still exist even with TrueType

In TrueType technology, outline-font and screen-font information are both contained in the same single TrueType file. Therefore, you may wonder why TrueType suitcases also contain *bitmapped* fonts for the same TrueType typefaces! (See Figure 29-10 for proof.)
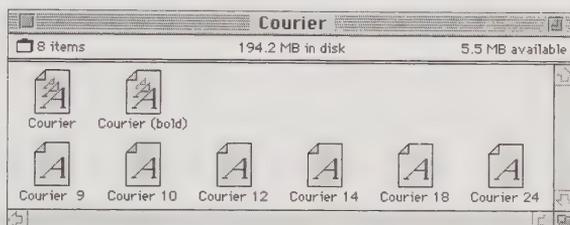
Figure 29-10: If you double-click a font suitcase that comes with System 7 or later, you'll discover something odd. Yes, there are TrueType font files inside; in this example, they're called Courier and Courier (bold). But there are also bitmapped screen fonts, each in one particular size!

We mentioned that using ATM, you must install each font into your system in at least one point size. With TrueType, however, you don't have to install *any* screen fonts. You can put just the TrueType file by itself into your System file or Fonts folder, and all your fonts show up correctly in your Font menus and look good at any size.

As with ATM, the reason to keep screen fonts around even with TrueType is speed. Without installed screen fonts, both type technologies produce a delay when you change type sizes. But ATM uses a memory cache to store recently built font bitmaps. TrueType must generate font shapes afresh each time you change a font or font size, so (without screen fonts installed) it tends to be slower.

Finally, as with PostScript fonts, a bitmapped screen font on the screen generally looks better than its TrueType-computed equivalent (see Figure 29-11). Be careful, though: Installed-size screen fonts and TrueType- (or ATM-) computed fonts give different line breaks in the same document.

Figure 29-11: The same font — Palatino — in its bitmapped and TrueType-generated incarnations. Note that the line breaks are different when no screen font is installed.

Which font version is that?

For best results, install into your System Folder *either* the TrueType version of a certain font *or* the ATM/PostScript version. It's perfectly OK to use the TrueType Times, the PostScript Palatino, and so on; just avoid having the TrueType and the PostScript Times *both* installed.

Which font you get on the screen

If you do, however, have both formats installed, the Mac selects which type to display on the screen as follows:

- If there's an installed bitmapped screen font in the appropriate size, that's what you see.

- If there's no screen font, the Mac constructs the screen font using the TrueType version.

- If you don't have the TrueType version, you get the ATM-created version (*if* you have ATM and the appropriate PostScript printer-font files).

- And if you have *neither* the appropriately sized screen font nor TrueType nor ATM, the Mac creates a bitmapped screen font based on whichever point sizes of that font *are* installed, just as the very first 1984 Macs did.

Which font you get on a PostScript printer

Printing to a PostScript printer is another story, however. Keeping track of which type you're actually getting on paper isn't easy; in fact, we found the following information surprising:

- Regardless of the type of technology used for the screen display, you get the printer's built-in version of the font, if available, on the printout.

  Therefore, even if you install (and are using) TrueType Times on your Mac, you get the *PostScript* version of Times in the printout!

  This weirdness is true regardless of whether it's a built-in printer font (Times, Helvetica, Courier, and so on) or a PostScript font you've downloaded to the printer (see Chapter 30 for details on downloading fonts).

- If there's no PostScript version of the font in the printer, only then does it print the TrueType version of the type.

- If the font you're printing *isn't* a PostScript or TrueType font, then it's a regular old bitmapped screen font. It prints out at 72 dpi, exactly as it appears on the screen. (Neat trick: If you happen to have a point size installed that's exactly four times larger than what you're trying to print — if you're printing 12-point and you've got the 48-point size installed — the Mac will cleverly scale down that larger bitmap, giving you much higher quality, just as it did in the days of the ImageWriter dot-matrix printer.)

Strange
But True

Which font you get on a non-PostScript printer

The font-preference order is different if you're printing on a QuickDraw printer, such as a StyleWriter, DeskWriter, ImageWriter, Epson inkjet, or non-PostScript LaserWriter.

■ The Mac first tries to print using the TrueType outlines, if it's indeed a TrueType font.

■ If it's not a TrueType font, the Mac attempts to use ATM. It checks to see if you're using a PostScript version of the font.

■ If you're using neither a TrueType nor a PostScript/ATM font, then once again the Mac prints whatever's on the screen as a 72 dpi bitmap.

Installing, Removing, and Moving Fonts

Now you know the techie differences between different font formats; and, we hope, you know how to identify each kind of font file. But to make them work — and print smooth letters on the screen and on paper — you must know where to stick them.

We'll assume that you know how to spot a *suitcase file* — akin to a folder for font files. You may, for example, store all the different bitmapped screen versions of a font into a single suitcase for convenience. Then there are the *printer font* files, required for each style of a PostScript font.

Here's the exact rundown of their required locations.

How to install a font

To install a font in System 7.1 and later, drop its components (suitcases and/or printer files, TrueType or PostScript) onto your System folder icon. You're asked if you want the Mac to store them in the appropriate place for you. Click OK. They're all placed into your Fonts folder (even though, technically, PostScript printer fonts also work if they're in the Extensions folder or the outer level of the System folder).

You can add fonts to your system even while programs are running. However, as a dialog box will tell you, these fonts won't show up in the Font menus of those programs until you quit and relaunch them.

If you have Suitcase or ATM Deluxe, you can keep your fonts anywhere on any drive. Keep like-named screen and printer fonts in the same folder, however. These utilities let you manage *sets* of fonts. For example, you can use Suitcase, MasterJuggler, or ATM Deluxe to create one set for a newsletter project, a second for a flyer, and so on. You can load or unload a set at any time.

How to remove a font

Begin by quitting all your programs. (You're not allowed to remove fonts while programs are open, and therefore using them.) Open your hard drive; open your System folder; open your Fonts folder; and drag the appropriate suitcase out of the Fonts window and onto the desktop (or into the Trash, if you're really finished with it).

How to copy a font to another disk

Suppose you want to take, say, a Zip disk to a local service bureau, and you want to be sure to include all the fonts you used in your document. Even if you still have programs running, you can Option-drag font suitcases out of your Fonts folder (and onto the Zip disk's icon).

Font Secrets

The following secrets apply to System 7 and later.

That 128-font limit

Worth Learning

The Fonts folder is all well and good, but it does have its limit. You can put no more than 128 font suitcases into the Fonts folder at a time.

This really isn't much of a limit at all, however. The operative words are "*font suitcases.*" A suitcase file can have almost as many TrueType fonts and screen fonts in it as you care to pack in! You could put 50 TrueType fonts in *one* font suitcase, which would only count as *one* file toward the Fonts folder's limit of 128.

To add font files to a suitcase, drag them onto it. You can even add an entire *suitcase* to a suitcase.

How to create a new font suitcase

Without a font utility such as Suitcase, how are you supposed to create a font suitcase in System 7?

You take an *existing* font suitcase (there are plenty in your Fonts folder), duplicate it, open it, trash its contents, and rename it. Then add your own choice of individual font files.

ANSWER MAN

Sucking out your favorite fonts

Q: There's this cool font called Mishawaka, but it only shows up in my Eudora program. How can I use it in all my other programs like any normal font?

A: Man, is this a sneaky one, devised by Eerk Hofmeester, our favorite reader in the Netherlands. This'll work *any time* you've got a program with its own embedded, private fonts.

Make a copy of the program (we'll use this Eudora example). Use FileTyper, included with this book, to change the copy's *type and creator codes* to *FFIL* and *DMOV,* respectively (see Chapter 15 for instructions and explanation). Lo

and behold: Eudora now turns into a font suitcase!

Open your own Fonts folder and duplicate one of the font suitcases inside. Drag the duplicate suitcase to the Desktop, open it, and trash the fonts inside, leaving a hollow suitcase shell.

Now just double-click your Eudora copy/font suitcase file to open it. You'll see the fonts there. Drag them into your suitcase shell. Close the suitcase-shell window, drop it onto your System Folder icon to install it, and throw away the Eudora copy. You've now got its font installed normally in your system!

Why Text Prints with Jaggies

Conventional wisdom has it that jagged text is a thing of the past in Macintosh printouts. Outline fonts (courtesy of TrueType and ATM) have completely eliminated the need to put up with "jaggies," whether your printer is a Post-Script laser printer or a QuickDraw printer (such as an inkjet). Here are the only possible reasons that your printouts might contain stairstepped text.

It actually *is* a bitmapped font

Maybe you are, in fact, actually *using* a bitmapped font — some shareware font, for example (or a city-named font from System 6). As we mentioned at the beginning of this chapter, bitmapped fonts aren't *outline fonts* capable of looking great in any size. Get ATM and some PostScript fonts. Or start using TrueType fonts.

It's a PostScript font and you don't have the printer files

If you *are* using a PostScript font and you're getting jaggies in printouts, you may be missing the corresponding printer-font files. (Remember that a PostScript font has two parts: the screen font and the printer font.)

You also get jaggy printouts of PostScript fonts if you put the printer fonts in the wrong *folder.* See "Where Do They All Belong?" on the preceding pages for specific information.

You'll never have this problem with the built-in LaserWriter fonts (Times, Palatino, Helvetica, and so on). But if you're using a "downloadable" font, a PostScript font you installed yourself, then fetch the printer portion from the font's original installation disk.

You're printing from a painting program

As explained in Chapter 20, painting programs like Photoshop and ClarisWorks' Painting window store everything as a bitmap, no matter what kind of fonts or ATM you have. Text you've typed into a painting program prints out as a bitmap on any printer.

Inkjet printers: You've rotated text

Even if your type — whether TrueType or PostScript with ATM — usually prints out fine, you may get jagged printouts from QuickDraw-style printers, such as StyleWriters and other inkjets, if you've rotated the text on the screen. For example, ClarisWorks' drawing window lets you freely rotate text — but the printout won't have smooth type unless you use a PostScript laser printer.

Inkjet printers: You don't have ATM

Even if you're using PostScript fonts (that is, fonts whose names aren't city names), you'll still get jagged printouts unless you install ATM.

Style Variations

From the very first Macintosh model, you could create an italic or bold version of any font. In fact, you could also create a number of less-attractive variations: underlined, outlined, shadowed, or any combination of these.

Style variations for bitmapped fonts

If you were reading about this topic in 1984, there'd be nothing much to read. The Mac used a built-in algorithm to create these *derived styles*. It slanted the letters a little to create italic. It added a couple of pixels on either side of the letter to create bold. It did everything, however, at 72 dpi (see Figure 29-12).

Be careful what you wish for. You might get it.

Be careful what you wish for. You might get it.

Be careful what you wish for. You might get it.

Figure 29-12: At top, what 12-point Palatino Roman looks like on the screen. In the center, the Mac's version of italic — it's simply a slanted version of the Roman version. At bottom, a true Palatino italic. As you can see, it's actually a completely different typeface.

In real typesetting, however, a different set of type is used to represent italic and boldface. Related, but different; every character has been designed individually in each style variation, as shown in the bottom example of Figure 29-12.

Style variations for PostScript fonts

Each PostScript font comes with several screen fonts: one each for bold, italic, bold italic, and sometimes more. If all of these styles are installed, a few interesting things happen:

■ Your Font menus get long and disorganized. For some reason, font companies give horribly inconvenient names to these style variations. Adobe doesn't call it *Times Italic*. It calls it *I Times Italic!* (The I prefix, of course, stands for Italic.)

As a result of the superfluous *I* at the beginning of the name, the italicized font's name isn't alphabetically adjacent to Times Roman, as it should be. Instead, it's up in the *I*s. Multiply the problem by *B Times Bold* and *BI Times Bold Italic*, and multiply that by 30 fonts, and you'll see what a poorly designed naming scheme this is (see Figure 29-13).

Font		Font	
Avant Garde		Avant Garde ▶	
B Avant Garde Demi		Bookman ▶	
B Bookman Demi		Chicago	
B New Century Schlbk Bold		Courier	
B Palatino Bold		Futura ▶	
BI Avant Garde DemiOblique		Geneva	
BI Bookman DemiItalic		Helvetica	
BI New Century Schlbk BoldIt		Helvetica Condensed ▶	
BI Palatino BoldItalic		Helvetica Narrow ▶	
Bookman		Monaco	
Chicago		New Century Schlbk ▶	
Courier		New York	
Geneva		**Palatino ▶**	**Roman**
Helvetica		Symbol	Bold
I Avant Garde BookOblique		Times	Bold Italic
I Bookman LightItalic		Zapf Chancery	Italic
N Helvetica Narrow		Zapf Dingbats	
NB Helvetica Narrow Bold			
NBI Helvetica Narrow BoldObl			
New Century Schlbk			
New York			
NI Helvetica Narrow Oblique			
✓Palatino			
Symbol			
Times			
Zapf Chancery			
Zapf Dingbats			

Figure 29-13: A typical font menu, as destroyed by various styles of the same PostScript fonts (left), and as repaired by Adobe Type Reunion.

Thank goodness for programs like Adobe Type Reunion, which consolidate all the separate styles into shorter, simpler Font menus, as shown in Figure 29-13.

■ If you highlight some normal, upright Palatino (that is, Palatino Roman) and choose Italic from the Format or Style menu, the Macintosh is smart enough to use the I Palatino Italic typeface, if one is installed. In other words, it doesn't simply slant the letters of Palatino Roman. It actually substitutes another font entirely.

This feature can have some unexpected results. When the Mac displays the I Palatino Italic font on the screen, for example, the *computer* doesn't think it's displaying an italic font. It just thinks it's displaying a regular, unstylized font. Therefore, you're allowed to choose the Italic command *again*, and you'll get a *double*-italicized font! (See Figure 29-14.)

Fortunately, there's only one *printer font* designed for italics in the typical font. When your double-italicized (or double-bolded) font prints, then you'll just get a single-italicized (or -bolded) font.

On the screen	When printed
William "Automatic" Teller	William "Automatic" Teller
William "Automatic" Teller	*William "Automatic" Teller*
William "Automatic" Teller	*William "Automatic" Teller*

Figure 29-14: The hazards of double-stylized text. On the left: from top to bottom, you see the Roman version of the font, the authentic italic font, and then the authentic italic with the Mac's Italic command applied. On the right: the resulting printout. Of course, there's no such thing as double italic, so the third line prints the same as the second.

This second example proves an interesting point. When you're working with PostScript fonts, stylized text you see on the screen may not print out as stylized text. Your success at printing stylized text is completely dependent upon whether or not there's a *printer font* designed in that style.

Look in your Fonts folder to see which style variations you actually have for a given font. But be aware that some fonts don't have *any* stylized versions. The standard Zapf Chancery built into office laser printers, for example, comes in only one style. You *can* apply styles to it on the screen. But because there's only one printer font (in this case, built into the typical PostScript printer), you only get one style of printout, as shown in Figure 29-15.

On the screen	When printed
Zapf Chancery	*Zapf Chancery*
Zapf Chancery Italic	*Zapf Chancery Italic*
Zapf Chancery Bold	*Zapf Chancery Bold*
Zapf Chancery Bold Italic	*Zapf Chancery Bold Italic*

Figure 29-15: What you see on the screen (left) won't print unless you have a PostScript printer font for *each* style variation you used on the screen. (There aren't *any* style variations for the Zapf Chancery font unless you purchase the full family from Adobe, so all four printouts, on the right, look the same.)

How to apply bold and italic

When it comes to PostScript fonts in a word processor, we're often asked which is the better procedure: (1) type in plain Futura (for example) and apply the *Bold* command to it, or (2) use the Futura Bold *font* instead. Answer: The printed result is the same.

On one hand, using plain Futura and applying the Bold command seems superior. That way, if you send your document to somebody who doesn't have your fonts, bold will still be bold. (If you had used Futura Bold instead, your recipient would have seen *everything* as nonbold.) On the other hand, if you apply bold to plain Futura, and you don't *have* the FuturBol printer font on hand, then you'll be deceived; you'll see bold on the screen, but won't get it in the printout. If you subscribe to that reasoning, you'll choose the Futura Bold font from the Font menu to begin with.

You only *have* that choice to make for bold and italic, by the way. If you want Futura Demi, or Futura Condensed, or whatever, you must choose those names from the Font menu.

Other styles and Multiple Masters

There's more to life than bold and italic, of course. Depending on the font you're using, there may be as many as six or eight different *weights* (thicknesses). For example, Futura comes in three different shades of bold (Bold, Heavy, and Extra Bold).

MACINTOSH SECRET

Your secret Symbol fonts

Apple hasn't lost its sense of whimsy, even after all these years. Buried in your Geneva and New York fonts are a host of great cartoon symbols from the Mac's original 1984 fonts. Actually, it's all the same symbol; here's what it looks like at 9, 10, 12, 14, 18, 20, and 24 points:

Geneva:

New York:

That New York 10- and 20-point symbol looks neat when you run a bunch of them together:

So how come you've never seen these symbols? Because they don't show up in Key Caps, and they can't be typed. Instead, you need a program that can show you *every* character in the font — such as the Insert Symbol command of Microsoft Word, or the shareware program PopChar, or ResEdit. Poke around enough, and you'll locate the character (which looks like Ÿ in any other font); from that point, you can copy and paste it into your important documents.

These are truly phantom symbols, by the way — if you try to print them, enlarge them, or even convert them to outlines in a PostScript drawing program, they vanish! All that's left behind is the boring Ÿ character!

Mac Basics

Generally, you can figure out what the style names mean: Roman is the "regular," upright, normal-weight typeface. *Oblique* is a slanted face reminiscent of italic (but in this case a type designer — rather than the Mac — did the slanting), just as *demi* is a variant of bold. In fact, in order of boldness, typical fonts are named Ultra Light, Extra Light, Light, Roman, Medium, Demi, Bold, Extra, Black, and — for the really fat look — Ultra Bold.

If you're a real font nut or a professional designer, you may want to get into the expensive, but fascinating, realm of Adobe's *Multiple Masters* fonts. These are special core fonts that come with a program that you can use to fatten up, skinny down, condense, expand, or slant the characters in any way you want — and save the result as a new font. You can make as many font variations as you wish, each with different thickness and spacing; the program names your different variations with tacked-on numbers in your Font menus. (In case you're not nuts about font names such as "MyriaMMIt_658 wt 342 wd," you'll be happy to hear that the current version of Adobe Type Reunion — called Type Reunion Deluxe — lets you give your Multiple Masters creations normal-sounding names.)

Don't even think about printing one of these fonts unless your PostScript printer has 3MB or more RAM in it, though.

Other derived styles

There are a few other styles in the typical Style menu that we haven't said much about: Underline, Shadow, and Outline.

These styles aren't like the bolds and italics we've been discussing. These styles *don't* each require a printer font in your System Folder, and they *do* print just as they appear on the screen.

That's because the Mac generates these specialized styles itself (the font designer has nothing to do with it) by modifying the PostScript code that it sends to the printer. Be warned: The resulting printouts may not look much like the screen representation, especially in Shadow style. (The printed version actually creates a *second* complete set of type, slightly offset from the first, printed in a light gray.)

We encourage you not to use these font variations much. We especially urge you to forget about the Underline style (as we'll explain later in this chapter).

Why TrueType styled text looks lousy

On the screen, the Mac creates italic and bold styles by slanting or thickening the Roman version. In PostScript fonts, it only does this crude stylizing *if* you don't have an installed PostScript font that's been custom designed for italic or boldface.

TrueType is a different story. Even if you *have* a TrueType font installed for Times (Italic), for example, you won't see a true italic Times on the screen! You see the Mac's standard, crude slanted-Roman version.

The key, it turns out, is the bitmapped screen fonts you have installed. As we described earlier, these fonts are generally desirable because they appear faster on the screen and look better (than a TrueType outline-generated font).

Strange
But True

But it's these same screen fonts that prevent the Mac from displaying TrueType's true stylized variations! Remove all screen fonts for a certain font, leaving only the TrueType file (in your Fonts folder or System file), and you see the TrueType style's true colors (see Figure 29-16). Ah, but there's the rub: Without the screen fonts, the *unstyled* (Roman) TrueType font looks crummy. Unfortunately, you can't have this cake and eat it too.

Screen fonts and TrueType: *There are none so blind as those who will not see.*

TrueType only: *There are none so blind as those who will not see.*
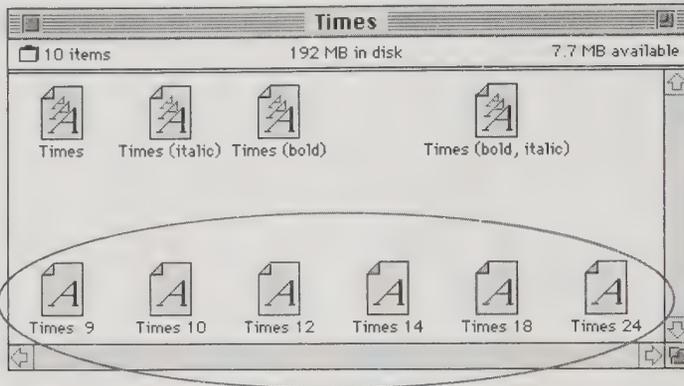
Figure 29-16: The TrueType catch-22. Stylized text looks good only if you take out all the fixed-size fonts (bottom) from the System Folder. And yet if you do that, regular text takes longer to appear on the screen and looks worse.

The Non-Typographer's Guide to Type

Typography is an art and a science. The best Mac typesetters, naturally enough, are people who used to do traditional typography and have adapted to the Mac's flexibility.

Still, almost anyone can improve the look of documents by boning up on some of the basics of typography and design. This information may be more than you want to know if you simply want to get your memos typed. On the other hand, your Mac offers you the tools to *create* great-looking, professional documents; with very little effort, you can make your documents look as though they've been published.

For additional tips on great-looking, self-published documents, see our page-layout guidelines in Chapter 18.

Proportional fonts

Here's one of the most important differences between typewriters and Macs: Most typewriters use *monospaced* type. That is, every letter is exactly the same width, be it an *I* or a *W.*

But each letter in a Mac font is exactly as wide as it needs to be. This fact actually makes life considerably more complicated, as you'll read in some of the items below. It also, however, makes text much easier to read.

Two standard Mac fonts are still monospaced like a typewriter's: Courier and Monaco. As shown in Figure 29-17, every character in such a font is the same width.

Wide, wide world
Pig's-hair muffs

Figure 29-17: In a monospaced font (Courier used here), every symbol and letter is exactly the same width. Even when it looks goofy, as with the apostrophe.

Suit yourself, but we find monospaced fonts ugly. However, monospaced fonts have their place. For instance, many of the less-graceful computers in the world (DOS systems, for example) tend to use monospaced fonts *all the time*. If you ever exchange files with one of these computers, or if you download text from the Internet, eventually you'll probably run into a file that looks like Figure 29-18 when you open it in your word processor.

Tevye................Bill McIntosh..........AEA
Golde, his wife......Jean Ogdenber g.........AFTRA
Chava, his daughter..Leslie Skolnik.........AEA
Perchik..............Michael R. Hausman.....Non-Equity
Grandma Tzeitel......Tracy Ellen Puge.......AEA

Figure 29-18: When you open an IBM or modemed file in your word processor, nothing looks aligned.

What happened? Your word processor probably prefers to use a nice proportional font. So, it took what *used* to line up nicely (when it was in some monospaced font) and substituted a font in which the characters are all different widths . . . and presto, nothing lines up!

In these cases, just change the font to a monospaced font, such as Courier, and you get the nicely aligned look of Figure 29-19. A monospaced font looks better in tables of numbers, too.

```
Tevye................Bill McIntosh..........AEA
Golde, his wife......Jean Ogdenberg.........AFTRA
Chava, his daughter..Leslie Skolnik.........AEA
Perchik..............Michael R. Hausman.....Non-Equity
Grandma Tzeitel......Tracy Ellen Puge.......AEA
```

Figure 29-19: Courier makes everything line up.

The Unicode Question

Q: I heard that Mac OS 8.5 now supports Unicode. What is that? A font? A password? A mythical beast with one digital horn?

A: Come with us now as we visit the online nightmare of e-mail and Web pages in the early 1990s. Picture, if you will, the difficulty of creating e-mail or Web pages that contain foreign symbols. You can't use plain ASCII text (the only set of alphabet characters universally understood by every kind of computer at the time), because it's only got 256 symbols in the entire set. That's nowhere near enough to handle every letter in the English alphabet, plus accented symbols, plus non-Roman symbols such as those used in Japanese. Furthermore, the standard ASCII set contains a $ symbol, but not such modern characters as the Euro monetary symbol. Clearly, something had to be done.

So a bunch of smart computer-types got together and decided to define a new character-set standard — kind of a super-expanded ASCII set — called Unicode. Because it uses a much longer piece of data to specify each character, it can specify many more characters.

Now it's up to the system-software companies such as Apple and Microsoft to agree to adopt this new behind-the-scenes standard. And sure enough, in Mac OS 8.5 and Windows 98, Unicode became a standard font-specifying language. If everyone else — software companies, Web-page designers, and font designers — gets on the bandwagon, pretty soon you'll be able to visit Web pages in, say, Japanese and see *Japanese* characters instead of their ASCII representations (which look something like Î*EƒGƒlƒʃM*[*j).

Spaces between sentences

Here's a rule you actually have to unlearn from your typing classes: Type *one* space after a period (on a Mac).

CD

This principle follows from the fact that the Mac uses proportional type. Not only is every *letter* the correct width, but so is a space — it's already wider than the typical letter, saving you the trouble of putting *two* spaces after a period. If you do put two, the gap between sentences will be too big. (Use SmartKeys, included on the CD-ROM with this book, to zap them for you automatically. See the appendix.)

Don't use underline style

There are two reasons not to use underlining in Macintosh documents. First, the underline tends to look thick and gawky, and it slashes right through the descenders in your font (the parts that stick down, as on a *p* or a *g*).

The more important reason: Underlining is a decrepit workaround, invented for the benefit of typewriters. It was used to denote emphasis. But real publishers use *italics* for emphasis — with much more success. (When's the last time you saw anything underlined in a book or magazine?)

Your Mac can *do* real italics. You may also want to use **boldface** in some situations where you'd be tempted to use underlining, such as character names in a script.

Worth Learning

As a matter of fact, here's an even better secret for getting emphasis while still being classy: Use *small caps.* This special type style uses all capital letters, but what would have been lowercase letters are set at a smaller size, as shown here:

<div align="center">

COTTER & KIMMEST
Attorneys at Law
125 TAYLOR STREET
SAN FRANCISCO, CA 94108

</div>

Most word processors and all page layout programs offer the small caps option in their formatting menus or dialog boxes. (AppleWorks/ClarisWorks doesn't; in a pinch, though, you can always simulate small caps by simply using all capital letters, making the initials a point or two larger.) You can also use small caps to make your publications more professional; an abbreviation such as A.D. won't stick out like a sore thumb if you set it in small caps rather than regular caps.

If you *must* use the underline style — if your art director demands it, for example — consider leaving letters with descenders *un*-underlined, as shown in Figure 29-20.

The Flying Nun

Figure 29-20: If you must use underlines, consider omitting characters with descenders from the Underline style.

Use tabs, not spaces

Mac Basics

Having just read about monospaced and proportional fonts, you'll understand this principle: When you're trying to line up text, don't do it by pressing the spacebar! Text aligned using spaces to separate chunks of text *does not* look the same in printouts as it does on the screen, as shown in Figure 29-21.

Admittedly, learning how to use tabs in your particular word processor involves 4 ½ more minutes of learning than typing spaces does. But it will pay off in spades.

	1963	**1992**	**2001**
Screen:	Born	Elected President	Graduated college

	1963	**1992**		**2001**	
Printout:	Born	Elected President		Graduated college	

Figure 29-21: If you try to align columns by typing a bunch of spaces in between phrases, you shall reap what you sow. Spaces are notoriously narrower in printouts than they are on the screen.

Em dashes

An *em dash* is a long dash—like this.

Because a typewriter can't type any shape wider than your typical letter, years of typing teachers have instructed you to imitate an em dash by typing *two* hyphens -- like this. But a double hyphen is about as good an impersonation of a proper typographical em dash as Budget Gourmet is for a wedding dinner.

CD

To produce a true em dash, type a hyphen while pressing Shift-Option. (Our little secret: Because we use em dashes in this book a lot, we use SmartKeys, included on the CD-ROM with this book, to convert our double hyphens automatically. Microsoft Word's AutoCorrect feature can handle that job, too.)

Usage: Use an em dash when there's a halt in the flow of the writing. "She ran to the edge of the cliff after him—but it was too late." Derivation: An *em* is a typographer's term (and a darned useful Scrabble word) that refers to the width of the capital letter *M* in a particular typeface.

En dashes

The next kind of dash, not as short as a hyphen nor as long as an em dash, is called an *en dash*. You produce the en dash by typing a hyphen while pressing Option.

Usage: Use an en dash to indicate a stretch of numbers or time. "See pages 79–80." Or "Reception: 7:30–9:00 p.m." Or "Years unemployed: 1988–1990."

Derivation: An *en* is another typographer's term. As you guessed, this one refers to the width of the capital letter *N* in a particular typeface.

Special spaces

Those special variants of dashes come from the world of typography. There are also special *spaces*.

For example, there's the *nonbreaking space.* This kind of space looks just like an ordinary space. But a nonbreaking space doesn't end a word! If you put a nonbreaking space between the words *New York,* these two words will always appear on the same line (and, therefore, on the same page).

To create a nonbreaking space, type a space while pressing Option.

Leading

It rhymes with sledding. *Leading* is line spacing, as in single-spaced or double-spaced. But in the world of computers, single-spaced and double-spaced text are only two of an infinite number of settings. There's $1^1/_2$-spaced. Triple-spaced. And so on.

In fact, most word processors can make these adjustments in much finer increments — in *points,* just like type. (A point is a typographical measurement equal to $1/_72$ inch.)

Leading measurements are expressed, among professionals, as "ten on twelve." They're saying that the *font* size is 10-point, and that the *leading* is 12-point. You can do the math: There's two points' worth of blank space between the lines.

In Microsoft Word, you control the line spacing by selecting text and choosing Format ⇨ Paragraph. In ClarisWorks, MacWrite Pro, or WriteNow, there's a line-spacing control right on the ruler; by clicking, you increase the leading of the selected text in increments of half or whole points. Figure 29-22 shows a few examples of leading in action.

A marvelous bird is the pelican.
His mouth can hold more than his belican.
He can hold in his beak
Enough food for a week
I'll be darned if I know how the helican.

A marvelous bird is the pelican.
His mouth can hold more than his belican.
He can hold in his beak
Enough food for a week
I'll be darned if I know how the helican.

A marvelous bird is the pelican.

His mouth can hold more than his belican.

He can hold in his beak

Enough food for a week

I'll be darned if I know how the helican.

A marvelous bird is the pelican.

His mouth can hold more than his belican.

He can hold in his beak

Enough food for a week

I'll be darned if I know how the helican.

Figure 29-22: Four degrees of separation. These four examples show different degrees of leading, *none* of which are actually single-spaced or double-spaced. They're all in-between gradations.

As you can imagine, the leading for your text has a huge effect on the psychological impact of your text, on its readability, and (of course) on the length of the document.

Tracking

If leading is the control of vertical spacing of your text, then *tracking* is a measure of *horizontal* spacing. (*Kerning* is slightly different; see the next section.)

In page-layout programs, such as PageMaker, there's an actual tracking control. It's measured in plain English: Tight, Loose, and so on (referring to how closely the letters are packed in). See Figure 29-23.

"It's a little loose," he said tightly.

"It's a little loose," he said tightly.

"It's a little loose," he said tightly.

Figure 29-23: Using PageMaker's Tracking command, you can create loose, normal, or tight letter spacing (from top to bottom in this figure).

In Word, you can achieve some control over tracking; select some text, choose Character (or Font, in Word 6) from the Format menu, and use the Condensed or Expanded (or Character Spacing) controls. In other word processors (such as AppleWorks/ClarisWorks), you may not have any tracking control at all.

That's OK; tracking is a rarefied art. Except for commercial type (such as advertisements or newsletters), there's little reason to mess with the tracking of your text.

Kerning

Kerning also has to do with letter spacing. But where tracking affects the letter spacing of an entire block of text, kerning is the act of adjusting just *two* characters, relative to each other. People generally kern very large letters — in headlines, for example — whose shapes overhang each other (see Figure 29-24). They kern for two reasons: First, kerned, compact type is easier to read than unkerned type. Second, kerning a headline means that more can fit into the equivalent amount of page space.

Way-out Toad
Way-out Toad

Figure 29-24: Kerning at work. The top example is what you get when you type normally into a word processor. Each letter begins just to the right of the previous letter, as shown by the gray lines in the top example. After the capital letters (and the hyphen and the lowercase *"y"* and *"d"*) have been kerned (bottom), the phrase is more compact and easier to read. Note how the lowercase *"o"* now tucks under the wing of the capital *"T."*

You can turn kerning on or off in any page-layout program (Quark, PageMaker, and so on) or graphics software (Canvas, FreeHand, Illustrator). In other programs, it may either be combined with some kind of tracking control or missing entirely (Word).

Ligatures

Here's another typographical nicety that, technically speaking, you never need to consider for most everyday writing. A *ligature* is when two letters are run together, as in the words æsthetics, œdipus, fishy, and flugelhorn. In fact, these are about the only examples we can think of: ae, oe, fi, and fl.

These two-letter pairs are each represented in most fonts by *one* symbol. If you have QuickDraw GX and a GX-savvy program (lotsa luck), you can opt to have ligatures created automatically. (SmartKeys, included on the CD-ROM with this book, can do it, too.) Otherwise, here's how you make them manually:

CD

Symbol	Get it by pressing these keys
æ	Option-apostrophe
œ	Option-Q
fi	Shift-Option-5
fl	Shift-Option-6

A word of warning, though. If you use your word processor's spelling checker, don't type ligatures as you go. A spelling checker (except in QuarkXPress) will flag these as misspellings. Instead, type your document normally; check the spelling; then do a search-and-replace for those letter pairs, replacing each with the appropriate ligature.

The T-shirt company that awaits you

This is only faintly related to fonts. But when your cheerful authors were in college, we came up with a brilliant scheme to make a million dollars. (In those days, that was a great deal of money.) We'd start a T-shirt company.

We even had our first two designs figured out. You know those annoying shirts that say "I ♥ NY" or "I ♥ Rush Limbaugh"?

Well, we were going to market shirts that say "*I ♠ my cat*" and "*I ♣ my husband.*"

Then we got lives. We hereby relinquish all rights. As we wrote in the previous edition: Go wild, ye entrepreneurs. (Apparently, someone did — a Mac Secrets reader spotted an actual "I ♠ my cat" T-shirt on Cape Cod shortly after the last edition of this book!)

Hyphenation

You hyphenate, of course, to avoid ragged-looking right margins caused by long words that aren't broken at the line break. Figure 29-25 shows a good example from a newspaper-style column.

Dr. Elizabeth Muranski, an enthusiastic but underschooled practitioner, tells us she thinks acupuncture's time hasn't yet come in the field of broken bones.

Dr. Elizabeth Muranski, an enthusiastic but under-schooled practitioner, tells us she thinks acupuncture's time hasn't yet come in the field of broken bones.

Figure 29-25: What a difference a hyphen makes. In the first figure, the right margin looks terrible because of the long words. Judicious use of a program's auto-hyphenation feature brings the type closer to having an even right margin (right).

Each program's auto-hyphenator works differently, so we'll refer you to your manuals for specific instructions. However, we can give you some basic rules for good-looking hyphenation:

- Avoid having hyphens wind up at the right margin in more than two successive lines of text.

- Avoid breaking up a word in such a way that one letter is left alone on a line. In fact, if you have a choice, it's usually preferable to break a long word in the middle, rather than leaving a two- or three-letter syllable alone on a line.

- Try not to hyphenate words that are shorter than six letters, a word that already has a hyphen (or a slash), the last word on a page, or the last word of a paragraph.

- Don't hyphenate centered text.

- Avoid hyphenation that makes a word hard to recognize, as in recre-ation (when you mean re-creation), read-just (when you mean re-adjust), and tapes-tries (when you mean tapestries).

Most page-layout programs let you customize a document's hyphenation thresholds to take many of these guidelines into account.

Most Mac word processors have a little-known but handy feature: You can create a *discretionary* hyphen. This is, if you think about it, exactly the kind of hyphen you want: It remains invisible *unless* the word needs to break at the end of a line.

Try it in Word, for example. Type the first half of the word. Then press ⌘-hyphen; absolutely nothing happens. Then finish the word. If this specially prepared word ever needs to break at the end of a line, it will do so at the discretionary hyphen. Even more amazing: If you delete some text to the left of it so that the word no longer falls at the end of a line, the hyphen will disappear, and the word will be made whole again!

There's also a *nonbreaking hyphen,* which you create by pressing ⌘-equal sign; in most page-layout programs, it creates a hyphen for use between words that you *don't* want broken up across a line break.

Fractions

Despite the amazing variety of symbols and nonalphabet characters hidden behind the Mac's Option key, fractions aren't to be found anywhere. You have the yen symbol, the French cedilla, Greek symbols — but nary a proper typographic ½ symbol to be found.

Sure, you can buy an "expert" font that includes fractions and other special characters. (We've included two such fonts on this book's CD.) For most of us, however, that's overkill.

Otherwise, your only options are to use the confusing-looking "1 1/2" when you mean 1.5; or type "one-and-a-half;" or use decimals; or painstakingly construct normal-looking fractions using a combination of superscript and subscript lettering. (A *superscript* character floats just above the normal horizontal baseline of text; a *subscript* character, like the 2 in H_2O, floats below the line. If you have ClarisWorks, you're even better off: It offers two additional font styles called *superior* and *inferior* (we won't even *touch* the self-esteem issues of that terminology). Apply these styles, and the affected text moves up or down *and* gets smaller — perfect for making fractions.

One more tip for fractions: Don't use the regular slash key. Instead, use the tighter, more elegant slash produced when you press Option-Shift-1.
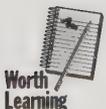
Ellipses

An *ellipsis* looks like three periods in a row. It's used, for example, to indicate that some words of a quotation are missing ("This movie is this a . . . full-length . . . film"); in the Macintosh world, ellipses are used in menus to suggest that you'll be asked for further information before the command can be executed.

The trouble with typing three periods in a row is that sometimes they get separated from each other at the end of a line. Fortunately, the Mac's famous *Option-semicolon* keystroke produces a single, unseparatable character that looks like — you got it — three dots. They're even a bit more compact than periods would be.

(Don't use them in documents you plan to send by e-mail or transfer to a PC, though; the beautiful one-shot ellipsis symbol is a Macintosh-only benefit! Use three periods when you'll be sending your words online.)

Curly quotes

Our last pair of typographical tips has to do with quotation marks and apostrophes. You can spot the difference immediately in Figure 29-26.

"Well, I'll be a jack-o'-lantern," he muttered.

"Well, I'll be a jack-o'-lantern," he muttered.

Figure 29-26: The top line is what you get if you don't take action: awkward-looking straight quotes. Turn on your word processor's curly quote feature (bottom), and you've got yourself some classy-looking dialogue.

You can type a curly quote in any program, and in almost any font, if you *avoid* the quote key on your keyboard! Instead, press as follows:

Type this:	To produce this:
Option-[	"
Shift-Option-[	"
Option-]	'
Shift-Option-]	'

In other words, the left bracket always stands for double quotes, and the right bracket always produces single quotes. The Option key always makes the open quote, and adding the Shift key makes the closed quote.

TRUE FACT

Some quotes are smarter than others

Plenty of programs do smart quotes — Claris Works, WordPerfect, SmartKeys, QuicKeys, and so on. Trouble is, all of these programs decide which way to curl your quote based on whether or not you just typed a *space.* If the keystroke before the quote was a letter (and not a space), then, obviously, you get a right-hand quote because you're probably finishing up a sentence (or putting an apostrophe into a contraction). Otherwise, the program automatically substitutes a left-hand quote mark.

They're missing one big boat: a little thing we call *editing!* Any program whose smart-quote feature simply counts on your having typed something before the quote is ignoring all the times you want to *insert* a quote or apostrophe where there wasn't one originally. You can see the problem in this example:

"It was a feel-good performance," said she.

"It was a feel-good' performance," said she.

"It was a 'feel-good' performance," said she.

As you type the first sentence, everything is fine. The program puts an open quote before the first line because it was preceded by a space. It puts a close quote after the comma because it *wasn't* preceded by a space.

What if you decide that you really wanted to put single quotes around *feel-good?* In the center example, you see that all is well so far. You click the mouse just after the *D.* The program thinks to itself: "No, they didn't just type a space. Therefore, this is a close quote."

Trouble is, it thinks that same thing when you click before the *F!* It again thinks: "Still no space has been typed. This, too, is a close quote."

All of these programs, therefore, err on the side of too many close quotes! What's much preferable are the smart quotes found in Microsoft Word and WriteNow. When you click the mouse to add a quote, the program actually *looks back at what's already* on the page! It therefore produces the correct curling quote, whether you're typing them for the first time or editing madly.

(Fortunately, SmartKeys — included with this book — offers a convenient workaround. If SmartKeys produces a close quote when you intended an open one, you just press the quote key a *second* time. SmartKeys instantly replaces the close quote with an open one.)

CD

All of this is moot, thank heavens, because every word processor has a built-in "smart quotes" feature, usually in a Preferences command. They're called smart quotes because all you have to do is press the normal quote key at the right end of your keyboard's home row. The program examines the context — are you beginning or ending a word? — and automatically substitutes a curly quote, curled in the correct direction. (And, if you have a program that isn't smart enough, use SmartKeys, included on the CD-ROM with this book, to do curly quotes for you. See the appendix.)

When to use dumb quotes

Curly quotes are, typographically speaking, only for use as *quotes.* Prime-number, degree, inch marks, and feet marks are another story. They should *not* be curly. Here, in order of preference (and effort), are the four best ways to represent feet and inch marks:

- Use the Symbol font, Option-4 and Option-comma, respectively, to produce authentic, correct typographical marks.

- Use Option-Shift-E for the single prime, and Option-Shift-G for the double prime.

- Turn off your smart-quotes feature long enough to type the feet or inch marks straight. Then italicize them for the finessed, correct, slanted look.

- In Microsoft Word, if you have the smart-quotes feature turned on, you can press Command-Z just after typing the quote mark.

- Just turn off the smart-quotes feature and use straight single and double quotes.

See Figure 29-27 for examples of the results.

He stood 6′ 2″ tall.
He stood 6′ 2″ tall.
He stood 6' 2" tall.

Figure 29-27: At top, the best solution: Use the correct typographical feet and inches symbols from the Symbol font. Middle: Using italicized straight quotes will do but may give you some trouble with spacing. Bottom: straight quotes. Better than nothing.

In the meantime, keep in mind that after you create these markings, you can save them in your word processor's glossary or library so that you won't have to construct them the next time.

Mac Basics

By the way, there's one other great time to use dumb quotes: any time you're sending e-mail over the Internet. Macs are the only computers intelligent enough to understand curly quotes sent by e-mail; if your message travels via a non-Mac — and it will — your lucky correspondent will see either a strange symbol or nothing at all where you have indicated quotes. (This problem doesn't occur on e-mail sent *from* America Online *to* America Online. Most e-mail programs, like Claris Emailer, meanwhile, automatically convert curly quotes into straight ones.)

If you use straight quotes in your Internet mail, they'll come through fine — yet another argument for using SmartKeys (which lets you specify which programs you want smart quotes in) to add intelligence to your quotes and apostrophes.

TRUE FACT

The basics of font design

You sometimes hear the terms *ascenders, descenders, baseline,* and *x-height* used among Mac users. These terms refer to the various vertical components of a certain typeface, as shown here.

Flight 106
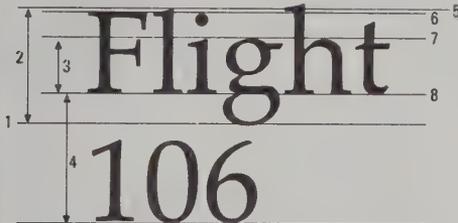
1. The *descent* line. This imaginary line marks the lowest point of any character in the font.

2. The *point size.* It may surprise you that the point size is actually measured from the ascent line (5) to the descent line (1). This measuring scheme explains why some fonts seem tiny at the same point sizes as other fonts. Park Avenue, Zapf Chancery, and other decorative fonts, for example, are almost too small to see at 12-point size,

where 12-point Times is fine. It's because those decorative fonts have large ascenders and descenders, making the overall type seem smaller by comparison.

3. The *x-height.* It's the height of most lowercase letters.

4. The *leading.* It's measured from baseline to baseline. Typographers sometimes refer to text as being "ten-on-twelve." They mean that the font is 10-point, but the leading is 12 points, leaving a 2-point gap between lines of text.

5. The *ascent line,* which is at the height of the tallest letters.

6. The *capital line.* As you can see from this example, the capital letters in a font aren't always the tallest letters. The capital line is often below the ascent line.

7. The *mean line.* This is the imaginary line that marks the top of the x-height of the font.

8. The *baseline.* It's the imaginary line upon which all the letters sit.

The Option-key character set

There's more to a typeface than the characters in the alphabet, of course. Almost every Mac font has dozens or hundreds of hidden symbols. They're tucked away behind obscure Option-, Shift-, and Control-key combinations. Of particular usefulness are the Option-key characters: ©, †, ™, ¥, and so on.

We're often impressed by the shrewdness of the placement of these hidden characters. Among the Option-key characters, for example, Y is ¥, ß is S (because ß is short for two S's in German), √ is V, and so on. To find them, use your Key Caps desk accessory, as described in Chapter 3.

Before you go wild, however, a warning: As with curly quotes, Option-key-generated special characters get garbled if you send them via Internet e-mail. (E-mail sent within America Online isn't a problem, however.)

Fontographer's secret messages

If you inspect the innards of Fontographer with ResEdit, CanOpener (which comes with this book), or a similar innards-inspection program, you'll find that Fontographer's creators have quite a sense of humor. Reader Russ Stotyn poked around in Fontographer with CanOpener and found these gems among the Balloon Help messages:

- Hint: Learning about hinting via balloon help is like living through a bug in the Holodeck.

- Hint: Learning about hinting with balloon help is like entering Larry Bud Melman in a fashion show.

- Hint: Did you think we would teach you about hinting via balloon help without a Scooby Snack? Without two Scooby Snacks? No way!

- Hint: If you are trying to learn about hinting using balloon help, you probably couldn't tell the old Darin from the new Darin.

- Hint: If you don't know what hexadecimal means then you probably shouldn't care.

- Hint: If you see this balloon call Pete at (214) 680-2060 for a free prize. While supplies last.

- Hint: Gotcha! Displays a selection of incredibly advanced hinting commands.

- As the Wizard of Oz exclaimed before his uncontrollable balloon trip, you are about to embark into "a hazardous and technically unexplainable journey into the outer stratosphere." Please see the manual.

- Hint: The Professor made a battery recharger out of coconuts, but could he make a raft out of logs? No. Please consult the manual or call our tech support line.

Do these guys watch a *little* too much TV, or what?

Option Key Secrets

Remembering the dead keys

The Mac has five so-called *dead keys.* When you press one of these keys, nothing happens on the screen until you then press *another* key. To produce the ñ character, for example, you first press Option-N. (Nothing happens.) Then you type a regular *n.*

Just remember to UNItE! Those are the dead-letter keys — U, N, I, and E — plus the accent-grave key (also called the tilde key, usually in the upper-left corner of your keyboard).

(Much as we enjoy remembering EUNICE, as we've read in other sources, the C isn't actually a dead key.)

The classic damaged suitcase problem

Q: Help! One of my fonts is damaged, and I can't throw away the suitcase!

A: Sure enough: One of the worst aspects of the Mac's font-suitcase scheme is the way that your font suitcases suddenly become "damaged." Corrupted font files are a nightmare; it generally takes a day or a week before you even realize that a corrupted suitcase is the *cause* of the crashes and freezes you've been having.

What's worse is the frustration you'll encounter when you try to throw away the suitcase. The Finder won't let you remove it, open it, or trash it! You can drag till you're blue in the face, but trust us: That suitcase won't budge from the Fonts folder.

We're particularly proud to have discovered the solution. Take the *entire* Fonts folder out of the System folder (and onto the Desktop, for example). You should now be able to drag the troublesome suitcase from the decommissioned Fonts folder.

At this point, you may be able to salvage the damaged suitcase's contents as follows: Open it by double-clicking. Drag the fonts out of the suitcase window and into a new, empty suitcase file. Trash the empty suitcase.

And if that doesn't work, trash the defective suitcase. Put your Fonts folder back into the System folder.

Interestingly, dead keys (except ñ) are only dead if the next character you type is a *vowel* (because these markings only affect vowels in the languages that use it). For example, when you press Option-tilde, nothing happens; if you then type a consonant, you get both markings together (such as `m) instead of one atop the other (such as õ).

Bringing the dead (keys) back to life

Here's an undocumented feature: You can type one of the dead-key symbols (`, ¨, ˜, ˆ, or ´) and see the symbol appear immediately on the screen, without having to type an additional letter. The Secret: add Shift (or the Caps Lock key) to the Option-key combination.

Font Futures

Today, Mac users are still stuck with three different font formats, each of which must be handled and stored differently. It's certainly not as graceful a scheme as most other aspects of the Mac. People — even the pros — still occasionally get bitmapped printouts of outline fonts that should print gorgeously. The Courier font still shows up in printouts when a nice

PostScript font is what you selected. If you're like most people, you still can't receive a document file and view it as it was designed, unless you happen to have all the fonts installed that were used by the document's designer.

Apple and Adobe have worked for years to bring some harmony to this disorder, which affects both Macs and Windows. Both companies are well aware that the current font situation is, shall we say, less than ideal. One way or another, something will be done. Whether it's a peaceable kingdom that includes ATM and TrueType under one System, or a new, universal font scheme such as OpenType (under development among various software companies) is still an open question.

Chapter 30

Printing Secrets

In This Chapter

- ▶ How printing works (dot-matrix, inkjet, laser)
- ▶ Tales of dpi: 300, 600, 1200, and more
- ▶ PostScript : Levels 1, 2, and 3
- ▶ Desktop Printing
- ▶ Color printing and service bureaus
- ▶ Troubleshooting

The Macintosh has always been hailed as a radical step forward in the world of printing. For the first time in the world of personal computing, printouts matched the screen images. People called the Mac a WYSIWYG (What You See Is What You Get) computer.

But over the years, printing has become even more complicated. There's QuickDraw, GX, PostScript, TrueType, inkjets, color printing, background printing, desktop printing — and sometimes WYS is definitely not WYG.

How Printing Works

When it comes to the look of your printouts, *dpi* — the number of printer dots per inch of paper — is king, whether it hits paper by ribbon, spraying ink, heat-fused powder, or melted crayon dots. In fact, once you've been around Macs for while, you can instantly identify which printer produced a given printout: dot-matrix, inkjet, or laser. How? Primarily by the difference in resolution (smoothness) — measured in dpi.

Dot-matrix printers

A *dot-matrix* printer composes its printed image of little dots, like the dots on your Mac's screen. Dot-matrix printers (such as Apple's ImageWriter II) are often referred to as *impact* printers — the pins actually strike a ribbon against the printed page. They're also dying out, having been supplanted by inexpensive, much higher-quality inkjet printers (even though impact printers are the only ones that can print multi-part forms, like FedEx shipping labels). In

fact, it was with a great, universal, fond sigh that Apple discontinued the 144-dpi ImageWriter II in the fall of 1996 after the printer's 11 years of proud service.

Inkjet printers

If the price of a laser printer is still too high for you, there's an *inkjet* model calling your name. Such printers, like the Apple StyleWriters, HP DeskWriters, or Epson Stylus family, use an ink-filled cartridge that slides across a moving track, back and forth, spraying narrow sheets of ink on the page. (The newer color inkjet printers use *four* or *six* separate ink cartridges that spray black, yellow, cyan, and magenta inks as they move across the page.)

Mac Basics

In theory (or should we say "on paper"?), these printers print even *sharper* text and graphics than some laser printers. A typical inkjet printer sprays 720 or even 1,440 very fine dots per inch, whereas a standard laser printer's resolution is only 600 dpi. In practice, however, because of the way the ink spreads when it hits the page, fine images printed by an inkjet printer tend to blur slightly, making the printouts from most inkjets just short of laser-quality.

Inkjet printers offer plenty to like: they're inexpensive ($150 or even less) and they're small and light, making them easy to transport or store. They also offer the least expensive color printing available; color inkjets run between $200 and $400 and can turn out impressively rich, vivid color images.

Laser printers

A laser printer has more in common with a copying machine than with other printing devices. Inside the printer, the paper wraps around a cylindrical drum, just as it does in a copying machine. But instead of using a light-and-lens assembly to read an original, the laser printer uses a laser diode that beams the image of your document onto the drum. The drum uses an electrostatic process to attract toner particles, and the toner is fused to the printed page using a heated set of rollers. Some "laser printers" don't have lasers inside at all. Instead, they use a CCD (Charge-Coupled Device) assembly to generate the image; the printed results are very similar.

The *toner* (the black powder that creates the printout) comes in a cartridge that, in Apple and HP PostScript printers, includes the drum as well. When you replace the toner, you're essentially giving the printer a stomach transplant.

Laser printers come in two types: *QuickDraw* and *PostScript.* For now, just note that a PostScript printer has its own CPU and memory, and is, therefore, faster than a QuickDraw laser.

The typical PostScript laser printer also comes with a set of *resident* fonts (fonts built into the printer's ROM chips). The basic set consists of 35 fonts that range from Avant Garde to Zapf Dingbats. These ROM-based fonts are desirable because they print faster. They don't have to be downloaded to your printer every time you process a new file. You can use as many of them

as you want, in whatever order you want, and they won't use up any precious printer RAM. Unfortunately, some of these basic fonts are, frankly, overused.

Laser printers are available with resolutions of anywhere from 300 to 1200 dpi. As with any printer, the higher the resolution, the better the quality of the printed output.

300 dpi laser printers

The very first laser printers had engines that printed 300 dots per inch — a single square inch of the printed page had 90,000 dots. Though higher-resolution printers have become standard in most offices, there are still plenty of 300 dpi printers in use. This kind of printer is fine for letters and basic desktop publishing.

Compared to a higher resolution printer or imagesetter, 300 dpi text is thicker, and, in smaller sizes, a little chunky-looking. The little holes in characters (such as the upper half of a lowercase *e*) may be partly filled in, and the fine details of a decorative typeface are often lacking. When you print a photo on a 300 dpi printer, its different shades of gray don't get very fine.

600 and 800 dpi laser printers

The most common laser printers in use today contain a 600 dpi "engine." These include printers such as the Apple LaserWriter Pro series and the Hewlett-Packard 5M and 6MP.

A more precise engine, coupled with extremely fine-grain toner powder, gives you ultra-sharp details. A 600 dpi printer is *not* twice as sharp as your 300 dpi printer. Think about it: The image from a 600 dpi printer contains 360,000 dots per square inch, so it's actually *four times* as sharp as a 300 dpi printer! Further-more, these new printers cost less than half as much as a 300 dpi laser printer did just a few years ago. In the years to come, even higher-grade toner and higher-resolution print engines will become available — and commonplace.

1200 dpi laser printers

Several printers, from LaserMaster and others, are advertised to have a resolution of 800 to 1200 dpi, supposedly going head-to-head against professional imagesetters.

These printers do indeed make sharp printouts, but most don't really print 1200 dots per inch. Instead, they vary the size of the dots that make up the printed image; they also adjust the movement of the drum as the paper rides through the printer. Those stunts, plus the use of fine-particle toner powder, greatly improve the printouts from a conventional 300 dpi, 400 dpi, or 600 dpi engine. Only the most expensive models, such as the HP LaserJet 4000 N, have true 1200 dpi engines — again, four times sharper than a 600 dpi printer — with 1,440,000 dots crammed into each square inch.

But the output from even one of these enhanced laser printers isn't quite as sharp as that of an imagesetter (described shortly). The limitations of toner and paper simply can't match an imagesetter's fine resolution of small text and artwork.

Color printers

Color printing used to be for professionals only. High-quality *dye-sublimation* printers used by graphics professionals cost thousands of dollars and the more economical color inkjets that were available were terrible, producing washed-out, inaccurate, smeary colors. But in the last two years, there's been a color printing revolution, as color printer prices plummeted — and quality soared.

Color inkjets

If you want a bargain-basement color printer, maybe a little zest to spark up a flier you're printing, consider a color inkjet. Popular examples include the Epson Stylus series, the HP DeskJet C series, and the Apple Color StyleWriter series (which Apple phased out in 1998). Some of these low-end color inkjets cost less than $300 and their printouts are impressive; from three feet away, we've seen printouts of scanned color photos that look convincingly like the real thing. And for photographically realistic printouts, you can find models like the Epson Stylus Photo printer, which uses six different colors of ink instead of four, to create even smoother tones. For the best printouts, the really amazing photo-like ones, you must use $1-per-sheet special paper, but they blow away the printouts from other color inkjets.

If you're shopping for a color inkjet, look at actual samples from each model you're considering — including output on plain paper, not just the fancy dollar-per-sheet glossy stuff (unless that's what you're planning to print on all the time). Also take into consideration the type of printing you plan on doing. Some models, like the HP DeskJets, print crisper, sharper black text than most inkjets, but they can't compare to the Epson Stylus printers on photos.

Other color printers

Most Mac users look at inkjets when buying into color, but there are more expensive, more full-featured products. Color *laser* printers, for example, are available from Xerox, HP, Canon, Tektronix, and Apple. These printers use the same laser technology as traditional monochrome laser printers, but they fuse four different colors of toner (cyan, magenta, yellow, and black) to create vibrant, laser-sharp color images. Most of these printers turn out up to five full-color pages per minute at 600 or 1200 dpi. The printouts are generally gorgeous, but even the least-expensive color lasers printers are about $4,500. One of the big selling points about the color laser models is that they double as full-blown workgroup black-and-white laser printers that can print from 10 to 12 pages per minute at 600 dpi.

Another novel alternative for color printing is a $400, miniature, *dye-sublimation* printer (the kind that makes glossy, full-color, photo-like prints — and usually costs about $10,000 for the machine). Several of these are available, such as the Fargo Foto Fun. They generally print a maximum size of 4 by 6 inches, but the quality — on shiny photographic paper — is amazing. (For bigger dye-sub printouts, visit a local print shop/service bureau, disk in hand.)

Imagesetters

When you seek the ultimate quality for your document, book, or magazine, you take your file to a prepress plant or service bureau, where they'll print your stuff on an *imagesetter*.

The original phototypesetting devices of the 1960s and 1970s consisted of a large spinning drum (a cylinder) upon which film strips containing negative images of the type were placed. A lamp flashed through the type in the film strip onto a roll of light-sensitive film or paper. This paper had to be developed in a processing machine. The mid-1970s brought the beginning of digital technology to the typesetting world, in which a TV-style picture tube (a CRT) replaced the spinning drum and light source.

Modern-day imagesetters — made by Linotronic, Agfa, VariTyper, and so on — are very similar to those CRT typesetters, except that lasers now expose the photographic media. Paper is pulled through an imagesetter by rollers, gears, and springs. When you're creating color printouts, registration (the precise alignment of four plates, one of each color) is critical. Therefore, high-end imagesetters are drum-based. Some imagesetters print a single sheet for each plate.

All imagesetters are driven by a computer running software called a RIP (short for Raster Image Processor). The RIP is essentially an extremely sophisticated version of the PostScript interpreter that's in your desktop laser printer. Many RIP computers use large hard drives to store programs and fonts. All of this sophistication, of course, costs huge amounts of money.

General Printing Secrets ────────────────■

Printing page one

In our desire to be as efficient as possible, here are some keystrokes you can save in the Print dialog box when you don't want to print the entire document.

First, you know (don't you?) that you move from blank to blank in the dialog box by pressing the Tab key (see Figure 30-1).

Mac Basics

Most people figure out, therefore, that to print only page 1 of something, they press Tab (to get to the From box), type **1**, press Tab again (to get to the To box), type **1**, and then click Print.

Our secret du jour: Don't even bother with the first number 1. Leave the From box *blank*. Just put a 1 in the To box, and the Mac is smart enough to figure out what you mean. Figure 30-1 should make this efficiency-nut's trick clearer. (Your print dialog box may look a little different from the one shown here, but the same rules apply.)
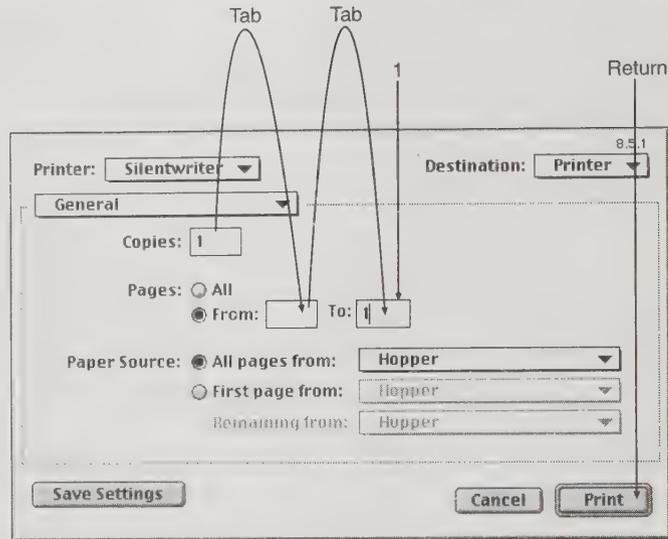
Figure 30-1: Power printing. In four keystrokes, you can get page 1, and only page 1, on its way to the printer.

Likewise, if you only want to print from page 18 to the end, you can put 18 in the *From* box, and leave the To box empty.

On the other hand, remember that the page numbers in this dialog box usually refer to the *physical sheets of paper,* not to however they're numbered on the screen. Even if you've numbered the first page "p. 20" in your word processor, the Print dialog box still thinks of it as page 1.

Label printing

Label printing isn't quite as straightforward as printing on paper, but almost. First, you have to buy the labels. If you're going to use a laser printer, you must buy special laser labels made by Avery. (Office-supply stores sell them.) Many programs (FileMaker, Word, and so on) have form setups for standard Avery label types.
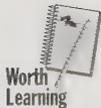
These labels aren't cheap. Print a test page of your labels on regular paper and then hold that page up to the light against an unprinted page of labels to check alignment; you'll save the cost of wasting a sheet of labels as you fiddle with the alignment. As a matter of fact, consider removing every *other* label from a sheet of labels; when you hold *that* up to the test piece of paper, you'll be able to see much more clearly how your addresses will line up with the labels.

TRUE FACT

Let's go to the Lino

Sometimes a product makes such an impact on the marketplace that its brand name becomes synonymous with the product itself. People ask if you've got a Kleenex handy, even though they couldn't care less about the actual brand of tissue. The same trademark generalization has occurred with Jell-O, Band-Aid, and Xerox.

If you're heavily involved in desktop publishing, you probably call your trip to the service bureau a visit to the Lino shop, and call all of their imagesetters Linotype machines. Yet the Lino is only one particular *brand* of imagesetter (and in the old days, it wasn't even an imagesetter — it was a *type*setter); you're just as likely to run across equipment manufactured by Agfa, VariTyper, or other firms.

The manufacturer of Linotype imagesetters, the Linotype-Hell Company, is the descendant of two companies whose lineage dates back to the early history of typesetting. The founder of the original Mergenthaler-Linotype Company, Ottmar Mergenthaler, produced the original Linotype machines in 1886. Many of the typefaces that are so familiar to laser printer owners are original Linotype-Hell designs, licensed by Adobe or Apple. These original fonts — genuine Lino fonts, if you think about it — include Helvetica, Palatino, and Times Roman.

And we'd be less than honest if we didn't tell you about one curious label-printing fact we've discovered over the years: Despite the fact that printer companies often brag about their machines' label-printing capabilities, many technicians at these same companies don't actually recommend running sheet after sheet of labels through laser printers. In fact, many of the people who service and repair laser printers swear that this is a mistake — sooner or later, printing those adhesive-backed labels is going to mean trouble. The problem occurs when one of those little labels peels away from the backing sheet as it travels through the printer and ends up sticking to the imaging drum, feed rollers, or some other sensitive part. We've seen companies pay big-time repair bills after a laser printer choked on a label, which then proceeded to gum up the whole inner workings of the printer.

We're not saying you shouldn't print labels with your laser printer. But if you're going to be turning out thousands of labels on a regular basis, you might consider a dedicated label printer.

Canceling a printout

Without background printing, it's easy to stop a printer in its tracks. Just hold down ⌘-period for a few long seconds. And then wait a minute for the printer to finish what it's in the middle of before responding. And with the Desktop Printing software installed (see "Desktop Printing" later in this chapter), just click the icon of your printer (on the desktop) and choose Printing ⇨ Stop Print Queue. (You can also double-click a desktop printer icon, click on the job in progress, then click the Trash button to cancel it completely.)

But if Background Printing is on and you're *not* using Desktop Printing, the little background program called PrintMonitor now controls the printing tasks. You can press ⌘-period from now till Doomsday, and PrintMonitor won't get the message.

Unless, that is, you pull PrintMonitor to the foreground. To do so, wait until about 10 seconds after you used the Print command. You see PrintMonitor's name appear in your Application menu. Choose it. The PrintMonitor window pops to the front, where the big, fat Cancel button is staring you right in the face. Click it.

A minute or so may elapse before PrintMonitor actually stops the printing. But if you catch it early enough, the printing operation is aborted. (We have much more to say about PrintMonitor later in the chapter.)

Finally, a word of friendly advice: when all else (meaning ⌘-period) fails, don't be timid about just shutting off the printer in midprint. Sure, you may have to help the page-in-progress out of the machine's innards, but no harm's done, and you may save a lot of time. (PrintMonitor will squawk in protest, of course, but a couple of judicious clicks on Cancel should shut it up.)

Worth Learning Actually, if it's a laser printer, this method may be even simpler: just pull out the paper tray. Once the out-of-paper light comes on, you can switch the printer off, push the paper tray back in, and turn the printer back on again — and you don't risk getting a page stuck in the guts of the machine.

Printing from the Desktop

In many cases, you don't even have to open an application to print a document. You can do it from the Desktop simply by highlighting the document icon — or several icons, even those created by different programs — and choosing Print from the Finder's File menu. Alternatively, you can drag the icons to a desktop printer icon if you have Desktop Printing turned on. (Read all about Desktop Printing later in this chapter.) In either case, the Mac automatically launches the programs that created those documents (memory permitting), asks you to confirm the Print dialog box, then quits those programs.
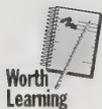
Worth Learning There's one huge benefit to using this method that's often ignored: If you select *several* files and use the Finder's Print command, you only have to confirm one Print dialog box (per program). All the other jobs get spooled automatically. That's a lot better than stepping through the Print dialog box for each individual job.

QuickDraw Printing

There are two different schemes the Mac uses to tell a printer what to draw on the page: PostScript and QuickDraw.

QuickDraw versus PostScript

QuickDraw is the built-in software that the Mac uses to draw text and graphics on its own screen. It remained essentially unchanged from its invention in 1984 through the debut of QuickDraw GX (read on).

A QuickDraw printer uses that same image-drawing technology to take what you see on the screen to the printed page. When you print on a QuickDraw printer, the Mac's QuickDraw programs, built into its ROM chips, do the processing. Therefore, the speed of a QuickDraw printer is directly dependent upon the speed of your Mac. The StyleWriters, Stylus Colors, and DeskJets of the world are all QuickDraw printers. In its day, Apple also produced a handful of inexpensive QuickDraw *laser* printers: three models in the Personal LaserWriter series (SC, LS, and 300) and the LaserWriter Select 300, for example.

Some of today's QuickDraw printers are very high-resolution printers. The memos and newsletters printed with an Epson Stylus Color 800 at 1,440 dpi resolution look great. So who needs PostScript?

The trouble with QuickDraw printers

Adobe Type Manager and TrueType technology do magical things for printed *text* on QuickDraw printers. But graphics are another story.

Graphics drawn in QuickDraw graphics programs (otherwise known as drawing programs, such as ClarisWorks/AppleWorks's Drawing window) look great when printed on QuickDraw printers. (See Chapter 20 for more on graphics programs.) But graphics from a PostScript drawing program, such as FreeHand or Illustrator, don't translate well into QuickDraw. Such graphics generally print as jagged, 72 dpi representations of the high-quality graphics on the screen. Recent versions of Freehand and Illustrator do better at converting their own PostScript graphics into QuickDraw form than before. But to print such images at their best, you need one of these two things:

- A conversion program, such as InfoWave's StyleScript or Birmy Graphics' PowerRIP, that translates PostScript code into instructions that QuickDraw printers can understand. (There's even a freeware program of this type called GhostScript, although figuring out its interface isn't a joyride.) This allows images to print at full resolution on a StyleWriter, Stylus Color, or other non-PostScript printer.

- A PostScript printer (see "The Truth About PostScript" later in this chapter).

What's good about QuickDraw printers

If all you print is text, a QuickDraw printer (such as an inkjet) is a very attractive option. Because print quality is generally outstanding, the only drawbacks to QuickDraw printers are their slower printing speed, their inability to print PostScript graphics unaided, and (in the case of inkjet printers) the difficulty of finding a paper/ink combination that looks sharp, but doesn't smudge.

The StyleWriter series

This printer used to be everyone's best buy. For about $200, you could get a machine whose printouts looked very nearly laser-printed.

But in the years since the release of the first StyleWriters, other companies, such as Hewlett-Packard and Epson, have produced Mac-compatible color inkjet printers that, frankly, blow away the StyleWriter's image quality and price. The HP DeskJet 870ce, for example, prints crisp black text that makes most StyleWriter output look downright crude. And color StyleWriters can't even come close to matching the Epson Stylus series printers when it comes to printing color photos.

In 1997, Apple radically redesigned the StyleWriter series, shifting to a new print engines manufactured by HP (the older StyleWriters were built around a Canon print engine). Finally, in 1998, Apple got out of the printer business completely.

CD

We've included a few general StyleWriter secrets here, but if you're still using one of the older, monochrome StyleWriters, be sure to check out our stash of more model-specific StyleWriter tips in Chapter 24 of *Macworld Mac Secrets, 4th Edition* (on the CD-ROM that came with this book).

StyleWriter Secrets ────────────────────────────────■

Make your own watermark

Some StyleWriter printing software (such as the Color SW 1500 printer driver) includes a Watermark feature, which can be used to emblazon an automatic logo or text stamp—- such as CONFIDENTIAL or DRAFT — across every page that you print. To apply one, you open the Page Setup dialog box, click the Watermark button, and then choose the stamp you want from the pop-up menu in the Watermark Options dialog box (see Figure 30-2). You can also adjust the density (darkness) of the watermark and where you want it to be aligned on the page.

CD

The secret, though, is that you're not limited to the 16 or so pre-set watermarks that show up in the Watermark menu. As reader Jim Jewell discovered, you can create your own custom watermarks with your own company name or logo. Using any graphics program (such as Color It, included on this book's CD-ROM), design a mark and save it as a standard PICT file. Then drop the file into the Printing Prefs folder, which is nestled away in the Preferences folder inside the System folder. Your custom watermark will now be available in the Watermarks pop-up menu. (Conversely, if you open the Printing Prefs folder, you can also *remove* the PICT files for watermark styles you never use.)

You can add watermarks when using laser printers, too, but only if you have Version 8.5 (or later) of Adobe's PostScript printer driver. See "PostScript Level 3" later in this chapter.
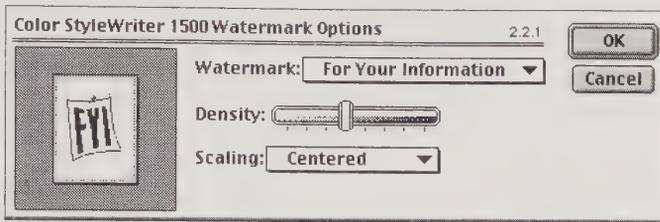
Figure 30-2: Most StyleWriter software lets you superimpose a preset watermark on print jobs, but you can also design your own.

Paper suggestions

StyleWriter (and other inkjet) printouts take time to dry. Especially if you're printing larger images that require a lot of ink on shiny copier paper, be careful not to let the sheets stack up as they emerge from the printer, because one outgoing page may smudge the previous one. This is especially true of transparencies.

For what it's worth, Apple recommends 25 percent cotton bond paper. As a general rule, smooth-finish (but not glossy) paper yield far better results with an inkjet printer than rough, grainy paper, which tends to absorb and spread too much of the liquid ink.

Sharing the StyleWriter on a network

The GrayShare feature (StyleWriter II and later models) or ColorShare feature (on Color StyleWriters) not only lets you print grayscale or color images, it lets you share the printer across a network. (Don't ask us why these two features should go hand-in-hand.)

To activate "sharing," all of the StyleWriter's software must be installed on your Mac. The same StyleWriter software also has to be installed on any other Macs on the network that will share the printer. Also — weirdly — the printer must be attached to the *modem* port, not the printer port, as you'd expect. (And what if you have a *modem* that needs the modem port? You'll have to buy an A/B switch box. This setup is clunky, but it works.)

Open the Chooser, select the StyleWriter icon, and click Setup. The dialog box in Figure 30-3 appears. You can give your printer a unique name. You can even set up a password to restrict access to certain users.

Strange But True
After it's set up, people sitting at other Macs on the network will be able to select *your* printer in their Choosers. They can then print documents just as though the printer were any kind of networked device (such as a PostScript laser printer).
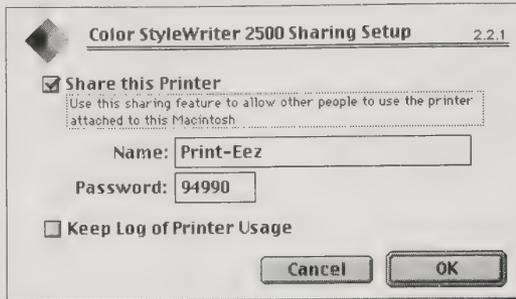
Figure 30-3: The Color StyleWriter's unique brand of networking.

But the StyleWriter is a QuickDraw printer. Therefore, it needs a Mac to do its processing; in this case, it's the Mac directly attached to the StyleWriter. Whoever happens to be using this "server" Mac will have to wait through bouts of mysterious computer sluggishness as other people on the network send their documents to it. Furthermore, all the fonts used in the documents sent by the network Macs must be installed on the "server" Mac, or you'll be in for some unpleasant surprises when you look at the printed pages.

Still, sharing a StyleWriter among two or three Macs is a decent and inexpensive option.

StyleWriter ink facts and fiction

All Color StyleWriters models released prior to the StyleWriter 4400 contained print mechanisms manufactured by Canon — so, not surprisingly, you can use Canon color inkjet cartridges with most Color StyleWriters. The Canon and Apple cartridges are virtually identical — except for the fact that, as reader Jeremy Bohn discovered, the Canon cartridges are cheaper and a lot easier to find. This money-saving tidbit applies, for example, to all black-and-white StyleWriters; they all work with the older Canon BubbleJet black ink cartridges.

And speaking of black ink, for years Apple marketed two separate products — ink cartridges for the original StyleWriter and ink cartridges for the StyleWriter II. The assumption was that they were *not* interchangeable; after all, if the cartridges were identical, why on Earth would Apple call them by two different names?

Turns out, of course, that they *are* the same, as are the cartridges for the StyleWriter 1200. Any of these three models can use exactly the same inkjet cartridge, regardless of what it's named.

The Truth About PostScript

PostScript is one of those terms that you hear every two minutes in the Mac world. Most people associate it with laser printers. Yet you can buy a laser

printer that doesn't have PostScript, and you can buy a PostScript printer that isn't a laser printer. Furthermore, people talk about PostScript as though it has something to do with text — and then you hear about a PostScript *drawing* program.

PostScript is actually a computer language. It's used to describe images — text and graphics on the screen and on paper. If you know what you're doing, you can actually sit down and *type out* the PostScript codes necessary to make the computer draw, say, a triangle.

The word "PostScript" pops up in conjunction with almost everything in the Mac world: fonts, printers, graphics, commands, and so on. We'll tackle them one by one.

PostScript fundamentals

PostScript was released by Adobe Systems in 1985. It's a computer language that describes the characteristics of a page, including the text and the pictures. (The original PostScript language was later called *PostScript Level 1*, as newer versions got introduced.) The PostScript file that you create on your Mac (or any other computer) is nothing more than a set of instructions to the printer: "Draw a straight line, starting an inch from the top of the page. Turn left. Draw another line." And so on. If you open an Adobe Illustrator file in a program that reads simple text, you'll see what we mean. Although the instructions that follow are rather oblique, they are, more or less, in English. The numbers describe, in points, the precise location of the various parts of the graphics file (see Figure 30-4).
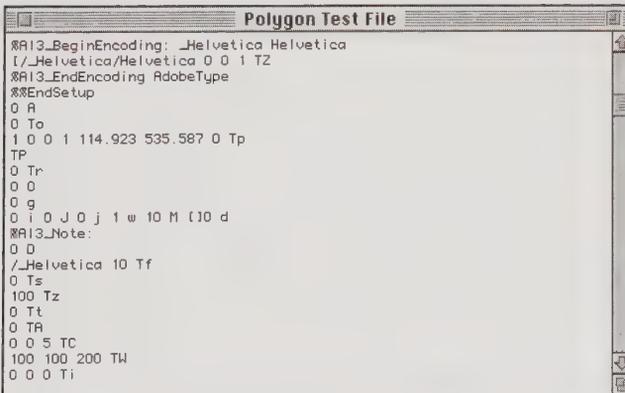

```
                    Polygon Test File
%AI3_BeginEncoding: _Helvetica Helvetica
[/_Helvetica/Helvetica 0 0 1 TZ
%AI3_EndEncoding AdobeType
%%EndSetup
0 A
0 To
1 0 0 1 114.923 535.587 0 Tp
TP
0 Tr
0 0
0 g
0 i 0 J 0 j 1 w 10 M [10 d
%AI3_Note:
0 D
/_Helvetica 10 Tf
0 Ts
100 Tz
0 Tt
0 TA
0 0 5 TC
100 100 200 TW
0 0 0 Ti
```

Figure 30-4: Part of a typical Adobe Illustrator document file describing a series of polygon shapes.

When you actually print the file on your PostScript laser printer, you get something like Figure 30-5.
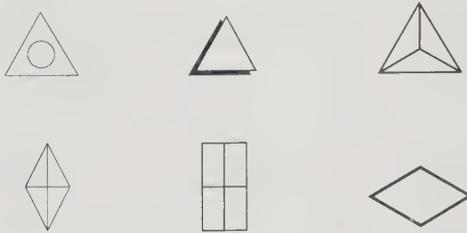
Figure 30-5: Printout of the Adobe Illustrator graphics file.

PostScript was designed to provide what Adobe calls *device independence:* That is, the same PostScript file comes out at 72 dpi on the screen, at 600 dpi on a PostScript laser printer, and at 2,400 dpi on a PostScript imagesetter. It prints, therefore, at the highest resolution capability of your printer (or screen).

PostScript gave desktop publishing the boost it needed to take over from traditional typesetting. Older professional-level printers could only use a single set of fonts provided by the manufacturer and could only work with a certain kind of computer workstation. With PostScript, you can use the same file and the same fonts on printers made by many different manufacturers — and you know that your file will print at the highest resolution that is possible on that printer.

PostScript fonts

A PostScript font is a file that may be compared to a coloring book. The file contains only the hollow *outlines* of the letters and symbols (which is why we call them outline fonts). (See Chapter 29 for details.)

The PostScript interpreter (the computer inside the printer), in effect, supplies the crayons to fill in those outlines. The outlines that describe the font may come from any of two places. It may be transferred to the printer by your system software (a *downloadable* font). Or, the font may be a *resident* font, permanently installed in your printer's ROM. (On most heavy-duty PostScript printers, you can install font *cartridges* or attach a font hard drive, too.)

PostScript printing

The Mac draws images on the screen using QuickDraw. When you print to a PostScript laser printer, therefore, the QuickDraw commands that compose the screen image must be *translated* into PostScript.

After the PostScript instructions are sent to the printer, yet another conversion takes place: The printer's processor (its *interpreter*) translates the PostScript instructions into a *bitmap* that describes exactly which microscopic dots on the page need to be black.

All of this translating accounts for the delay between the time you click OK in the Print dialog box and the moment the first page emerges from your printer. How long the printer takes depends on the power of its processor, the size of your document, how many fonts and graphics the document has, and how much memory (RAM) is in the printer.

The PostScript Printer Driver

A *driver* is a piece of software that tells your Mac how to communicate with some external piece of equipment — such as a laser printer. Every printer you use must have a corresponding driver installed on your Mac.

Mac Basics

Printer drivers go into your Extensions folder. As every first-time Mac owner eventually discovers, you can't print a single page until you open your Chooser desk accessory; the icons you see there — StyleWriter 1200, LaserWriter 8, and so on — are your printer drivers. (If you're using the Desktop Printing extensions described later in this chapter, the procedure is slightly different — highlight the icon of the printer *on your desktop* and press ⌘-L to designate it as your preferred one.) After you select a driver, the options in your Page Setup dialog box change to reflect the features of the printer you specified.

The original PostScript printer driver was called, simply, LaserWriter (with no numbers or letters tacked on at the end). The LaserWriter driver was intended primarily for use with Apple's own line of LaserWriter printers, but it works with virtually any laser printer that uses Adobe's PostScript technology.

LaserWriter 8: PostScript Level 2

Five years after the initial release of PostScript, Adobe produced an updated version of the PostScript language called PostScript Level 2.

Almost every PostScript printer manufactured within the last several years supports PostScript Level 2, which has features to make printing faster and more predictable than with the original PostScript software. A Postscript Level 2 printer offers faster background printing, improved text and graphics handling, better color printing on any color printer, and, in general, more efficient PostScript files, which means faster printing of complex documents.

It also provides improved *halftoning* algorithms (see Chapter 31 for details on halftones). Level 2 uses a smarter simulation method that reduces common problems with halftone printouts — moiré patterns, for example — that even affect high-end imagesetters.

Also, all PostScript Level 2 and later driver software comes with a folder full of *printer-description* files, or PPDs. Each file tells the Mac what special features are unique to your make and model of printer: the capability to handle special paper sizes; multiple paper trays; *duplex* printing (on both sides of each page); and so on.

To take advantage of these offerings, Level 2 printers require Level 2 *software* — otherwise known as the LaserWriter 8 driver. This driver was developed and distributed jointly by Adobe and Apple.

Actually, the two companies released the same driver under different names. The Apple version is called LaserWriter 8. You'll find its set of PPDs in your System folder, in your Extensions folder, in a folder called Printer Descriptions. (Feel free to discard all but the one that matches your printer.) Although Apple has released several versions of this driver — 8.3, 8.4, 8.5.1, and so on — its name is still officially LaserWriter 8.

The Adobe edition, *PSPrinter* (or more recently, *AdobePS*), comes on two high-density disks and includes over 200 PPDs so that you can customize the driver for almost any printer on the market. (You can also download the PostScript driver for free from Adobe's Web site at www.adobe.com.)

PostScript Level 3

In April 1997, Adobe released PostScript Level 3, its first major upgrade to the PostScript language since 1990. PostScript Level 3 is designed, yet again, to speed up PostScript printing routines and improve the handling of graphics, particularly in the area of color printing. It provides more ways to fine-tune color output and improve color matching. It also uses new shading algorithms to reduce banding, produce smoother color gradients, and improve the resolution of black-and-white printers.

Several Internet-related features are incorporated into Level 3, too. With Level 3, you can create *Portable Document Format* (PDF) files directly from the printer driver. (A PDF is an Adobe Acrobat document, complete with fonts, layout, color, and other graphic elements, that you can distribute to anyone without worrying what program or fonts they own — as long as they have the free Adobe Acrobat Reader.) Networked printers that can connect to the Internet can grab a PDF file from a designated Web address and print it directly from the Web site, without ever having to display it on screen.

Level 3 also expands the standard PostScript font set — the ones pre-installed in every Level 3 printer — to 136 fonts. The result is less network traffic, fewer font errors, and much faster printing. Finally, Adobe designed Level 3 to accept "plug-ins" that let you add new features to your printing software simply by dropping new extensions into your System Folder. For example, you can add a watermark feature to your PostScript printer by plugging in Adobe's free Watermark extension.

So how do you "upgrade" to PostScript Level 3? To tap into all of these features you have to get a Level 3 *printer*, such as the LaserWriter 8500.

(OS 8) Taking advantage of PostScript Level 3 also requires a Level 3 printer driver. Again, both Apple and Adobe have released their own Level 3-compatible drivers. The Apple version is LaserWriter 8.5.1, which comes with Mac OS 8.1

and later, and can also be downloaded from Apple's Web site. Adobe's Level 3 printer driver — AdobePS 8.5.1 — is free and available from Adobe's Web site (www.adobe.com).

Fortunately, you can use these updated drivers even with an older PostScript Level 2 printer. You won't be able to take advantage of most of the Level 3-specific features, of course, but you will benefit from some of the other improvements Apple and Adobe have made in the printer drivers.

What's a PPD file?

As we've said, PPD stands for "Printer Page Description" — a small text file that describes your printer's possible page sizes, screen angles, its list of built-in fonts, whether or not it has more than one paper tray, and so on. As we mentioned earlier, PPDs live in the Printer Descriptions folder within the Extensions folder.

One of the few times you encounter PPDs is when you first choose a new PostScript printer in the Chooser, using the LaserWriter 8 printer driver. After picking a printer in the Chooser, you have to click the Setup button to configure the printer's settings and, in the resulting dialog box, click the Use PPD button. Then you choose the PPD that exactly matches your printer.

If you don't have a PPD file for your printer sitting in the Printer Descriptions folder, it won't show up in this list. In that case, click the Use Generic button. Your printer will work just fine, but you won't have access to any of your printer's unique model-specific features — feeding paper from multiple paper trays, for example, or color and resolution settings. (If you can't find the right PPD for your printer, look for it on the disks or CD that came with your printer; you can also check the Web site of the printer manufacturer.)

Actually, PPDs are nothing new; professional programs such as Adobe Illustrator, Aldus FreeHand, and PageMaker have used them for years. (QuarkXPress uses them, too, but calls them PDFs and uses a proprietary format.)

The Page Setup dialog box

The PostScript printing process begins with a mandatory visit to the Page Setup dialog box, where you make a few decisions that dictate how your document prints (see Figure 30-6).

The basic options are always the same. You specify the size of the paper you print on; whether or not you want the image reduced or enlarged; and whether you want the paper printed in portrait (taller than it is wide) or landscape orientation (on its side). Depending on the program you're using, the main pop-up menu may list other "panels" of printing setup options; don't forget to explore them.
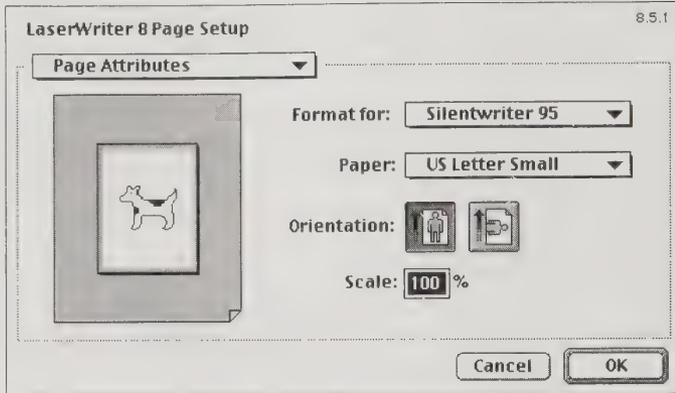
Figure 30-6: The standard LaserWriter 8.5.1 Page Setup box. This box may differ slightly, depending on the application and printer driver version.

Ineffectual FX

Among this main pop-up menu's options, you may find something called PostScript Options (see Figure 30-7). (If you're using the older LaserWriter driver, these options are called Printer Effects and they appear right in the Page Setup window. And in early versions of LaserWriter 8, you access them by clicking the Options button in the Page Setup window.)
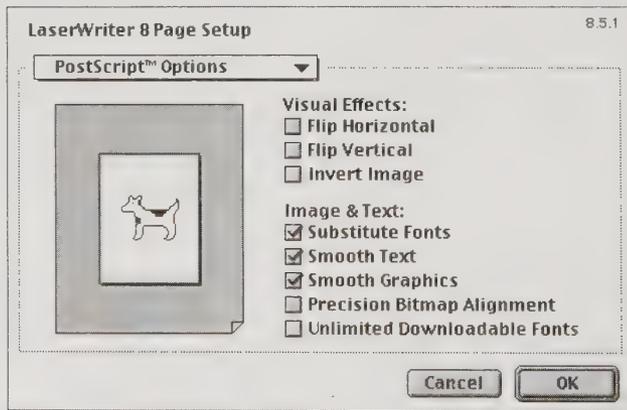
Figure 30-7: The increasingly useless options of the Page Setup dialog box

In today's world of powerful, high-tech PostScript printers, the Printer Effects/Options are next to useless. Unchecking them conserves RAM, saves printing time, and leaves the printing quality unaffected.

ANSWER MAN

The disappearance of "Larger Print Area"

Q: OK, I took your advice and upgraded from the old LaserWriter 7 printer driver to LaserWriter 8.x. But I was horrified to discover that the Larger Print Area option has vanished from the Page Setup options! Why on earth did Apple leave stuff like Precision Bitmap Alignment in there and remove a perfectly good feature that let me print with narrower margins on my laser printer? You call this progress?

A. Relax. You can still print with narrowest possible margins on a laser printer, even though the Larger Print Area is gone. (The "Larger Print Area" checkbox was hidden behind an Options button in pre-8.0 LaserWriter Page Setup boxes. When it's turned on, your LaserWriter can print to within .25" of the edges of each sheet of paper. Without it, you can come to within only half an inch of the paper's edge.)

Check out the paper size options in the Paper pop-up menu in the Page Setup dialog box. You'll see that there are now *two* size options for all the standard page sizes — US Letter and US Letter Small. US Letter is the same as the old Larger Print Area mode.

The other option — US Letter Small — leaves the half-inch margins around every laserprinted sheet — in other words, it's the equivalent of the old US Letter size *without* Larger Print Area turned on. Evidently, Apple finally realized how popular the larger-print-area option was, and so they brought it out of its hidden dialog box and into the foreground. (If you don't see US Letter Small listed among the Paper sizes, it means your laser printer is set up to always print to the larger print area when US Letter is selected.)

But because they're always there, staring you in the face, we'd like to demystify them. (If you haven't yet upgraded to the LaserWriter 8 driver, some of these options are hidden in the dialog box that appears when, in the Page Setup dialog box, you click Options.)

- **Flip Horizontal** and **Flip Vertical.** These options are used for mirroring your document; as illustrated by the sample Dogcow image in the dialog box, they flip the printed image right-for-left or upside-down. You may occasionally need to print something flipped horizontally when you print onto film using a Linotronic imagesetter if your pages must be "emulsion side down."

  You *never* need Flip Vertical, as far as we can imagine. You can accomplish the same thing by simply selecting Flip Horizontal and then turning the page upside-down in your hand — and you get your printout much sooner!

  Strange But True We think it's safe to say that we're the only people in America, by the way, to notice that this bug in the Dogcow: when you turn on Flip Horizontal, the Dogcow picture *doesn't* change to a perfect mirror image of the unflipped Dogcow. The horizontally flipped one has a bigger eyeball — and a patch of black fur on his rump!

- **Invert Image.** This choice prints a negative of your pages: black-for-white and white-for-black. You can use it, we guess, at Halloween.

■ **Substitute Fonts** (formerly **Font Substitution**). In the early days, there were only two kinds of fonts: laser fonts and ImageWriter fonts. As you can read in Chapter 29, these two categories actually corresponded to *PostScript* fonts and *bitmapped* fonts (which print jaggedly on the LaserWriter).

In those uncertain days of 1985 and 1986, people sometimes used the fonts they were accustomed to — Geneva, New York, Venice — in preparing documents. Of course, such fonts inevitably came out looking jagged, because no PostScript instructions (outline fonts) were involved.

As a helping hand, Apple offered the Font Substitution option. It automatically swapped a PostScript font for its non-PostScript equivalent. That is, wherever you used Geneva in your document, the laser printed Helvetica; wherever you used New York, you got Times; for Monaco, you got Courier. Unfortunately, the characters in each of these fonts simply aren't the same widths. As a result, your Helvetica, Monaco, and Times text had ridiculous word spacing when it finally hit paper.

Today, this option is irrelevant in terms of print quality. Today, Geneva, Monaco, and New York are TrueType fonts, so they'll never print jaggedly on a laser printer at all. Leave this option off.

■ **Smooth Text (formerly Text Smoothing).** If, by some freak of fate, you're still using bitmapped fonts (such as Venice or London), this setting supposedly makes them look better by smoothing the ragged edges.

■ **Smooth Graphics (formerly Graphics Smoothing).** This option performs a similar smoothing operation, but it applies only to bitmapped pictures — those you created in Photoshop or another painting program.

■ **Precision Bitmap Alignment.** Here's another obsolete feature. You're supposed to use this option when you're printing MacPaint-style documents (72 dpi bitmapped art).

It so happens that 72 doesn't divide evenly into 300 dpi, which is the resolution of a laser printer. Precision Bitmap Alignment reduces the overall image by four percent so that each on-screen dot perfectly fills up four of your 300 dpi printer's dots.

Speed Tip

Ignore this option. Instead, when you go to print, simply specify that you want to print at 96 percent of full size! The effect is exactly the same, but you save the trouble of trudging through two dialog boxes. (Come to think of it, using our 96 percent method has an additional advantage. If you use Precision Bitmap Alignment, only the bitmapped graphics are reduced 4 percent, while text and vector graphics remain at full resolution. The result: alignment and scaling differences between screen and paper.)

■ **Unlimited Downloadable Fonts.** This setting, another holdover from the days of memory-strapped laser printers, lets you print documents that contain too many fonts for your printer to handle otherwise.

This feature works by flushing fonts from RAM as soon as they're used and then downloading the next batch. This constant downloading and flushing makes the printing take longer, of course, but it may be the answer when lack of printer memory would otherwise render your document unprintable.

One caveat: If you're printing an EPS graphic that contains the only instance of a certain font, this setting may not download that font correctly. The Courier font will be substituted instead. If that syndrome happens to you, you may have to turn off Unlimited Downloadable Fonts and find another solution.

■ **Larger Print Area.** As we mentioned in the sidebar "The Disappearance of 'Larger Print Area,' in LaserWriter 8.4 and up, this checkbox has been renamed the US Letter paper size — as opposed to US Letter Small.

Anyway, the purpose is the same: to expand your printer's printing area to within a quarter-inch of the edge of the page all around (instead of its default half-inch).

■ **Faster Bitmap Printing.** This option has been removed completely from LaserWriter 8, but you'll see it if you use the earlier LaserWriter driver. When originally designed, Faster Bitmap Printing forced the Mac to preprocess bitmapped (MacPaint-style images) before sending them to the printer, resulting in faster overall printing.

Speed Tip

This was one of the best jokes in the world of Mac, however. Today's laser printers are so efficient that Faster Bitmap Printing actually results in *slower* bitmap printing! Leave this option off.

TRUE FACT

The inevitable Dogcow sidebar

Look at Figure 30-7. In fact, look at your *own* Page Setup or Print Options dialog box. Look at that animal, the one who stands in for your actual document image, the one who obediently flips, shrinks, grows, turns black, and hangs upside down to illustrate the effects of the various printer effects as you turn them on and off.

What *is* that animal? Is it a dog? Is it a cow? No. According to anonymous sources at Apple, this animal is the Dogcow. The Dogcow has become legendary among the Mac intelligentsia. There are Dogcow T-shirts. Dogcow discussions on the Internet. And in the newest Print dialog boxes (for the StyleWriter, for example, or the Level 2 PostScript driver), the Dogcow has been elevated to a much more prominent position.

You can predict, we'll bet, the sound she makes: *Moof!* (Yes, the Dogcow is a *she* — as is every cow. Otherwise she'd be a dog*bull*. This little

factoid, pointed out to us by reader Ben Galanti, is, believe it or not, fully documented by Apple in a technical note to Mac developers at devworld.apple.com/dev/dts/history.html.)

Frankly, we feel that one lonely person's heart may be repeatedly broken by all of this glee over the bizarre mutant hybrid animal: whoever first drew the little cutie. How do you think that person feels about her artistic skills, when her one attempt at system-software art has become a cultural laughingstock? She couldn't even draw a *cow* (or a *dog,* or whatever it's supposed to be), for goodness' sake!

We have a sneaking feeling the other Apple employees know who it is. It's the Apple programmer who refuses to play Pictionary at the company picnic.

The Print dialog box

The Print dialog box — the one you see when you actually choose a program's Print command — remained essentially unchanged through several successive versions of the LaserWriter printer driver.

Worth Learning

But in LaserWriter 8.4 and later, the Print dialog box got a major facelift (see Figure 30-8). First — and terrifically — you can now choose which printer you want to use for each printout (if it's a PostScript laser printer) by using the Printer pop-up menu, ignoring the Chooser altogether.

Furthermore, Apple took options that used to clutter up the Print window and buried them deeper in the dialog box. The basic options — the number of copies you want to print, which pages, and from which paper tray — are still visible when you first open the window. To get to the other options, you use the Print window's main pop-up menu; the dialog box "panel" changes depending on which of the eight categories you have selected in the pop-up menu.

```
                                                            8.5.1
  Printer:  [ Silentwriter  ▼ ]        Destination:  [ Printer  ▼ ]

  [ General                    ▼ ]

                Copies:  [ 1 ]

                 Pages:  ◯ All
                         ◉ From: [    ]  To: [ 1 ]

          Paper Source:  ◉ All pages from:    [ Hopper         ▼ ]
                         ◯ First page from:    [ Hopper         ▼ ]
                            Remaining from:    [ Hopper         ▼ ]

  [ Save Settings ]                    [ Cancel ]  [ Print ]
```
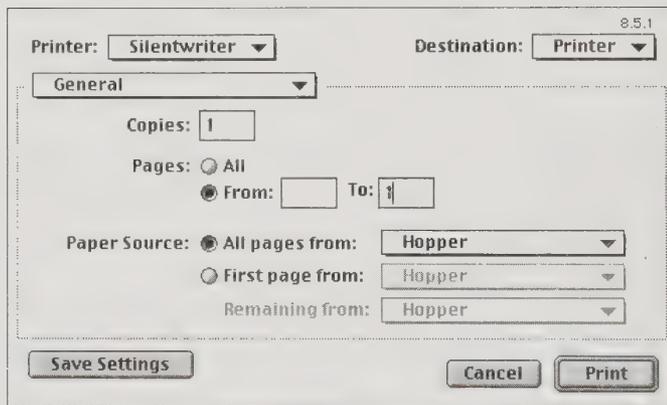
Figure 30-8: The LaserWriter 8 Print dialog box.

Here's a rundown of the available options in the pop-up menu:

- **General.** These options are displayed when you first open the Print window. Specify which pages of your document to print, the number of copies, and the paper source (manual feed, paper trays, and so on).

- **[Your Program Here].** After General and before Background Printing, you'll usually find a pop-up item with the name of the application from which you're trying to print: Microsoft Word, ClarisWorks, and so on. It lists additional options specific to this program.

- **Background Printing.** This is a brilliant addition to the Print dialog box, allowing you to decide *on the fly* whether or not you want each print job to be processed in the background. (For an explanation of background printing, see our discussion in the "PostScript Printer Guidebook" section, later in this chapter.) You also have the option of scheduling a

print job for a later time. You can set a large print job to run during your lunch hour, for example.

■ **Cover Page.** This option forces your printer to spit out a cover page before (or after) each job you send to it. The cover page lists your name (as defined in the File Sharing control panel on your Mac), the name of the document you're printing, the program from which you're printing, the name of the printer, and so on. Cover pages can be useful in large offices, where dozens of people are grabbing printouts from the same printer, but they do waste a sheet of paper for every printout.

■ **Color Matching.** This is where you set your printer to output either Color/Grayscale or plain black-and-white pages. If you're using Apple's ColorSync color calibration system, this is also where you set the Printer Profile, the file that tells your Mac how your particular printer handles color reproduction. (See Chapter 4 for more on ColorSync.)

■ **Layout.** This option migrated from the Page Setup dialog box in earlier versions of LaserWriter 8. It lets you tile multiple pages of a document onto one sheet of paper. You can print your documents 2, 4, or even 16 to a page, with or without window borders. (See our secret later in this chapter about how you can use this feature to save toner and paper.)

■ **Error handling.** If you happen to encounter a PostScript error when printing, this option lets you decide how you want to find out about the problem (exactly as the PrintMonitor program's Preferences command used to do). Do you want an error message to flash on your screen, or do you want the printer to spit out a detailed report? Our advice: Choose the No Special Reporting option — and read the Printing Troubleshooting section later in this chapter.

■ **Save as File.** Provides the options to save your document as a PostScript file or EPS (Encapsulated PostScript file), rather than send it directly to a printer. (If you've bought Adobe Acrobat, you'll also be offered Distiller as a choice — which turns your printout into a PDF file.) See the "Intro to PostScript files" and "EPS on the fly" secrets below for details.

■ **Printer Specific Options.** Here you'll find any other options specific to your particular printer, such as how many paper trays are installed, when the printer drops down into its low-power (sleep) mode, or how dark you want your printouts to be. For these options to be available, you must have the correct PPD installed. (See the section "What's a PPD file?" earlier in this chapter.)

PostScript (LaserWriter 8) Printing Secrets ──■

The secret "memorize these settings" keystroke

We went quietly mad for months as our Macs insisted that "US Letter Small," the Page Setup option that, in ensuring extra-large margins, often chops off the edges of our sheet-music and graphics printouts, was the default in all our programs.

Free book winner eight times over (and our tech editor) Dennis Cohen finally found the solution: If you *Option-click* the OK button to dismiss the Page Setup dialog box, you'll make your changes stick as the permanent settings for all future printouts (at least until you Option-click again). (A message even appears, telling you as much.)

Now our default page size is US Letter — normal margins — and we're much happier campers.

Print & Page Setup dialog box shortcuts

With LaserWriter 8.4 and later, you have to use a pop-up menu in the Print and Page Setup dialog boxes to switch between the various categories of options available for each print job. But as reader Francis George discovered, you can jump from category to category without using the mouse: Pressing ⌘-up-arrow and ⌘-down-arrow lets you move from panel to panel in both dialog boxes, without lifting your fingers from the keyboard.

Intro to PostScript files

One of the options in a PostScript printer's Print dialog box is PostScript File. (With LaserWriter 8.4 and later, you must switch the Print pop-up menu to "Save as File" to see this option.) Instead of actually printing your document on paper, the Mac creates a file on your hard drive that contains all the necessary printing information for that document. After you create a PostScript file, all you have to do is send it to your printer, using the LaserWriter Utility or Apple Printer Utility.

Contained in that PostScript file are all the instructions the printer needs to start spewing out pages. In other words, that time-consuming QuickDraw-to-PostScript conversion process has already happened. Printing a ready-made PostScript file, therefore, is much faster than printing using the Print command.

That's good to know when you're in a hurry, such as when you're printing at a service bureau or copy shop, and you're being charged by the hour. PostScript files are ideal for service-bureau visits for another reason, too — you don't have to take along the program that created them. The file by itself (and any special fonts you used) is all you need.

Read our section on service bureaus later in this chapter for details.

EPS on the fly
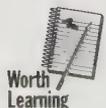
This is a *really* hot feature that appeared with the debut of LaserWriter 8. The Level 2 driver can actually create an EPS file of any document, even in programs that don't give you that option. (An EPS file, as you can read in Chapter 20, is a high-resolution graphics format. EPS files are most often imported into *other* programs, such as the page-layout programs described in Chapter 18.)

Suppose you want to create an EPS file of a ClarisWorks document. Choose Print from the File menu. Choose Save as File from the main pop-up menu in

the Print dialog box, and choose File from the Destination pop-up menu. (We're assuming you're using the LaserWriter 8.4 or later driver; in earlier LaserWriter versions, click the Destination: File radio button instead.)

From the Format pop-up menu, choose EPS Mac Standard Preview. Next, take a look at the extremely useful Font Inclusion pop-up menu (see Figure 30-9). If you choose All, the actual PostScript fonts needed to print your graphic are embedded *directly into the EPS file!* That's an important feature that has two important effects. First, the size of your EPS file on the disk grows tremendously, because it includes all the font information for all the fonts in the file. Second, despite its unwieldy size, you can now give this EPS file to a service bureau or a friend, confident that it will always print correctly, whether or not your recipient happens to own the fonts you used.
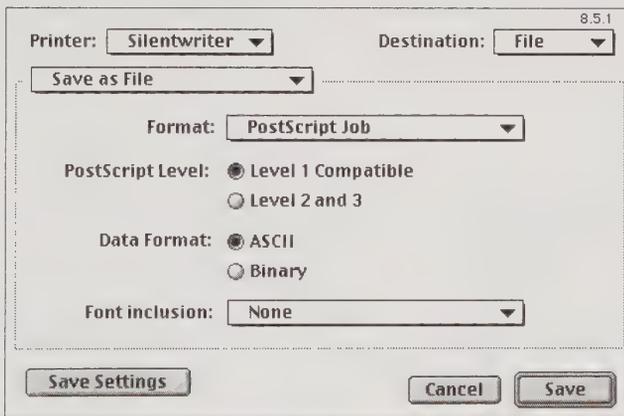
Figure 30-9: Creating different types of EPS files is a snap with the Level 2 driver.

Finally, click Save, and a new dialog box appears so you can name your EPS file and save it.

Note: With versions of the LaserWriter 8 driver prior to 8.4, you click Save after choosing the EPS format, and *then* set the Font Inclusion option in the Save dialog box.

Save bucks on cables

Mac Basics

You're supposed to connect your Mac to a PostScript laser printer with two PhoneNet or LocalTalk connectors (about $20 each) and phone-wire cabling. If you're a one-Mac operation, however, a plain old $12 StyleWriter cable works just as well. Run it from your Mac's printer port to the printer's usual AppleTalk jack.

You've just saved $33. No need to thank us.

Save toner — and paper, too

This secret has saved us literally reams of paper. The LaserWriter 8 driver lets you set up layouts that tile more than one page per sheet of paper. We've found that for proofing many documents, half- or quarter-size pages are perfectly adequate. You can still read the text, catch spelling or formatting errors, and get a sense of the overall look of each page — before printing a full-size final draft. And by printing two or four pages on each sheet of paper, you use only a fraction of the paper and toner.

To print these mini-pages, choose the Layout option from the main pop-up menu in the Print dialog box, then choose the number of pages you want printed on each sheet in the Pages Per Sheet pop-up menu (see Figure 30-10). (With versions of the LaserWriter 8 driver before 8.4, open the Page Setup dialog box, then use the Layout pop-up menu to choose 2 Up [for two document pages per sheet] or 4 Up [four per sheet]).
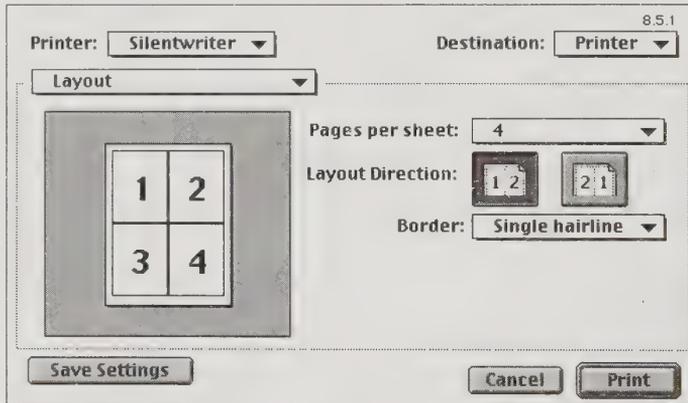
Figure 30-10: Creating a multi-page layout using the LaserWriter 8 Print dialog box.

The printer driver automatically scales and rotates the pages of your document to make them fit properly on a single sheet.

Eking out a few more pages

When your printer reports that the toner cartridge is out of powder, this old trick can squeeze out a few desperate additional pages.

Remove the cartridge (remember, you're supposed to do any cartridge-removing in dim light). Tilt it gently from side to side so that you redistribute what remaining powder there is inside the container. Replace the cartridge. You should now be able to print a few dozen or even a few hundred additional pages.

Mac Basics

Refilling cartridges

A typical laser printer toner cartridge lasts for between 2,000 and 6,000 pages, depending on the model and the type of work you do. Inevitably, though, it gives out. Copies become lighter, and you may see the dreaded amber light appear on your Apple laser printer.

You can save quite a lot of money if you use refilled cartridges. However, the quality level varies considerably. The only advice we can offer is to get a recommendation from a friend or coworker, or local user group. You might ask the recharging service for some sample pages. (In any case, you can't *damage* your printer by using a recycled cartridge.)

Multiple pages in manual feed

Worth Learning
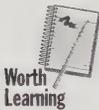
Most people think of the manual-feed slot on a laser printer as a one-page-at-a-time mechanism. You can, however, get a laser printer's manual feed to work with multiple pages automatically — if you master a simple technique.

Fan your stack of paper slightly so that the leading edge of the stack looks like a little staircase. Gently slide the stack into the printer's manual feeder, being careful not to disrupt the "staircase." The printer should now be able to grab the pages one at a time.

Depending on your printer, you should be able to reliably feed several pages using this method. Don't make the stack too thick (five pages seems like the maximum) and don't overdo the fanning. If the pages are staggered more than a couple of millimeters, they won't feed continuously.

Manual feed part II

If you occasionally print manual-feed pages, you may be less than pleased when you print with Background Printing turned on. You're told, for *every page,* that PrintMonitor requests your attention. You have to choose PrintMonitor from the Application menu. A message appears saying that "the LaserWriter is waiting for a sheet of paper." As they say, this is a feature, not a bug.

If you aren't using Desktop Printing, you can rid yourself of this warning. Launch PrintMonitor (if it's not already running, you can double-click its icon in the Extensions folder of your System Folder). From the File menu, choose Preferences. In the dialog box that appears, choose "Give no notification" (see Figure 30-11).

If you *are* using Desktop Printing, this little trick doesn't work. Instead, exit Desktop Printing, select the printer icon on your desktop, and deselect (uncheck) Printing ⇨ Manual Feed Alert.

When a manual feed job starts:
- ◉ Give no notification
- 🖨 ◆ ○ Display icon in menu bar
- ▢ 🖨 ◆ ○ Also display alert

Figure 30-11: PrintMonitor lets you control what degree of annoyingness it uses to get your attention when you're doing manual-feed printing.

Squelching the startup page

We certainly hope that your laser printer doesn't still spit out a pointless and wasteful startup page every time you turn it on. No one knows why they set up laser printers to do this, but it annoys the heck out of most people. (It doesn't thrill the rain forests, either.) And making the laser printer stop spitting out startup pages is so easy!

Mac Basics

Turn on the printer. Launch Desktop Printer Utility (or LaserWriter Utility, or Apple Printer Utility, or whatever it was called when you bought your Mac). Choose your printer from the list of printers and click Open Printer. Click the triangle next to the words Startup Page to reveal the startup page options, then turn off the startup page option (see Figure 30-12). If you're using the older Apple Printer Utility or LaserWriter utility, choose Startup Page Options and click Off. Wasn't that easy?

▽ **Startup Page**

☐ Print startup page(s) each time the printer is turned on.   **Default**
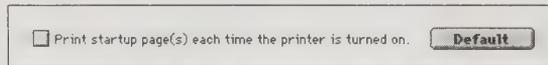
Figure 30-12: Make the start page stop!

Printing envelopes

Envelopes frequently jam when going through a laser printer; they're too stiff to bend around the mechanism of the paper path. Try these tricks:

■ Before printing, "break the spine" of the envelope. Run the flap edge of the envelope between your thumb and forefinger, bending it at about a 45-degree angle as it passes through. Do this twice, bending once in each direction so that the envelope ends up flat. Avoid paper cuts by folding the flap over backward.

  For an even better pass through the printer, break the stiffness along *both* edges. This makes the envelope more flexible and the likelihood of jamming is reduced.

■ Open the door at the end of the LaserWriter so that the paper path is straight. Almost every PostScript laser printer has a door or latch in the back, which makes the paper slide straight out the back of the printer instead of curling into the normal output tray.

■ Stick with plain bond paper for envelope stock if possible. Thick, rag-based papers seem to fare worse when traveling through a laser printer.

Preserving your prints

A laser printout is, after all, just a bunch of black dust that's clinging to the paper. As such, the black stuff can be prone to chipping, smearing, or peeling.

To minimize these aftereffects, our desktop-publishing friends swear by this technique: go to an art-supply store and buy a can of a spray-on fixative. Hold the can far away from the page and spray a very light coating.

Desktop Printing

One of the coolest parts of Apple's LaserWriter 8.4 and later software is Desktop Printing. Originally introduced as part of QuickDraw GX (discussed later in this chapter), desktop printing puts an icon representing each of your printers right on your Mac's Desktop — a blessing for Mac users who work in networked offices (though mostly irrelevant to anyone with just one printer). To print a file on a particular printer, you don't have to go to the Chooser; instead, you simply drag the document's icon on top of the printer's icon! If you double-click a printer icon, you see a full list of the files waiting to be printed on the printer it represents. You can manipulate the printouts-to-be in all kinds of useful ways, as we'll show you in the Secrets section that follows.

Desktop Printing, a standard part of System 7.6 and later, also gives you a new Printing menu on the menu bar that lets you stop and start printing; another printer menu (represented by a tiny printer icon) that lets you switch between different printers (see Figure 30-13); a Control Strip module that *also* lets you change printers; and a Desktop Printers folder in your menu that lets you open any of your desktop-printer icons without actually going back to the Desktop.

Figure 30-13: With Desktop Printing, you get a new menu so you can switch between printers without using the Chooser.

Creating a desktop-printer icon still requires a visit to the Chooser. Once you've selected a printer there, the printer's icon shows up on the Desktop. You can then switch between printers, stop and start print queues, put jobs on hold, schedule them for future output, transfer them from one printer to

another, and monitor all your printing activity — all without so much as a glance at the Chooser.

Desktop Printing 2.0 Secrets ———————————————■

Desktop printers minus the desktop

Speed Tip

OK, they're *called* desktop printers, but you don't have to keep them on the Desktop. With Desktop Printing 2.0, you can store the printer icons in any folder and create as many aliases of them as you want. You can put aliases of your printers in all the folders you use the most; you'll never be more than a short drag away from a print job.

A printer by any other name

You can rename desktop printer icons whatever you want, regardless of how the corresponding printers are named in the Chooser. This means you no longer have to remember which printer in the office is the HP LaserJet 4V and which is the HP LaserJet 5M. On your Mac, you can call them "Color Printer Next to Microwave" and "Big Printer Near Bob's Cubicle," if you so desire.

Remembering which printer is which

Having followed the advice of the previous secret, suppose you've renamed the four printers in your office John, Paul, George and Ringo. Problem is, now you can't remember if Ringo is the solid-ink color printer on the second floor or the 600 dpi laser on the third floor.

There's an easy way to refresh your memory: Select a printer icon and choose Get Info from the File menu (⌘-I). The Get Info window will tell you the printer's real name.

Select a default printer

Your *default printer* is the one currently targeted in the Chooser — the one you'll end up printing to from within a program if you choose the Print command and don't switch the pop-up menu.

Speed Tip

To designate a printer as the default printer, just select its icon and press ⌘- L; it automatically becomes the targeted printer in all your applications.

Of course, you can also choose the printer from the printer menu that gets installed when you use Desktop Printing 2.0, but we like this secret because you can do it without lifting your fingers from the keyboard. Navigate to the Desktop by pressing ⌘-Shift-up arrow. Type the first few letters of your printer's name to select its icon. Then press ⌘-L and you're finished. (You'll be able to tell which

of your desktop-printer icons is the default printer by the bold black outline around its icon.)

Faster batch printing

Speed Tip

If you have a batch of files that need to be printed, don't drag them to the printer icon one at a time; drag *all* of them at the same time. You'll only have to confirm your request once in the Print dialog box, and then all your documents will print.

Making extra copies

To print multiple copies of a file, you can select it in a print queue (after you've opened a desktop-printer icon by double-clicking) and choose the Duplicate command from the File menu. The file will print as many times as you dupe it.

Print while you're at lunch
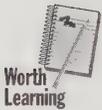
Worth Learning

Background printing is convenient, but if you're doing other processor-intensive work, having the Mac feed pages to the printer can slow you down. Instead, schedule jobs to print during your lunch hour—or even after you leave for the day.

In LaserWriter 8.4 (or later)'s Print dialog box, switch the main pop-up menu to Background Printing. Then click the Print At radio button and set the time/date that you want the printout to occur.

But suppose you've already sent a job to the printer—and *then* decide you'd rather schedule it to print later. To do this, put the job on hold (by clicking the Hold button in the print queue window), then click the Timer button. In the Set Print Time dialog box, click the At Time radio button, then set the date and time you want the job to print, and press Return.

Print queue shortcuts

As we mentioned earlier, when you double-click a printer icon, you see a list of the files waiting to be printed on that particular printer. The four buttons along the top of the printer window let you pause, resume, postpone, or cancel jobs in the print queue. (First click the icon for the job you want to change, then click the appropriate button.)

But reader Philip Tan noticed that there are a few other less-obvious controls hidden in this window as well. If you press both Option and Shift keys, the Pause button turns into a Stop button, so you can stop all jobs being fed to the printer (as opposed to just pausing a particular print job in the queue). The same key combination turns the Resume button into a Start button, which you can click to reactivate the print queue.

QuickDraw GX

In earlier editions of this book, this section contained a breathy description of QuickDraw GX and how this emerging Apple printing technology — which came with System 7.5 and was originally touted as a knock-your-socks-off major upgrade to QuickDraw — was going to change the world of Mac printing as we knew it

Now, however, QuickDraw GX is dead — a promising Apple technology that simply failed to take off. Apple abandoned GX during its 1997 financial crisis.

Indeed, GX had the *potential* to be a dramatic leap forward in printing on the Mac — not just printing, actually, but font handling, color, document distribution, screen display, and much more. Whereas LaserWriter 8 was only a driver enhancement that affected PostScript printers only, QuickDraw GX was to bring changes and enhancements to drivers *and* just about everything else related to type, printing, and graphics on both PostScript and non-PostScript printers. QuickDraw GX promised to add all kinds of stunning font controls, color management and graphics capabilities to the Mac.

CD

Fortunately, some of the best features of QuickDraw GX have emerged in Apple's Desktop Printing software and in Version 8.5 of Adobe's PostScript printer driver. If you'd like to read our complete discussion of what GX promised to deliver when it was still a living, breathing Apple technology, read Chapter 24 of the electronic edition of *Macworld Mac Secrets, 4th Edition* (on the CD that came with this book).

PostScript Printer Guidebook

Believe it or not, a PostScript laser printer is a computer unto itself. Most models contain a Motorola processor, just like a Mac. (If you still need convincing, consider a laser printer's price.)

Fortunately, using and maintaining this second computer of yours isn't nearly as complicated as using the first one (your Mac). But there's still plenty to learn.

Background printing

Background printing means that you can keep working on your Mac while your document is being printed. Without background printing, your Mac simply displays a "Now printing" message for as long as the printing takes. You can move the mouse, but you can't type, use menus, click buttons, or get any work done at all until the Mac's attention returns to you. And, though we're discussing background printing here in the context of PostScript printers, most non-PostScript printers (such as inkjets) can also print in the background.

MACINTOSH SECRET

The Desktop Printing Bermuda Triangle

Under Desktop Printing 2.0, desktop printers appear on your Desktop as cute printer icons — except when you encounter them in Open or Save dialog boxes, where they appear, not as tiny pictures of LaserWriters or StyleWriters, but as plain old ordinary *folders!*

So what happens if you unwittingly open one of these "folders" and save a file into it? It becomes embedded in the desktop printer itself and *vanishes from sight!* The file won't be visible in any Finder windows, nor will it appear in print queue if you double-click the desktop-printer icon.

How can you retrieve the otherwise hidden file? Launch the program you used to create the file, choose the Open command, and open the desktop-printer icon folder again; your hidden file will still be there. At least now you can open the file and re-save it into a new location. Alternatively, you can restart your Mac with extensions turned off. Your desktop printer icons will show up with big X's through them, but if you double-click on the icons, they open just like folders and you can pull your seemingly lost files out of limbo.

The primary on/off switch for Background Printing has traditionally been in the Chooser. Just open the Chooser, click the icon representing your printer, and click On or Off (see Figure 30-14).
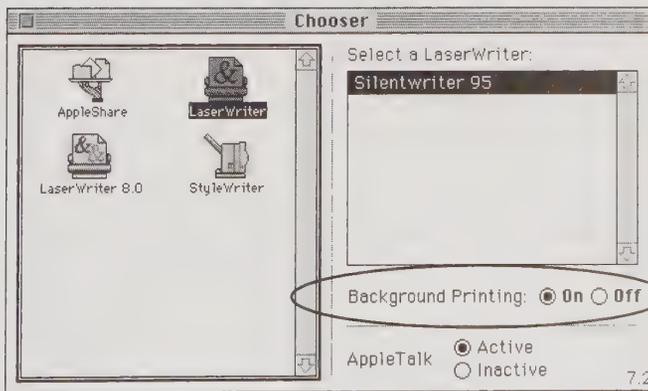
Figure 30-14: With older printer drivers, you turn background Printing on or off in the Chooser, depending on what kind of hurry you're in.

With LaserWriter 8.5.1, the Background Printing option no longer appears in the Chooser. Instead, you decide on a job-by-job basis which items you want to print in the background. In the Print dialog box, select Background Printing from the main pop-up menu. You can then select either the Foreground or Background radio button — or schedule your job to print later, as shown in Figure 30-15. (LaserWriter 8.4 offers Background Printing on/off buttons in Chooser *and* the Print dialog box.)
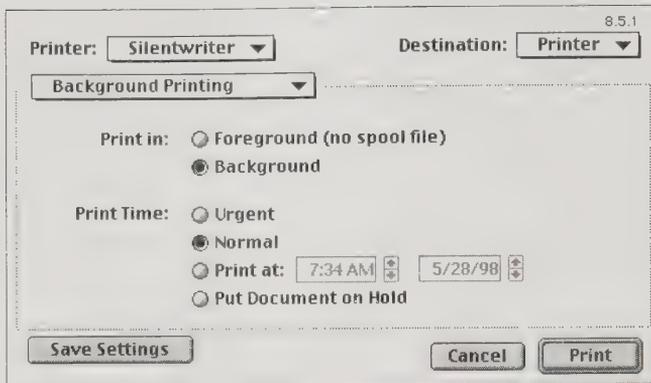
Figure 30-15: Now you can turn Background Printing on and off in the Print dialog box.

Printing is faster if it's the Mac's only focus of attention. Therefore, when you're in a hurry, and you have no additional work to do on the Mac, turn Background Printing *off*.

The messages you see during printing

Whether printing is foreground or background, a series of status messages appears on your screen while the printing is happening. (If you're printing in the background, you can't see the messages unless you pull! PrintMonitor to the front. More on PrintMonitor in a moment.)

"Looking for LaserWriter"

The first message you see is "Looking for LaserWriter: Claire's Printer" (or whatever you've named the printer that's selected in the Chooser). This message simply means that the Mac is trying to confirm that your Chooser-selected printer is attached and turned on. If not, the message will change momentarily to tell you that the printer is "not found."

"Initializing printer"

Each time you turn on your PostScript printer, it must be *initialized*. (The Mac doesn't bother to initialize it until you actually try to print something.)

When it initializes a PostScript printer, the Mac transmits a printer-preparation file to the printer. This file contains PostScript instructions specific to the printer driver you installed. (In this age of laser printers that can be shared between Macs and IBMs, initialization tells the printer that it's connected to a Mac, for one thing.)

For speediest printing, install the same LaserWriter driver on *all* Macs. Now the printer will only be initialized once, when the very first document of the day is printed.

"Starting job"

After all the preliminaries are out of the way, the task of printing your document begins. In Apple parlance, each document that you're trying to print is called a *job*.

"Processing job"

Now the printer begins to process the printing information from your document. In other words, it interprets the PostScript instructions coming from the Mac and begins to form them into an image, so to speak, in its head. This processing process can take seconds, minutes, or even hours, depending on the complexity of the document and the number of fonts used in it.

What a difference RAM makes

We mentioned that a printer is actually a computer unto itself. It has its own memory, too.

While 2MB may be enough memory for a typical Mac application, 2MB in a printer is barely enough to process a single letter-sized page with a couple of different fonts. The original Apple LaserWriters had less RAM than that, and had constant problems printing complex files.

You can install additional memory into most PostScript printers. (Visit Apple's Web site and download the Acrobat PDF file called `Apple_Memory_Guide`. It includes memory configuration information for all Macs and Apple printers.) That's lucky, because hardly any printers come with even enough RAM to handle complex graphics and text on full-width, legal-size pages. And the situation's only going to get worse: All the latest printing features — Level 3 PostScript, for instance, or Apple's FinePrint and PhotoGrade enhancements, and, most of all, color printing — suck up RAM with abandon.

Desktop Printer Utility (Apple Printer Utility, LaserWriter Utility)

This oddball, forgotten, under-documented gem is a program that Apple throws onto your System disks. Its name changes every other year: first it was the LaserWriter *Font* Utility; then just LaserWriter Utility; then the Apple Printer Utility; and then, when Apple stopped making printers altogether in 1998, it became the Desktop Printer Utility. In any case, it performs a collection of useful tasks related to your PostScript printer.

With your permission, we'll refer to it by its current name, the Desktop Printer Utility (DPU).

CASE HISTORY

The telltale print job

When you're connected to a network of Macs and printers, you have no privacy.

We know a woman who landed in some serious hot water at the PR firm where she worked. She'd been thinking of quitting her job there for weeks. Just when she got up the courage to start sending out résumés to other companies, her boss called her into his office. He demanded to know why she was spending company time and resources seeking a new job.

She was flabbergasted. How could this guy have known? She hadn't told a *soul* she was planning to leave!

Actually, she'd told *everybody.* She had failed to realize a simple fact: When you print on a network, anyone else who's trying to use the same laser printer gets a message on the screen that describes what that printer is doing.

The woman hadn't changed the name of her résumé. Her boss had tried to send a document to the same laser printer. And the message on *his* screen said, "Now processing job: Pam '95 Résumé."

He didn't have to be a rocket scientist to guess what she was doing. (And he was glad he hadn't yet installed the LaserWriter 8 driver, which no longer announces the names of the documents over the network.)

Naming the printer

When System 7 first came out, our clients kept asking: "Isn't there a way to name printers anymore?" (In the pre-System 7 days, you got a special little program called Namer with your laser printer. You used it to give your PostScript printers names so that each would show up in the Chooser with a different title. But there's no Namer in System 7 or later.)

Today, you use DPU to name your printers.

Printing a PostScript file

As we mentioned earlier, the Print dialog box (which appears whenever you choose the Print command) lets you print to a *PostScript File* instead of to paper. (See "How to make a PostScript file," earlier in this chapter.) When you select this option, the Mac creates a new file on your hard drive, containing PostScript instructions for whatever you just tried to print.

Only trouble is, no one bothers to tell you how you *print* a PostScript file after you create it. DPU is your answer (unless you prefer a shareware alternative, such as DropPS). Choose Utilities ⇨ Send PostScript File (or Download PostScript File, in earlier versions of the program). You're asked what file you want to send to the printer; find the PostScript file you created earlier and open it. Provided your PostScript printer is on, the file finally prints.

Downloading a new font to the laser printer

You can also use DPU to download a *font* to the printer.

Mac Basics

A PostScript laser printer comes with a certain set of fonts built in: Times, Helvetica, and a few others. If you want to print using a laser font that's not built in — Bodoni, say — you must send (*download*) that font to the printer before printing the document.

Fortunately, most well-behaved programs do this font downloading automatically. (Even DPU itself, when downloading a PostScript file you created, downloads any necessary fonts before printing.) Now you know why certain text documents take longer to print than others: The Mac needs extra time to print any document that contains a font not already built into the printer.

You can avoid this time delay — well, divide it up, anyway — by sending the fonts to the printer separately. You may do this, for example, when you're on a deadline and the designer is still working on the document. You can get the printer ready by sending the fonts to it ahead of time.

To send the fonts, launch DPU and open your printer by selecting its name in the Printer Selector window and clicking Open Printer. Then click the triangle next to the word Fonts to reveal the font options. The window shows a list of all the fonts currently stored in your printer, as shown in Figure 30-16.
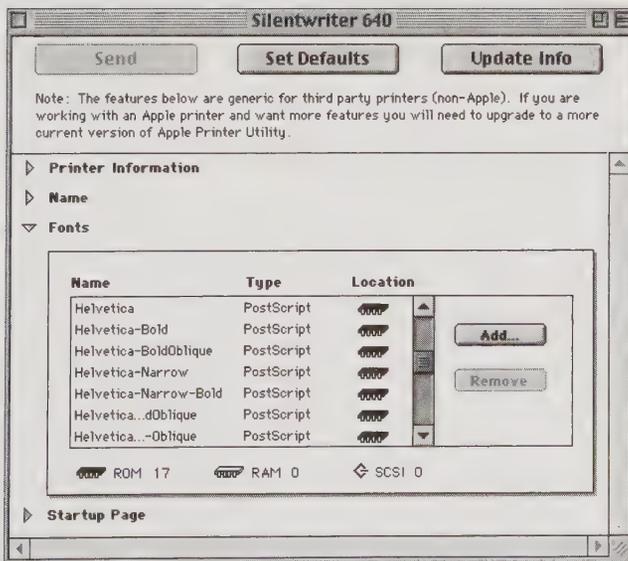
Figure 30-16: The Desktop Printer Utility reveals the fonts stored in your printer's memory.

Click the Add button. Now use the Open dialog box that appears to locate the fonts that you want to download (see Figure 30-17). Each time you select a font, click the Add button. When you've got them all, click Send to transfer them to the printer.
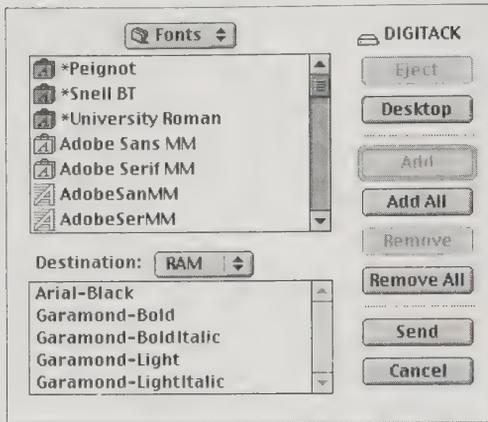
Figure 30-17: Getting ready to send non-built-in fonts to the laser printer using DPU.

Remembering the font: the printer's task

One additional little secret about downloadable fonts: If you send a font to the printer using DPU, the font stays there in the printer's memory until you turn off the printer.

But if a *program* downloads a font in the course of printing a document, it immediately flushes that font from the printer's memory as soon as the document is finished printing. This flushing does make your printer ready for its next task, and it does save printer memory. But it makes documents take longer to print because fonts must be loaded first and flushed after. If you plan to do lots of printing involving the same downloadable fonts, use DPU to send the font before printing the document.

Finding your printer's fonts

Of course, you have a general knowledge of which fonts your laser printer has built in. But it may be wise to know more specifically; documents you prepare using the built-in fonts print faster than those with downloadable fonts.

A quick, paperless way to find out is to use DPU, as described above in the "Downloading a new font to the laser printer" section. After opening a connection to your printer using DPU, click the triangle next to the word Fonts to display the font options. DPU does a quick inventory of your printer's resident fonts and displays them in a scrolling list, as shown in Figure 30-16. This can be especially useful in troubleshooting printing problems. It doesn't just list the built-in fonts; it shows all *available* fonts, including those that you've downloaded to the printer manually.

Want to see samples of all your available fonts? Choose Print Font Samples from the Utilities menu to print out a sample page that displays all your fonts.

Worth
Learning

The day PrintMonitor saved $341.82

One of your cheerful authors found himself with a PowerBook full of Finale files (sheet music for an orchestra) to print out. He was in a small New England town where he could find only a single laser printer: a slow one belonging to a Mailboxes Etc. outlet. He was relieved to have found a place where he could print out these 1,200 pages of orchestra sheet music, but alarmed that the copy shop not only charged 25 cents per printout— but $15 per hour of printing time!

An experiment (printing out the cello part) quickly revealed that these graphics-intensive documents took forever to print on the shop's antique, hand-cranked, gas-powered laser printer. Each page had to be converted, processed, and only then sent to the printer, where it printed on its own sweet (and expensive) time.

PrintMonitor, of all things, came to the rescue. Safely back in his hotel room, your cheerful protagonist opened the System Folder; opened the Extensions folder; and double-clicked PrintMonitor. From its File menu, he chose Stop Printing (as he had learned to do years ago while on planes).

Now he opened up each Finale file and chose Print from Finale's File menu, confident that his laptop would do the time-consuming work of pre-processing the printout—without actually printing anything.

Upon arriving at the print shop the next day, he hooked up his laptop to the laser printer, launched PrintMonitor, and chose Resume Printing from its File menu, thus uncorking the torrent of saved-up printouts that now flew to the laser printer in half the time. Having already done the necessary printing conversions, the PowerBook had but to transfer the data to the printer, which took much less time (and cost much less money).

PrintMonitor/Desktop PrintMonitor

Despite the confusing fact that it resides in your Extensions folder, Print-Monitor is, in fact, an application. Yet you probably can't ever remember double-clicking its icon. That's because PrintMonitor launches *itself*, unbidden, every time you print a file when Background Printing is turned on.

Meanwhile, if you're using Desktop Printing, PrintMonitor never appears at all; its functions are handled instead by an application called Desktop PrintMonitor. That's the program that shows you the progress of your print jobs when you double-click on a desktop printing icon. (When you turn Desktop Printing on, PrintMonitor gets turned off and moved into the Extensions (Disabled) folder.)

Mac Basics

But PrintMonitor and Desktop PrintMonitor both do essentially the same thing. They're both *print spoolers*. When you use the Print command, the Mac creates a *spool file* on your hard drive—in the PrintMonitor Documents folder, inside the System Folder. (A spool file is a disk-based version of the printout that awaits its time to be sent to the printer.) PrintMonitor now takes charge of the printing process. It grabs the first spooled file and directs it to your chosen printer. When the Mac's preprocessing of the file is finished, PrintMonitor quietly departs from your screen, even if the pages haven't actually come out of your printer yet.

When things go smoothly, you're never aware of PrintMonitor. Unless there's a printing problem, the only way you'd know that PrintMonitor was running is the fact that it's listed, temporarily, in the Application menu. Desktop PrintMonitor is even more elusive — it doesn't even show up in the Application menu. (Then again, it doesn't have to: With Desktop Printing, you can click on desktop printer icons and use the Printing menu to change printer settings in the Finder, without having to launch a separate program.)

Remember that PrintMonitor only plays a role in printing *if* you've turned on Background Printing in the Chooser. If you intend to print one document at a time and take a coffee break while printing is in progress, you may not even need background printing.

But to use your time most effectively, have your Mac multitask and process the job in the background. You pay a small price for using background printing, both in the time it takes a document to print and in the peppiness of your Mac while things are being printed in the background.

The PrintMonitor window remains hidden even when it's running. You can, however, bring it forward (while it's running) by choosing its name from the Application menu. (To access Desktop Printing's controls, just go back to the Finder and use the Printing menu.) You can also *force* PrintMonitor to show itself during every print job by turning on the "Show the PrintMonitor window when printing" option in PrintMonitor's Preference dialog box.

You can also summon PrintMonitor on command (to change its settings, for example), even when you're not printing anything. Just go to your Extensions folder and double-click the PrintMonitor icon. It launches like any other application. After changing your settings using File ⇨ Preferences, you can make PrintMonitor go away just by clicking on the Desktop (unless PrintMonitor is actually processing a document).

Color Separations

Printing on a Color StyleWriter or even a color PostScript printer is fine for printing a color flyer or two. But when you want to publish thousands of copies, or when you're doing professional work, you need the help of professionals. You need to take your files to a shop that can generate *color separations.*

TRUE FACT

What SPOOL stands for

Ever wonder about the derivation of the term *print spooler?* We always assumed the word "spool" is a metaphor: Your printed documents are waiting to be printed, like thread waiting to be pulled off a spool. But in fact, SPOOL is an acronym meaning Simultaneous Peripheral Operations Off-Line. (We like our thread explanation better.)

Four-color printing used to be a photographic process. Today, separations are typically generated by high-end digital scanning equipment from such companies as Hell, Crosfield, and Scitex. Your graphic is scanned, and the color information is separated electronically into its component four colors: cyan, magenta, yellow, and black. That's where the terms four-color printing and color separations come from.

You can perform the scanning, placing, and separating into component files yourself. Depending on your quality requirements, however, you'll need some expensive equipment. And you'll need to work closely with your print shop's staff to figure out the best settings for the separations.

Before you take the plunge, study the subject. You're going to get involved in such arcane arts as trapping and choking. Violent though these terms sound, they're techniques for handling colors that abut each other on the page to avoid leaving a gap if the color plates aren't precisely aligned when the printing begins.

Prepare carefully for a trip to the service bureau to print film. A normal imagesetter isn't always capable of providing precise enough registration for high-quality color. In other words, one plate may not line up against another. You don't want to find that out after you've spent serious money for four-color printing.

Secrets of the Service Bureau

So now you've run proofs of your work. It looks absolutely perfect, and you want to take it over to your friendly Lino shop for high-resolution output. Before signing a work order, be certain your job is absolutely ready. Here are a few tips we've gleaned from the School of Painful Experience.

Service bureau checklist

- **Fill out the form.** Most service bureaus give you an order form on which you describe the files you're sending. To avoid delays and extra expense for the staff to fix errors for you, answer every question.

- **Check the software.** Every service bureau has the popular programs on hand (such as Illustrator, Photoshop, PageMaker, Word, and QuarkXPress). But if you're using a less-ubiquitous program — Canvas, Publish-It Easy, or ReadySetGo, for example — find out if the service bureau has it. And check the version number. If your version is more recent than the service bureau's, they may not be able to open the files at all.

- **List the fonts; provide a printout proof.** Next to missing graphic files, the Number One source of output problems at a service bureau is missing or mislabeled fonts. The service-bureau technician won't even know there's a problem unless you provide a printout to check the work against.

- **Be wary of TrueType.** Despite the convenience and good looks of TrueType fonts, many service bureaus won't touch them. Older

imagesetters' RIPs (controlling computers) may need a hardware update to work with the newer font format, and some service bureau owners may not want to make such an investment (which can cost thousands of dollars). Before choosing fonts for a document, call your service bureau about this.

■ **Make a last check.** Before you pack up your work or send it via modem, make test prints on your own printer. The service bureau needs a test print to verify that the work has been printed satisfactorily. If your document takes 45 minutes to print on your laser printer, it will take much, much longer on an imagesetter. If it won't print at all for you, don't expect the imagesetter to do any better.

PostScript files and PDFs

If your service bureau doesn't have the program or font you used to create your document, you may be tempted to save the file as a PostScript file (see "Desktop Printer Utility," earlier in this chapter). As we mentioned in "PostScript Printing Secrets," PostScript files are easy to make.

But sending PostScript files to the service bureau requires some thought. Talk to the technicians. You may need to configure the Page Setup box in your publishing program to match the requirements of the printing shop.

Above all, you must be absolutely certain that your document is perfect! Unlike a regular document file, where you (or the service bureau) can always make last-minute changes, a PostScript file is etched in stone. A PostScript expert can, in theory, open up the file, scroll painstakingly through it, and perhaps fix a misspelling. But he or she will bill you at a high hourly rate for such exasperating work. A PostScript file is essentially a one-way street; don't take the plunge without setting it up carefully.

Worth Learning

In fact, here's our tip about sending ready-to-print files to a service bureau: Consider creating them as PDF (Adobe Acrobat) files instead. Although you have to buy Adobe Acrobat to create them, they have all the advantages of PostScript files — plus the big bonus of being able to *see* exactly what they'll look like before you send them out.

Service Bureau Secrets ─────────────────■

Don't use Helvetica Narrow

Yes, we know, Helvetica Narrow is a common font on PostScript laser printers. Weirdly, it's *not* common on imagesetters. If you must condense Helvetica, use the horizontal scaling feature in your page-layout program, or buy Helvetica Condensed, which actually looks far superior.

Don't use PICT

Strange But True Don't save your graphics in PICT format. That's a strange piece of advice, isn't it? You'd think PICT would be the perfect choice. It's the Mac's most basic and common graphics file format (see Chapter 20).

But professional imagesetters aren't Macs. They've been known to hang up for agonizing periods when sent a PICT file. Instead, save bitmapped images (paintings, such as Photoshop images) in TIFF format, and save object-oriented graphics as EPS files. These files take huge amounts of disk space, but they'll be much surer (and quicker) to print.

The page-layout trap: non-embedded graphics

QuarkXPress doesn't actually embed your graphics into the page-layout document itself. Instead, it simply keeps track of where that graphics file *is* on your hard drive. The nice result of that system is that the document file remains small. The not-so-nice result is that it's extremely easy to leave important graphics behind on your hard drive when you send the Quark file to a service bureau for printing! (PageMaker, which used to store graphics within the document, can now use this on-disk referral system, too, so it requires the same amount of caution.)
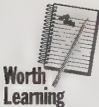
Worth Learning If you have QuarkXPress 3.2 or later, it's not too hard to avoid this kind of trauma: When you're ready to send your files out for printing, use the program's Collect for Output command. It automatically copies every single graphics file used in your document into one folder that you designate — and it generates a neat output report that lists every graphic that appears in the document, along with all the fonts, colors, and style sheets. Service bureaus *love* receiving this output report because it tells them everything they need to know about your file.

At any rate, before leaving for the service bureau, be certain that you have included every graphic file used in the document. Don't rename the files, either. If you do, the page-layout program will simply report the graphic file as "missing."

Slide printing tips

To get a presentation that you created on the Mac — in Persuasion or PowerPoint, for example — transferred to slides, you must send your file to a service bureau equipped with a *film recorder.*

A film recorder writes the image onto the slide in horizontal lines. Therefore, although your presentation software may make it easy for you to create stunning gradients (ramps of graduated color) that change in density from left to right or diagonally, bear in mind that film recorders can take a long time to process such a slide.

A gradient that changes color from top to bottom, on the other hand, won't be nearly so challenging for the film recorder. (We're not saying that you shouldn't use diagonal blends; we're just pointing out that such designs may carry a price.)

Printing Troubleshooting

After all is said and done, it doesn't matter if you're using a QuickDraw or PostScript printer, Level 1, 2, or 3, in the background or foreground, if the document won't print right.

When the printout doesn't match the screen

What put the Macintosh on the market was its ability to display an image that closely matched the one that came out on the printed sheet. But the trip from screen to printer isn't always an easy one, and things can change along the way. Here are some examples of WYS not matching WYG:

- **Screen resolution**. Not all Mac monitors have true WYSIWYG screen resolutions. Today, you can't count on a monitor's being 72 dpi (see Chapter 11 for examples). It's possible that the screen image may be slightly larger or smaller than the printout.

- **Low-res screen, hi-res printer.** There's quite a bit of difference between the 72 dpi display of a monitor and the 300 dpi (or higher) resolution of a printer. Very fine details of a document simply can't show up on the screen; they won't show up until you actually print. Two common examples: the letter spacing of type may be off, and graphics may not be positioned as precisely as you thought they would be.

  Some publishing programs (and word processors) let you zoom in, magnifying your document on the screen. Only then can you see the fine points of the text you're about to print.

- **The printer-driver difference.** Different printer drivers may have different effects on output. In other words, the way the words fall on each line, and the way the lines fall on each page, may actually shift considerably depending on *which icon* you selected in the Chooser!

  The solution to this problem is simple. Before finalizing your document's layout, open the Chooser. Select the printer driver you'll ultimately be printing with, even if no such printer is connected to the Mac.

- **PostScript versus QuickDraw.** As we mentioned earlier, the *kind* of image you're printing and the kind of printer you're using may also cause unexpected results. A QuickDraw printer may have trouble printing rotated text or graphics that you prepared in Illustrator, for example.

- **Font problems.** The difference between the way type appears on your screen and the way it appears on the printed page may be caused by something rather simple. If you're using a PostScript font, the printer-font portion (see Chapter 29) may have been installed incorrectly.

  Furthermore, among the popular font families (such as Times), a raft of font-conflict problems may zap you. Believe it or not, there are two different screen versions of the common fonts — one each from Adobe and Apple. They're named and designed similarly, but their actual letter spacing is different. It's perfectly possible, therefore, that your printout

(using the laser printer's built-in Times font) might not match the screen (which uses the Apple screen font). Likewise, if you've installed both the TrueType and PostScript version of the same font, the document may look fine on the screen, but the printed results may be unpredictable. (See Chapter 29 for details on printed deviations from TrueType on-screen display.)

Even worse surprises may result if you get caught in the snarl of competing font companies with fonts of the same name. Two fonts of the same name from different suppliers may differ in their metrics (width and height information).

■ **Color differences and ColorSync.** Color work can be complex. Each brand of monitor has a different overall color tone and *gamma* setting (see Chapter 11). Chances are good that the colors you see on the monitor won't quite match the ones produced on a color printer.

To get around the differences, Apple created a technology called ColorSync. It's a system of calibrating your color monitor so that its colors match those printed by a particular color printer. (Several competing products, such as EfiColor, are also gaining popularity.) ColorSync works very well among Apple products — monitors, scanners, printers — and the required "device profile" files are now available for color products from HP, Epson, Lexmark, and other major manufacturers.

Font and graphics problems

Question: My document prints, but the fonts are coming out all jagged. What's wrong?

Answer: See the section of Chapter 29 called "Why Text Prints with Jaggies."

Question: I'm trying to print out a document with an Illustrator EPS file containing Futura, but I'm getting Courier instead. Why can't this printer work properly?

Answer: You should first suspect that your printer font isn't properly installed. Once again, see Chapter 29.

Next, you may simply be overwhelming your printer's memory. Try using fewer fonts. Finally, check to see if you selected "Unlimited Downloadable Fonts" under Options in your Page Setup box. If so, fonts are flushed from the printer right after use, to make way for new fonts. It's a way of managing printer memory better. But if a font is used only in an imported graphic (and not in the publishing or word processing document itself), the fonts may not be downloaded properly, and font substitution may result.

You have two ways out. First, use that font in the text of your document (color it white if you don't want it to show up in your printout). Second, turn off the Unlimited Downloadable Fonts option.

Question: My illustrations looked beautiful until I imported them into my publishing program and printed them; now they're printing bitmapped and jagged. What's wrong?

Answer: In most publishing programs, such as QuarkXPress, the image you see on the screen is only a stand-in for the actual EPS file, which resides safely on your hard drive. When it comes time to print, Quark consults the file on the disk in order to print.

Mac Basics

If the EPS file has been moved or renamed, Quark does the only thing it can: prints the low-resolution PICT representation of the file that's used in the on-screen document. This PICT portion of the EPS file may look fine at the 72 dpi of your Mac's screen, but it will look chunky or ragged when printed. The solution is to re-import the EPS file from wherever it now lies.

Question: Why can't I print my FreeHand files on my StyleWriter? They either don't print, or they come out jagged and bitmapped.

CD

Answer: Illustrations done in FreeHand and Illustrator are *PostScript* graphics. The best a QuickDraw printer (such as the StyleWriter — or most fax/modems, by the way) can do is to print the PICT portion of the image, if it's available. Here's a solution: Import the PostScript artwork into a program such as Photoshop or Color It (which comes on the CD-ROM with this book); convert it into a TIFF file with high resolution and print *that.*

Here's another solution: as mentioned earlier in the chapter, buy a translator program, such as InfoWave's StyleScript or Birmy Graphics' PowerRIP for about $100.

General printer errors

Question: Every time I try to print a document, I get a message about an "Undefined Offending Command," and, a few seconds later, another message that the document is "OK, but can't be printed." Or sometimes i'll get "PostScript error occurred." What's going on?

Answer: For some reason, your file is choking the printer; maybe the document is simply too complex.

First, try printing the document one page at a time rather than all at once. If that doesn't help, go to the Page Setup box and turn off those silly printer effects (Graphics Smoothing and so on). They don't make much difference in the quality of your output, but they do steal RAM that may be needed to image the document.

Try turning off Background Printing. Finally, try restarting the printer. This last step flushes out the RAM and gives you a fresh start.

If all else fails, go back to your document and use a smaller number of fonts, or replace some downloadable fonts with those that are built into the printer (Times, Palatino, and so on). Consider making your illustrations less complex.

Question: My printing appears to go okay, but when I look at the pages, the image on the edges of the pages are clipped off. What gives?

Answer: You realize, of course, that a laser printer can't print all the way to the edge of the page. As described in the "The Disappearance of 'Larger Print

Area'" sidebar earlier in this chapter, a quarter-inch from the edge of the paper is about the best a laser printer can print (even if you turn on the larger-print area option).

If you have this problem when printing on legal-size paper, it may be that your printer doesn't have enough RAM to process a page of that size. It may be time to get some additional RAM installed, if your printer can be upgraded.

Complex printing errors

When you work on documents with complex graphics and many font changes, and when you're baby-sitting a high-resolution laser printer or imagesetter, the problems get harder to handle.

Question: I'm frustrated. When I try to print a file, I get a slew of printer errors. Sometimes it's "Limitcheck," then it's "VMerror," or "–8133." On occasion, the printer just restarts.

Answer: "VMerror" is what it says: a virtual-memory error. It means that your printer has run out of memory and can't process your document. You can simplify your document by using fewer fonts or by making the graphics less complex.

The Limitcheck error occurs most often when you're trying to print a document with a linked EPS file created in a drawing program like Illustrator. It means that there are too many elements (paths or complex patterns).

There are several ways to clean up such a document. First, open it and get rid of elements you don't need. Just coloring them white won't help (the printer must still process them).

Second, Illustrator has a pair of settings called Split Path Resolution and Split Long Paths that make it easier for a printer to handle the file. Unfortunately, these options make it difficult to edit your document later; you can't undo the path-splitting process. Make this change, therefore, to a *copy* of the file.

If you're using blends, you might have to make them use fewer steps. You can also turn off Background Printing or restart the printer.

If you've done the best you can, your printer may simply need more RAM. Consider printing the EPS file separately from the document file and then putting them together the old-fashioned way, by pasting one atop the other.

The "–8133" error is just a general PostScript error. It means something is wrong; it's no more explicit than that.

Question: Every time I try to print a document, the printer resets itself or halts on just one page, but I'm only using one font on that page. What's wrong?

Answer: Maybe it's a bad printer or screen font. While the text may appear fine on your Mac's screen, a damaged printer font can prevent the document from being printed.

Question: When I try to print blends or halftone patterns on my printer, I get a banding or moiré effect. What can I do?

Answer: PostScript can only print 256 different shades of gray, and a standard laser printer can't even lay down that many (only a high-res laser printer or an imagesetter can approach that number).

Some imagesetter manufacturers have developed new software to optimize printing of halftones and blends to get around this limitation. In the meantime, check with the publisher of your drawing or publishing software on how to deal with this problem. Some software publishers can send you technical memos that show you how to calculate the number of permissible steps in a blend. QuarkXPress can automatically figure it for you, as long as you know the target line screen and dpi of your output device.

Just one general hint: Reducing the length of your blend helps, because each step in the blend occupies a smaller amount of space, thus reducing the banding effect.

Poor printout quality

Question: My printouts aren't coming out with even blacks anymore. The black areas look like a dark gray.

Answer: Sounds like you're running low on toner powder. In dim light, remove the cartridge and rock it gently to redistribute the powder — then get a fresh cartridge ready to roll when this one gives out.

Question: Each page has a regularly spaced blob or spot or dot on it. Do I need a new cartridge?

Answer: No. There's a blob or spot or dot on the roller inside the printer. Open the printer (you should probably let it cool since those rollers get very hot). Hunt the surface of the roller for a caked-on piece of toner or crud, and scrape it off with a Q-tip. (This goes for a continuous thin streak, too.)

Question: There's a white streak running horizontally through the page, one dot high, in the same place every time. Should I clean my rollers again?

Answer: Sorry, no. This time it sounds like a piece of RAM has gone bad. You must get the printer repaired.

Chapter 31

Scanners and Digital Cameras

In This Chapter

▶ Hooking up your scanner

▶ Color scanning

▶ Buying a scanner

▶ All about OCR

▶ A digital camera crash course

The Macintosh is a terrific tool for manipulating information. For most people, that information gets into the Mac by being typed on a keyboard. Or it enters the Mac's memory bank from a disk, from another Mac in the network, or even via modem.

But one kind of information can't be typed, downloaded, or recorded from a microphone: visual information. When you want to modify a photograph in Photoshop, pop a line drawing into your newsletter, even import some pages of text that aren't worth retyping, that's when scanners and digital cameras come into play (see Figure 31-1).
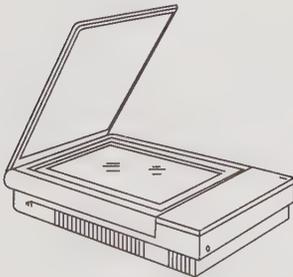
Figure 31-1: The conventional flatbed scanner looks like a squashed copying machine.

Scanning is great fun, actually. You can repair, retouch, or delete people from photos; you can turn drawings, photographs or newspaper clippings into files that can be e-mailed anywhere in the world; you can scan in typewritten pages to avoid having to retype them; you can scan documents to preserve them forever...no wonder people get hooked.

How It Works

A scanner is the sibling of a copying machine. Macintosh *flatbed* scanners consist of a long table with a cover (like a flattened copy machine). Under the cover, you see a piece of clear glass. Beneath the glass is a light source connected to a motor-driven assembly.

When you use the scanner, the light flashes on and the motor hauls the lamp across the image area. An array of *CCD sensors* (short for Charge-Coupled Device, a light-sensitive chip) picks up the image of the item on the scanner's glass bed and converts it to electronic current. This information is then converted into digital data that can be read and processed by your scanning software.

If you stop to think about it, a scanner is the opposite of a *printer.* A printer takes what's on the screen and sends it to a piece of paper. A scanner takes what's on paper and sends it to your screen.

Hooking Up Your Scanner

Modern scanners are USB devices (see Chapter 10). Older scanners are generally SCSI devices, which means they have to be attached and terminated in the same way you hook up a hard drive or CD-ROM player to your Mac...uh-oh. See Chapter 33 for our enthusiastic take on SCSI chains; if you have problems getting your scanning software to recognize the scanner, or your Mac won't boot, it's time to try the usual ritual of shuffling SCSI equipment around (as described in Chapter 33). We've found, for some reason, that many scanners seem to work more predictably when situated at the *end* of the SCSI chain.

Color Scanning

There are two kinds of color scanners. Some use a *single-pass* process, in which three separate lights — corresponding to red, green, and blue — flash on and off to capture the matching color information in your document or photo. The lamps on other scanners make *three passes,* in which red, green, and blue filters are used, in turn, to capture those portions of the color spectrum.

Each method has drawbacks. The single-pass process may introduce sharpness errors because of the effects of the three lights flashing on and off. The three-pass scanner may have registration problems (where the three elements of the color image don't exactly line up).

In the past, this sort of high-end color processing was the province of high-priced, *drum-based* scanners. In those machines, the scanned item was placed on a large drum, and the image was exposed onto film. These handy devices cost $40,000 or more. But today's flatbed scanners provide results comparable to many of the more expensive products, especially after you tweak the image a bit in Photoshop or Color It.

Which Scanner to Buy

The most common scanners for desktop publishing use are the flatbed models we've been discussing. In recent years, the price of color scanners has dropped so much that grayscale models (at one time the low-cost alternative) have just about disappeared. Color scanners capable of producing 24-bit color images at 300 dpi or higher start at about $150; more sophisticated models can cost as much as $3,000. (Among the most popular are those from Agfa, UMAX, and HP.) Because new models are being released all the time and existing ones updated, the first step in buying a new scanner is to read reviews in a Macintosh magazine like *Macworld.* We've found that quality among same-priced scanners can vary dramatically, so read about, compare, and, if possible, test scanners before buying one.

Scanners usually come with their own special software. Many scanners also come with "plug-ins" — add-on software that lets you scan an image directly into image-editing programs such as Photoshop and Color It. In fact, you often get a feature-limited version of Photoshop free when you buy a new scanner.

Other kinds of scanners

Not all scanners are flatbed. Some models, like the Visioneer PaperPort Strobe, are *sheetfed*; in other words, the document is inserted as though the scanner were a fax machine. A roller assembly moves the pages across the light source, which, unlike the lamps in a flatbed scanner, doesn't move. This sheet-fed technology has its limits. It can't handle pages that are too large or too thick to roll through the machine.

One advantage of sheet-fed scanners is their size; most are barely larger than the roller mechanism itself. They're designed to fit just behind your keyboard, so that you can quickly feed in paper documents for scanning without even having to turn away from your computer. As long as you don't need professional-quality color, and as long as you're mainly scanning text, this inexpensive, slimline gadget is terrific for processing the various scraps of paper that inhabit your life.

Overhead scanners are an expensive type, usually costing several thousand dollars. They have a base onto which you place the original to be scanned. The imaging assembly is mounted at the top of the device. This contraption may be very useful if you're trying to capture the image of an actual 3D object, such as a box or a smallish sculpture.

Then there are *slide scanners,* such as the Polaroid SprintScan series and the Nikon Coolscan. These convert a piece of positive film, say a 35mm slide, into an image file. A slide scanner passes light directly through the film, much like a slide projector. These scanners have much higher resolution than standard flatbed scanners — 2,700 to 4,800 dots per inch, as compared with 600 or so for a flatbed — and the resulting Macintosh graphic file is, therefore, of much better quality than you'd get from a flatbed. Greater detail is captured, and the resulting file prints out better on high-end color equipment.

Retouching has its limits

Another true story, submitted by a graphics service bureau:

A customer called us, saying that she wanted a poster made from a color slide. It was a picture of her recently deceased father with a couple of his fishing buddies in a boat.

This woman mentioned there was a slight problem: In the photograph, her father was facing away from the camera. She wanted our photo expert to flip the negative so that you could see his face.

When it was explained that this would only provide a mirror image of the back of his head, she became irate and screamed into the phone: "If you can take the pimples off those glamour girls, why can't you put a face on my father?!"

But slide scanners are expensive ($800 or more), and they're limited to dealing with positive film. You can't even use them to scan a piece of paper with text, graphics, or a traditional photograph! You must first convert these originals to slides before scanning.

If you need to scan both slides and printed material, keep in mind that some flatbed scanners come with an optional mount that accommodates slides. This two-scanners-in-one setup may sound like a great deal, but be forewarned: The optics in most lower-cost flatbed scanners usually aren't of high enough quality to create good scans from slides.

Choosing a Resolution

When you scan, your software will present you with a choice of resolutions — which, as in printing, is measured in *dots per inch*. Faxes look terrible because they're usually 200 dpi; books look great because they're 2,400 dpi. In printing, greater resolution is always better.

In scanning, however, more dots per inch *don't* necessarily make better scans. There are several problems with high-dpi scans: (1) They take much longer to make; (2) they take up huge amounts of space on your hard disk; (3) they're incredibly slow to process in Photoshop (or whatever touch-up program you use); (4) they take much longer to print; (5) they're more likely to interpret dust, streaks on the glass, or imperfections in the original as significant data.

So clearly there's such a thing as *too* much resolution; why scan at 1200 dpi if you'll be printing on a 300-dpi laser printer? But too *low* a resolution will make your finished document look grainy or *pixellated* (made up of discernible square dots). Endless debate rages, then, among the imaging elite: What's the best dpi for a given purpose?

Rule 1: The best dpi for a scan depends on the dpi of the *printer* you'll be using.

For example, if you're scanning photos for display on the Mac screen, as part of a Web page, scan at 72 dpi — the screen resolution. There's absolutely no point in scanning at a higher resolution. If you're scanning a photo that you'll be publishing in a magazine, though, you'd want a much higher resolution. (You'll also want a higher resolution if you plan to *enlarge* what you're scanning.)

Your assumption, then, might be to scan at the *same* dpi as the printer. Nope. Suppose you have a grayscale photo on the screen that you want to print on your laser printer. How does a laser printer print different shades of gray when it can only print black dots? It creates the *illusion* of gray shades by varying the sizes of the solid black dots it puts on the paper — a *halftone*. See the "Of LPI and DPI" sidebar later in this chapter for an example.

Obviously, it takes *several* of a laser printer's smallest dots to create *one* of these larger, variable-size halftone dots. That's why it doesn't make sense to scan something at the same resolution as the printer: It takes at least *two* printer dots to represent each gray dot on the scan as a halftone.

Rule 2: When the printout will be a halftone, your scan is just wasting time and disk space if it's *more than half the dpi of the printer.* That is, if you have a typical 600-dpi laser printer, your grayscale image should be composed of no more than 300 dpi. Table 31-1 should be your guide.

Table 31-1 : Scanner DPI Guidelines

Printer and image	Maximum useful dpi
professional color images	300*
color slides	300
color laser printer	180
onscreen display (multimedia or Web page)	72
laser-printed grayscale (300 dpi printer)	150
laser printed grayscale (600 dpi printer)	300
StyleWriter-printed grayscale	180

*Note: If you'll be printing on a *dye-sublimation* printer, these rules don't apply; create your scan at the maximum resolution of the printer.

ANSWER MAN

Of LPI and DPI

Q: Here it is, the inevitable question. What's the difference between LPI and DPI?

A: DPI, dots per inch, is a measure of your printer's resolution. As you know, 300 dpi is the standard quality for a laser printer.

LPI, on the other hand, is a much less discussed term. It has only to do with a single computing act: printing color or grayscale graphics, such as photos, on a printer capable of printing only black and white.

To simulate different gray shades, the printer varies the sizes of its all-black dots. It places these dots along a grid of evenly spaced lines, as shown in this magnified view. The more gridlines per inch (lpi), the more convincing the shade of gray. These phony gray shades, which you see every day in every newspaper, constitute what's called halftone images.

Actually, of course, a laser printer can't vary the size of its dots. To create a halftone, the printer creates larger dots composed of its much smaller, regularly sized dots, as shown here. Immediately, you can tell that dpi and lpi are related. If the printer's regular dots are smaller, then the number of different sizes of composite dots is larger, and, therefore, so is the different number of simulated gray shades the printer can produce.

lines per inch

dots per inch
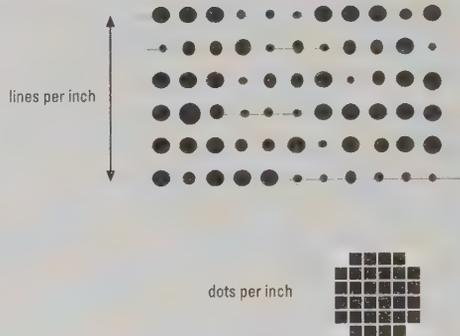
Most scanner software offers you a choice of lpi. The usual rule of thumb is to set your scanner at twice the output resolution of the printer that will ultimately print this graphic. If your printer's resolution is 60 lpi (that is, a 300-dpi laser printer), scan at 120 lines. If you are enlarging the image before it's printed, choose a higher lpi setting. (Of course, if the images are shown only on the Mac screen, scan at 72 dpi, which is the screen's resolution.)

Scanning at an lpi higher than twice the ultimate printing resolution won't improve the quality of the image; it will only waste disk space and slow down printing.

For best results, though, there's one more rule to follow. If you have a scanner, you probably also have a scan-editing program such as Photoshop or Color It. Such programs possess a great talent: They can convert a graphic to a lower-resolution edition in a process known as *downsampling*. The result is always better than if you'd scanned at that lower resolution to begin with.

If you want a great 150-dpi finished scan, you get much better results scanning at a *higher* dpi and downsampling it in Photoshop (or whatever) to the resolution you want. For example, suppose that you have a 300-dpi laser printer and a 600-dpi grayscale scanner. Set the software to scan at 600 dpi. Then, in Photoshop, change the resolution (using the Image Size command) to 150 dpi, the ideal setting for a 300-dpi printer.

TRUE FACT

Where the TWAIN shall meet

In recent versions of scanner-friendly software, a peculiar term is beginning to crop up. It's *TWAIN*, which is not Elmer Fudd's way of referring to a locomotive. It's a new kind of communications protocol dreamed up by Aldus, Caere, Hewlett-Packard, Logitech, and Eastman Kodak. It lets you scan an original document directly into the program you happen to be working in without having to use a special scanning program — *if* your program is TWAIN-savvy.

For example, there's a free TWAIN Plug-In for Photoshop. This plug-in (a modular software add-on) lets you scan an image using the DeskScan II

software (for example) — but the image appears in a new window in Photoshop. Similarly, you can scan an image directly into PageMaker 5 and 6, which can also speak TWAIN.

Quark offers a Photoshop XTension for Quark-Xpress that lets you accomplish the same thing in a roundabout way. When you choose Acquire from the File menu, it activates the TWAIN Plug-In from Photoshop, which then activates DeskScan II. The beauty of it all is that it really works.

The best part about TWAIN, though, is what it stands for: Technology Without An Important Name. (No joke!)
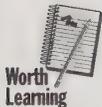
Worth Learning

To put it another way: You'll always get the best results by scanning at the highest *optical* resolution of your scanner. The maximum resolution of most scanners is described by two numbers — the *optical* resolution (usually about 300 or 600 dpi) and the *interpolated* resolution (always a much higher number, such as 2,400 or 4,800 dpi).

Forget about the interpolated resolution. Interpolation is just math performed by the scanning software to increase the apparent resolution of a scan by smoothing out its jaggy lines; it has little impact on color scans. (See the scanning secrets later in this chapter for more details about interpolation.)

Optical resolution, on the other hand, has to do with the actual number of sensors packed into each inch of the scan head. A 600 dpi scanner has 600 sensors per inch. That's the number to worry about. Your scanner will always do its best scanning at maximum optical resolution.

Scanning Secrets

The time-space-money continuum

Graphic images can take up huge amounts of disk space, especially if you decide to scan at a very high resolution. To save time *and* disk space, crop the image to the actual area that will be used, if you can, at the point when it's *scanned* (instead of cropping the resulting file). Most scanning software lets you preview a quick, low-resolution version of your scan *before* triggering the actual full-blown scan. You can usually crop the scan right in the preview window, targeting only the portion of the image you want. As a bonus, you speed up processing of the image

later on, because an image's size determines how long it takes your graphics program to handle the image. Furthermore, if you import a full-sized TIFF file into a publishing program and crop it *there*, the image may take nearly as long to print as the full image would have itself. Service bureaus are known to charge high hourly rates for documents that take extra time to image.

Secrets to feeding in originals

If you're scanning a large number of pages, the temptation is to leave the scanner's cover open all the time as you scan away. But you may regret your haste. The quality of the scan can suffer if the page isn't completely flat on the scanner's glass bed. Parts of the image may come out fuzzy. (For some scanners, you can buy a document feeder, which will automatically feed the loose pages to the scanner bed.) If you're scanning text from large books, scan good photocopies of the pages instead.

Slides, negatives — and the great PhotoCD alternative

If you have slides, negatives, or undeveloped film that you want converted into digital form, don't rush out for a slide or film scanner. Have them made into a *PhotoCD* instead.

Worth Learning

You can bring those slides to any neighborhood Kodak film-developing outfit. (Hint: Mail-order places are generally cheaper than walk-in shops.) A few days later, at a cost of about $1 per slide, you'll be given a CD-ROM containing each slide, represented as a *gorgeously* scanned graphics file, in five different sizes (resolutions). Unless you scan hundreds of slides/film per year, this is less expensive than buying a slide or film scanner. Furthermore, you save the time and hassle of having to do the scanning yourself. And finally, you don't have to use up any hard-disk space; those enormous files are safely, and permanently, stowed on that CD-ROM.

About those 2,400-dpi scanners

It's not a bad idea to read the fine print in the manufacturer's ads or sales literature, which usually says that resolution is *interpolated.* That means that the scanning software divides each pixel in your scanned image into smaller pixels to *simulate* a sharper image.

On line drawings, this process may actually help, because interpolation is apt to smooth jagged lines. But interpolation will never be quite as good as higher resolution. Interpolation won't, for example, fill in the details in an image that can't be picked up by the scanner's optical source.

As we mentioned earlier in this chapter, *optical resolution* is the true indication of the native sharpness of the scanner. Most popular flatbed scanners offer

resolutions between 300 and 600 dpi. True 1200-dpi scanners cost lots more and may be overkill for basic desktop-publishing use.

Turn your fax machine into a scanner

When you think about it, fax machines and scanners do almost exactly the same thing. They both use light-sensitive hardware to convert the light and dark areas on a piece of paper (or a slide) into a stream of electronic data. On a fax machine, the data is then broadcast over a telephone line, while the scanner records the information digitally and transfers it to your hard drive.

Strange But True

It naturally follows, then, that with the aid of a fax modem, you can use your fax machine's scanning capabilities to digitize a document and send it directly to your computer, in essence turning your fax machine into a scanner. Here's how you can do it:

First, disconnect your fax machine from the telephone jack in the wall and plug it directly into your fax modem's line jack. Load your fax machine with the document you want to scan. Next, launch your fax software and set it up to manually receive a fax. (Fax software is designed to answer incoming calls *automatically*, listen for a fax signal, and then start receiving, but most include a manual receive command—and that's what you have to activate. This bypasses the program's automatic answering function and forces your modem to start listening for a fax transmission at your signal, regardless of whether the phone is off the hook or not. The keystroke in Global Village software, for example, is ⌘-Shift-6.)

Now, start sending the fax from your fax machine. If your fax machine insists that you dial a number before sending, just dial a one-digit number, then start sending. At this point, your fax modem will already be listening for the fax transmission and should start receiving the fax.

Granted, this method will only work with black-and-white images and the resolution will be crude—most fax machines create low-res images at about 200 dpi. But it will enable you to transform a hard-copy image or document into a file on your computer.

We found that this secret doesn't work with every brand of fax machine; some are fussier about being connected to a live telephone line than others. If these steps don't work for you, try following the same procedures, but keep your fax machine connected to the telephone jack until the screech of the fax transmission begins, then quickly pull the wire out of the phone jack and plug it into your fax modem.

Straightening out crooked images

If you don't position your original artwork on your scanner just right, it's easy to end up with a slightly crooked scan. Fortunately, most scanning software includes a "straightening" function that tries to rotate your scan back into position automatically.

Sometimes, however, the software doesn't get it quite right, or you may be scanning into a program that doesn't do the straightening for you. *Mac Secrets* Reader Bill Soucy suggests a quick, easy way to rotate scans into their proper orientation without having to do a lot of guesswork:

In an image-editing program like Photoshop, select the line tool (the one that draws only straight lines) to a thickness of 0 pixels. Now find a line or an edge in the image that you think should be perfectly horizontal; trace it with the line tool. (Don't worry about messing up your image; with the thickness set to 0, the line won't actually show up.) As you drag the line tool along the edge, look at the Info palette, and make a note of the angle of the line displayed on the palette — that's the information you need to rotate the image back into a perfectly straight position (see Fig. 32-2).

The final step is to use the program's Rotate command (in Photoshop, use Arbitrary Rotate) to rotate the whole image by the same angle you saw in the Info palette. If the line you drew was 15 degrees, for example, then rotating the whole image counterclockwise by 15 degrees will straighten it up.
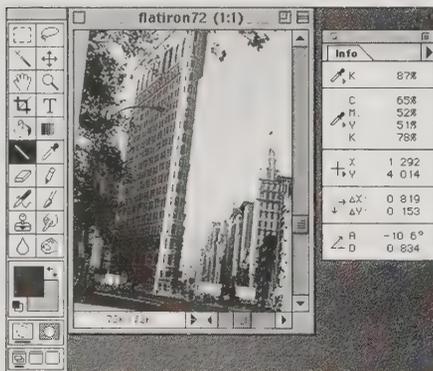
Fig. 32-2: Just how crooked is this picture? In Photoshop, draw an invisible line along an area you think should be horizontal and look at the angle in the Info palette — the number next to the letter A near the bottom of the palette. Rotating the picture counter-clockwise by that exact amount (10.6 degrees, in this example) will bring it all back into alignment.

36 bits and the human eye

Most scanners are billed as *24-bit* devices. That is, they can see about 16 million different colors in a particular photo — about the same as your eyeball.

So why are the more expensive color scanners advertised to have 36-bit color? These scanners can discern differences between *billions* of different colors, translating them into documents on your Mac that contain color gradations your eye can't even perceive.

There's not much point to paying extra for these scanners unless you work in professional publishing, where color accuracy is vital in day-to-day business. The extra color information winds up being useful primarily to Photoshop, for use when you convert the scan into a more standard 24-bit (see Chapter 11 for details on all this bit talk); it averages the additional color information, thus arriving at more accurate color selections for the millions of colors you *can* detect with your unaided eye.

All About OCR

Normally, if you scan an item, the result is a picture — usually a TIFF graphics file. The Mac thinks of that scanned image as a bunch of pixels. If those dots happen to form words, the Mac doesn't know about it. The only way you can edit those words is by using the Eraser tool in your painting program.

But with an OCR program — short for *optical character recognition* — the Mac can be asked to analyze those patterns of dots to see what the text is and to store the text in a brand-new text file. You can then open this exported text file in your word processor and go to town, editing it and formatting it.

OCR equipment cost tens of thousands of dollars when it first became popular in the 1970s. But today, for a few hundred dollars, you can buy software for your Macintosh that works even better than those early machines. Chances are that a scaled-down "lite" version of one of the popular OCR packages even came with your scanner, so you can try it out. OCR software is, however, memory-intensive, and it requires lots of processing power. As a matter of fact, some of the better OCR programs require 10MB of memory or more, and can't run on anything less than a PowerPC-based Mac.

How OCR software works

A scanned image is made up of lots of little dots — the image is called a *bitmap*. (See Chapter 20 for more on bitmapped graphics.) The scanner itself doesn't discriminate between text, drawings, or photos; it simply records the light and dark areas of a page and converts them into an electronic reproduction.

OCR software examines the little dots and, using various programming schemes, attempts to determine whether those assemblages of dots correspond to letters and numbers. Some of the more sophisticated OCR programs even attempt to duplicate the original typeface and layout of a document.

An OCR program may consult a kind of database of letter shapes in its attempts to recognize the characters. Some programs are *trainable;* that is, you can teach them to recognize oddly shaped or distorted characters. This new information is recorded in a preference file, and the program uses that data to improve the accuracy of character recognition the next time.

Faxes and OCR

Faxes, because of their fuzzy edges and low resolution, can easily confound the best OCR software. Because most fax machines have Normal and Fine settings, you have the best results with faxes sent in the Fine mode. Caution whoever is sending the fax to make the copy as clean as possible.

Recent fax/modems, however, come with specialized software (from STF and Global Village, for example) that provides OCR recognition of faxed pages. The result is often far more accurate than that produced by some stand-alone OCR programs, and the price is quite a bit less, too (see Figure 31-3).

CUPERTINO, Calif.--September 10, 1984--Apple Computer today
introduced a new Macintosh (TM) personal computer with 512 kilobytes
of internal memory. The powerful business computer enables users to
take advantage of larger documents and models, faster response time,
and the more than 40 business productivity software packages now
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Figure 31-3: Fax OCR software can take a murky, muddy fax (top) and do a pretty decent job of converting it into a word-processor file. (The bottom figure is a screenshot from the resultant Microsoft Word file.) As you can see, your keen eye is definitely necessary to spot the glitches (note the last word of the paragraph).

The end of spell-checking?

OCR software can save hours of drudgery in retyping a manuscript, but it isn't 100 percent accurate. While 99 percent accuracy may be achieved on an especially clean manuscript, that means at least one typo per 100 characters.

Worse, the errors made by OCR software aren't the simple ones of letter transposition or minor (but consistent) misspellings made by the human typist. Instead, they're errors of visual identity. The letter m might become rn when recognized by the OCR program, or li becomes h, and so on. These can be especially sinister mistakes because a spelling checker won't catch them. What on the original said yarn may be translated into yam, and the spelling checker won't blink an eye. (Your client may well do so, however.)

Run your spelling checker on your OCR-resultant documents, by all means. But in the end, a human proofreader is essential — particularly if numbers are involved. (Numbers are easily misrecognized by OCR software, and the consequences, if undetected, could be disastrous.) OCR software may mean less work for typists, but proofreaders won't be looking for new jobs anytime soon.

OCR Secrets

The importance of a clean original

When you're working with a poor-quality original scan, you may discover that you could have retyped the material in the amount of time you spend fussing with the OCR program.

Use a clean, clear copy of a manuscript or book. Copy that's indistinct or marked up will wreak havoc on the accuracy of a scan. Even a pen mark on a single character will prevent the OCR software from recognizing the word. Some OCR programs even skip an entire *line* when encountering markings that it considers unfamiliar.

Resolution: Bigger isn't better

If your scanning software lets you adjust the scan resolution (such as 300, 400, or 600 dpi), bigger is not always better. A higher-resolution scan may draw attention to minor imperfections in character shapes or slight smudges. Furthermore, doing the scan itself takes longer at higher dpi settings. For OCR purposes, if the text is of normal size (10- or 12-point or so), 200 or 300 dpi is sufficient.

Millions of colors don't help a bit

Almost any scanner sold today is capable of scanning in photo-realistic 24-bit color. But when it comes to OCR, all that color doesn't help. In fact, it may even hurt — by making scans take longer and resulting in less accurate OCR.

If you're working with pages of plain, black-and-white text, turn the color scanning features off. (You do this by selecting the black-and-white (or *1-Bit* or *Line Art*) setting in your scanning software before you scan. Black-and-white scans take *much* less time than color scans. Also, most OCR programs think best in black and white, anyway. Subtle changes in color and tone may only confuse the OCR software over the shape of some letters, producing less accurate results.

What a difference the brightness makes

The brightness controls are *critically* important in achieving a high accuracy rate of text recognition. When scanning smudged or dark copy, for example, lightening the scan by 25 percent or so can dramatically improve the OCR accuracy. (This fact is especially true of the one and only OCR-ready hand scanner, the Typist from Caere Corporation.)

OCR on dot-matrix printouts

If the manuscript was printed by a dot-matrix printer, such as an ImageWriter, see if your OCR software has a special setting for recognizing such documents.

Otherwise, here's a trick: Photocopy the document and scan in the *copy.* The copying will, in essence, connect the separate dots that make up the characters and improve the accuracy of the translation.

Digital Cameras

It used to be that if you wanted to edit and display photos on your Mac, you had to shoot traditional prints or slides and then digitize them, one by one, using a flatbed or drum scanner. Then, a few years ago, Apple introduced the QuickTake, a simple point-and-shoot digital camera. The $600 QuickTake offered limited capacity, a fixed-focus lens, and mediocre picture quality. But the fact that it could take pictures without film — and let you dump them into your page layouts and Web pages without having to mess with a scanner — still generated a lot of excitement. (Actually, digital cameras had been around for years before the QuickTake, but most were high-end, professional-quality cameras that cost tens of thousands of dollars.)

Since then, all the big-name manufacturers — Kodak, Olympus, Polaroid, Nikon, and Canon, to name a few — have introduced digital camera lines. With each new generation of cameras, the quality gets better and the prices drop.

Digital cameras generally look and feel like traditional automatic cameras, but they don't use film. Instead, when an image is captured by the lens, it's immediately digitized by a light-sensitive semiconductor called a *charge-coupled device,* or CCD — the very same type of device found in scanners — and stored in memory. In a way, digital cameras are a lot like scanners — but instead of recording a digital image of a flat page or slide, the digital camera has a lens that captures an entire scene.

Of course, capturing full color high-resolution pictures requires lots of memory, so most of the popular digital cameras can't hold many pictures. After you've taken enough photos to fill the camera's memory, you must connect it to your Mac and download the images to your hard drive. Depending on the camera's memory, it may be able to hold as few as 8 or as many as 40 high-quality images (or many more low-res ones). Once your digital photos are safely stored on your computer, you can go right on shooting more pictures. Most popular digital cameras let you plug in removable memory cards for storing images, so you can take dozens of pictures without having to run back to your Mac to empty the camera's brain.

The good and bad of digital

The most obvious benefit of digital cameras that they don't require any film; you can take as many pictures as you like, simply deleting the ones that you don't like and saving the keepers on your hard drive. There's no expense for film or developing.

CD

A second benefit is that because your pictures are digital, it's easy to edit and retouch them — no darkroom required. If a picture looks a little washed out, you can use a program such as Adobe Photoshop, Photo Deluxe, or Color It (included on the CD-ROM with this book) to play with the brightness, contrast, color balance, and so on. With a little image-editing know-how, you can even completely remove unwanted portions of a picture, retouch faces, and perform other more radical modifications (see Chapter 20).

However, the image quality of photos produced by consumer-level digital cameras still can't compare to pictures shot with a traditional 35mm camera. Even with prices dropping, you still have to pay hundreds of dollars more for a digital camera than a comparably-equipped film-loaded camera.

Buying a digicam

Still, for many typical uses — plugging photos into newsletters, adding pictures to your web pages, creating photo ID cards, or assembling an online family photo album — digital cameras are perfectly adequate, economical, fun, and addictive to use.

Digital cameras vary widely in price, shape, and features. Some let you preview your pictures on a small, color LCD screen right on the camera (great for editing on the fly and deleting the pictures that don't come out well). Some let you connect the camera directly to a TV or VCR to show off your latest pictures, without even having a computer. (We've yet to attend a party where showing on TV the pictures we've just taken isn't a huge hit.) A few models offer zoom lenses, which we find very useful.

Consider the cost of the storage disks, too: buy a few of the RAM cards used by most cameras, and you've spent enough to have bought your digicam all over again. Sony Mavica cameras use ordinary floppy disks as storage, although (a) they fill up almost instantly and (b) they severely limit the resolution of the photos you can take.

Above all, though, consider the resolution of the camera you're going to buy. The cheapo models capture 640 by 480 dots (pixels), which is great for Web pages but lousy for printing. Spend a couple hundred dollars more, and you can get cameras that capture *megapixel* resolution — that is, 1,000-something dots square. Those captured images make *huge* files on your hard drive, but when printed on the right printer (such as an Epson Stylus inkjet), the result is nearly photographic in quality.

Printing digital pictures

Most digital cameras let you shoot pictures in any of two or more different quality modes. In low-quality mode, you can shoot dozens of pictures before having to empty out the camera. Unfortunately, these low-res images — although great for displaying on screen at normal size or on Web pages — look jaggy and crude if you print them on a color printer (especially if you try to enlarge them).

For that reason, use your camera's highest quality setting when taking photos you intend to print out. At high resolution, each picture contains millions of pixels — which generally fills your camera's memory after only a handful of photos. But once you bring these photos into a program like Photoshop, reduce the physical dimensions until the resolution is 150 to 220 dpi, and print them out on a high-quality photo printer (such as a color inkjet) on glossy inkjet paper, you've got yourself a portable photo lab whose results look very close to actual photographic prints.

Chapter 32

CD-ROM, DVD, and Other Such Words

CD-ROM Basics

Just a few years ago, CD-ROM drives were expensive add-ons found only on higher-end multimedia computer systems. Today, of course, virtually every Mac comes with a built-in CD-ROM drive — including most PowerBooks. Apple provides its system software primarily on CD. And most other new software titles are available on CD-ROM.

Mac Basics

A CD-ROM itself is a silvery, plastic-coated disc, usually 4¾ inches across. It weighs about half an ounce. It has two remarkable attributes that make it cry out to be used with a personal computer: It's dirt cheap to manufacture, and it holds a lot of information — about 600MBs worth. (All the data on a CD-ROM is stored on its silvery underside.) True, in this world of 2GB Jaz disks and multi-gigabyte DVDs, the 600MB CD-ROM might not seem very impressive. But remember, CDs cost just pennies to produce. As a result, they're ideal for archiving large amounts of data and distributing software.

The speed issue

CD-ROM has a major drawback: It's slow. Although the newest CD-ROM drives operate many times faster than earlier models, CDs still lag far behind even inexpensive hard drives.

When evaluating a CD-ROM drive's speed, you're confronted with two issues: *access time* and *transfer rate*. Both are important, but not as important as you might think.

The access time is how long it takes the drive to *find* a particular piece of information on a CD. Early drives had dismal access times — about 500 milliseconds (ms), as compared to 8 to 10 ms for the average hard drive. Current CD-ROM drives offer access times as low as 85 ms — better, but still ten times slower than a hard drive.

The other key speed issue is transfer rate. That's the speed at which the drive can *send* information to your Mac once it has been located on the CD, which is especially significant when it comes to reading large video and sound files. The first CD-ROM drives delivered only about 150K of information to the Mac per second; today, "24X" drives are advertised to have 3,600K/second transfer times. That's a big improvement — but once again, not breathtaking compared with a plain old SCSI-2 hard drive, which can transfer data at 10 megabytes per second. ("Ultra" SCSI drives transfer data up to 40MB per second. See Chapter 33 for details.)

The great "8X, 16X, 24X" myth

In practice, there's often very little difference between the speed of, say, an 8X-speed and 16X-speed drive. True, a 16X-speed drive is *theoretically* capable of transferring data to your Mac at twice the speed of an 8X-speed drive. But often the sheer transfer rate isn't what determines a CD's overall speed. Meanwhile, most interactive CDs these days are engineered to accommodate the lowest common denominator: a quad-speed drive. All those extra Xs in your "24X" drive are worthless in that case; the QuickTime movies play back with exactly the same quality your 4X-owning neighbor gets.

The lesson here: Don't spend extra for the fastest CD-ROM drive. You'll do just as well with a slower drive — and you'll save a lot of money.

How a CD works

A CD is a sandwich: layers of clear acrylic covering outside, layers of aluminum and plastic inside.

Data gets etched into a single, continuous spiral on the disc. The data consists of pits and *lands* (the plateaus between the pits). As the disc spins, the CD-ROM drive shines a narrow beam of laser light through the clear plastic to strike the pits. The flickering light created by striking pits and lands with the laser beam is converted by the drive's complex electronics into data. The laser device is attached to a long arm that moves back and forth across the disc. Incredibly, a data track on a CD-ROM is about 1/100th the thickness of a human hair. That's why a disc so small can store 600MB of computer information — that track is three miles long!

A phonograph record spins at a constant rate, usually 33⅓ rpm, from the edge of the record toward the center. In contrast, the CD-ROM drive reads data from the *inside* of the disc outward. The drive speed varies according to the position of the laser beam; the disc gradually slows down as the laser travels toward the outer edge of the disc. (In other words, the surface of the disc is always moving at the same speed past the laser.)

TRUE FACT

Where's High Sierra?

The major manufacturers got together at the dawn of CD-ROMs to establish a set of standards so that every maker's CD-ROM player can play the same discs. CDs that meet this standard can be played on CD-ROM players for both Mac and IBM.

The first meetings to discuss CD-ROM format standards were held in 1985. Those attending included representatives from Apple Computer,

Digital Equipment, Hitachi, LaserData, Microsoft, 3M, Philips, and others. They held their meetings in a spot called High Sierra, near Lake Tahoe, NV.

To this day, the CD-ROM format we've come to know is called the *High Sierra* standard. High Sierra is a part of the general ISO (International Standards Organization) 9660 CD format.

When the laser is at the beginning, or inside, of the disc, the disc spins at about 500 rotations per minute; by the end or edge of the disc, it's down to 200 rpm. The data flows past the laser beam between 1.2 and 1.4 meters per second.

What to Do with 600MB

The term CD-ROM stands for *Compact Disc — Read-Only Memory.* As we mentioned in other chapters, *ROMs* on your Mac are chips that have software permanently "burned" onto them. A CD-ROM is also a read-only device: You can get information off it, but you can't store your own files there. (Unless, of course, you've got a recordable, rewritable CD, which we'll explain in a moment.)

So what comes on CD today? Almost everything: libraries of clip art, QuickTime movies, and fonts; interactive comic-book adventures with sound and video; electronic encyclopedias; and more.

And now that even PowerBooks have CD-ROM drives (and now that the iMac has *only* a CD drive), almost all software companies provide their products on CD. The CDs are cheaper to mass-duplicate than floppy disks, take up less space, and can't be erased by mistake. And you, the buyer, are saved from the misery of feeding floppies into a disk drive for 90 minutes. (A CD holds as much as 416 floppies.) Instead, you load a single CD-ROM and let the installation take care of itself.

Getting Your CD-ROM Up and Running

A typical CD-ROM comes with a set of oddly labeled system extensions that let your Mac read the little discs. The Apple CD-ROM drives, for example, include Foreign File Access, High Sierra File Access, and ISO 9660 File Access — and that's just to read the discs. You probably have additional extensions

that let your drive read Photo CDs (Apple Photo Access) or use your CD-ROM unit to play audio discs (Audio CD Access). Without these extensions installed, your Mac acts as though you don't even have a CD-ROM drive; your drive slurps up any disc you insert, but no icon appears on your Desktop.

PhotoCD

Kodak's PhotoCD works like this. You take a roll of 35mm film to a local camera shop. They send the film to a photo lab, where the photos are scanned with an ultra high-resolution film scanner.

MACINTOSH SECRET

When startup CDs won't start up

Apple's system software CDs for Mac OS 8.0 and later are designed to be startup disks: If you pop the system software CD into your Mac and restart (on some models, you must now hold down the C key), your Mac boots off the CD. This handy feature lets you use Disk Tools (also on the CD) to inspect and repair any damage on your hard drive and proceed with a clean, safe installation of new system software. And, if you're upgrading to Mac OS 8.1 or later, this procedure gives you the option of reformatting your hard drive to take advantage of Apple's new space-saving HFS+ disk format (see Chapter 8 for details).

There's one catch: If you don't happen to have an *Apple* CD-ROM drive, you *can't* start up from the system software CD. The System Folder on the CD contains only the extensions needed to mount disks from an Apple drive, not any third-party CD-ROM drives. If you have a Mac clone with an internal CD-ROM drive, or an external drive from another manufacturer, the Mac OS 8 CD may refuse to start up your machine. (Oddly, the older System 7.5.x versions of the system software CD *did* support third-party drives.)

If you want to install from the CD and still bypass your usual startup disk, your only hope is to create a customized version of the Disk Tools floppy disk that will allow you to start up from a floppy *and* mount a CD. Here's how you do it:

First you'll have to create a Disk Tools floppy disk. The disk images are located on the Mac OS 8 (or later) CD. If you have a PowerPC-based Mac, use the Disk Tools PPC image. For other Macs, use the Disk Tools 1 image. (See Chapter 22 for details on disk-image files.)

In the System Folder of the Disk Tools disk, pull the Apple CD-ROM extension out of the Extensions folder and replace it with the extension used by your CD-ROM drive. (You'll find this file — such as CD-ROM Toolkit — in the Extensions folder of your startup disk; the name of the file varies depending on the manufacturer. You can also find the file on the disk that came with your third-party CD-ROM drive.) If there's not enough room on the floppy to add the extension, just trash the Disk First Aid or Drive Setup files first. Don't worry about getting rid of them; you'll have access to copies of those utilities once you mount the system software CD.

Finally, restart your computer from your doctored-up Disk Tools floppy disk. With the new CD-ROM driver installed, you should now be able to mount the system software CD and perform whatever maintenance and installation tasks you wish on your hard drive.

After the photos are digitized, they're recorded onto a PhotoCD disc. The PhotoCD can hold up to 100 photos. You get each photo in five different resolution levels, ranging from thumbnail size up through a gigantic 3072-by 2048-pixel size — big and detailed enough for professional use.

PhotoCD costs about $30 for a 24-exposure roll and takes about a week to process. Be aware that the photos are often multimegabyte affairs, even though they're compressed with Kodak's special compression scheme. That much data can consume substantial chunks of your hard drive.

If you don't have enough photos to fill a CD the first time out, you can send the disc back with another roll of film and add more scans to the disc.

After your pictures are transferred to PhotoCD, you'll be amazed at how easy they are to work with. Kodak's Slide Show Viewer program lets you preview the PhotoCD. If you run a graphics program like Photoshop, you can transfer the image you view directly to it, either by copying and pasting, or by using a menu command. Desktop publishing programs such as QuarkXPress also let you import PhotoCD images directly into page layouts.

Make Your Own CDs

If building a clean room and buying expensive CD duplication equipment doesn't quite fit your budget, you have two other options: *CD-R,* short for CD-Recordable (Kodak's PhotoCDs are actually CD-Rs) and the newer *CD-RW* (CD-Rewritable). If you need to make just a small number of CDs, one of these may be the technology for you.

CD-R

CD-R systems let you record the disc just once; if you make a mistake in what you record, you must create another disc from scratch. All recent recordable CD-ROM drives offer *multisession recording,* meaning that you can go back and add material to a partially-recorded disc.

A CD-R player uses a laser beam to apply heat to the disc. The heat generates nonreflective spots on the disc surface, very much like the pits on a conventional CD. Like the most expensive CD products, the CD-R disc is gold-plated, which is said to provide superior reflective characteristics. Once you've "burned" a CD using a CD-R drive, you can read the disc using any CD-ROM drive (except the ancient, first-generation, single-speed drives.)

CD-R technology has become so inexpensive that almost anyone can become a CD-ROM publisher. Sony, JVC, Yamaha, and other companies make recordable CD-ROM drives starting at about $500. The blank CD-R discs have also gotten dirt cheap. Originally, the write-once discs cost at least $20 each, but now it's not uncommon to find them for $1 or less. At that price, you can afford to turn out your own CD-ROM titles in quantity, or create permanent archives at a very low cost.

TRUE FACT

How a CD is made

Manufacturing a CD is such a complex process that the manufacturing plants cost $30 million to build. With data on a compact disc reduced to microscopic levels, manufacturing must be done under extraordinarily clean circumstances. CD plant workers must wear protective clothing and face masks. The work is actually done in a so-called *clean room* that's carefully controlled to be free of even the smallest contaminants. A single particle of dust is more than 100 times larger than a data pit on a finished CD!

Before they can build a master, workers transfer the data to 9-track computer tape. From there, the data is etched onto a glass master disk, called a *float glass*. A laser beam burns data onto the float glass.

Next, the glass master is silver-plated to create a negative. The negative is called a *father* disc, which, in turn, is used to generate a series of positive-imaged discs labeled *mothers.* The mothers beget *sons* (we're not making this up), which are the actual molds used to stamp the finished CDs.

The actual injection-molding or stamping process takes about 15 seconds per disc. A laser beam inspects the discs for flaws, after which the disc is coated with reflective aluminum (or gold, in the case of the purist-style audio CDs). Finally, they apply clear acrylic to the aluminum coating; then the disc goes off to inspection and packaging.

On the other hand, recordable CDs aren't necessarily ideal for archiving large amounts of stuff. For example, a 2GB Jaz disk holds more than three times the amount of data contained on a CD-ROM disc — and you can erase it as many times as you want.

CD-RW

CD-RW drives, introduced in 1997, work a lot like CD-R drives, but they let you erase and reuse a disc — hundreds of times. Like a CD-R drive, the CD-RW mechanism records data by burning nonreflective spots onto a layer of the disc surface; but the spots left behind by the CD-RW recording laser aren't necessarily permanent. Under the heat of a laser, the spots can be wiped clean and the disc can be used again and again.

There are a few drawbacks to CD-RW. First of all, these drives cost a couple of hundred dollars more than a CD-R drive. Also, CD-RWs require special discs that still cost about $20 to $25 each — considerably more than the CD-R variety. (On the other hand, the fact that you can reuse CD-RW discs actually makes them more cost-effective than Jaz, Zip or magneto-optical disks for short-term archiving.)

The other big issue is compatibility. Only the newest standard CD-ROM drives can read CD-RW discs. That's because the material used in CD-RW disks is substantially less reflective than the material used in standard CDs; most second-generation CD-ROM drives can't even see the dots burned on a CD-RW disc. So, if you expect to create discs and distribute them to a wide range of users, CD-RW might not make sense.

On the other hand, the CD-RW format *is* compatible with the newer DVD drives that come in some Mac models.

The DVD

Now that the CD-ROM has finally come into its own as a widely-accepted standard, built into every new Mac and PC, it's about to be made obsolete by an even more promising technology — DVD. Some people claim the initials stand for something, such as *digital versatile disc* or *digital video disc.* But in fact, DVD is a pure marketing designation that stands for nothing in particular.

A DVD disc looks just like a traditional CD, but can hold up to 26 times more data — *17 gigabytes.* That's enough room to store eight *hours* of full-screen video. The DVD's incredible storage capacity results from a lavish array of technological tricks: The tiny pits etched into the surface of a DVD disc are only half the size of those on a traditional CD. The spacing between tracks has also been compressed by half. In addition, a DVD disc is *two-sided*, with data stored on both the top and underside of the disc (unlike regular CDs, whose data is stored only on the underside). Each side, in turn, can have up to two *layers*, with data stored separately on each. Single-layer DVD discs store 4.7GB on each side, while the dual-layer discs pack 8.5GB on a side. (At this writing, most DVD titles don't take advantage of the dual-sided, dual-layer technology, however. They're almost all single-sided, single-layer discs.)

On current DVD drives, playing a two-sided disc means ejecting the disc and manually flipping it over. But the next generation of DVD players will be able to read both sides of a disc without interruption. Complex games and multimedia reference works that currently require shuffling a number of different CDs will become much easier to use once they're released in DVD format and can be contained on a single disc.

As with today's CD discs, you won't be able to tell by looking whether a DVD is designed to play music (like audio CDs), video (like today's laserdiscs), or computer data (like today's CD-ROMs). Actually, there are five different DVD formats: DVD-Video (for movies), DVD-Audio (for audio-only, like a traditional audio CD), DVD-ROM (for storing computer data, like a CD-ROM), DVD-R (the DVD equivalent of CD-R, for writing your own data to DVD disc), and DVD-RAM (an erasable version of DVD-R, for multi-use data storage).

The first DVD drives for Macs became available in 1997, but it wasn't until 1998 that Apple began *replacing* standard CD-ROM drives with DVD drives on some models. Fortunately, a DVD drive can play the thousands of existing (original-format) CD-ROM discs as well as the new format.

Playing DVD movies on your Mac

Most DVD titles today are Hollywood-style movies. In fact, if you go to your local electronics store, you'll find several shiny new DVD players that hook up to your *television.*

Playing these video discs on your Mac isn't as simple as popping them into your DVD-equipped computer. First of all, two system extensions are required to mount DVD discs on your Mac desktop — they're called Apple DVD-ROM and UDF Volume Access. (UDF stands for universal disk format, the standard format used to store data on DVD discs.)

Second, DVD-Video movies are encoded and stored on DVD using a special compression method called *MPEG-2*. To play back such movies, you need either software or hardware that can *decode* the MPEG-2 Video and Dolby AC-3 audio tracks. If you're looking for smooth, full-screen playback, that means investing in a separate PCI decoder card that decodes the MPEG-2 video data — or buying a $600 to $800 drive that includes an on-board MPEG decoder. (Apple's QuickTime MPEG Extension lets you play back MPEG movies using QuickTime applications, but the playback quality is poor on all but the very fastest Macs.)

Fortunately, a few PowerBook G3 and desktop Mac models now include an optional DVD/MPEG card. It allows you to watch DVD movies from your local Blockbuster with gorgeous fidelity. The software's amazing, too, letting you flip between, for example, full-screen and letterboxed mode.

If you're on the World Wide Web (see Chapter 25), you can read more on DVD technology at http://www.sel.sony.com/SEL/consumer/dvd/index.html.

CD-ROM Secrets

Auto-playing CDs

Beginning with the introduction of QuickTime 2.5, you no longer must use the AppleCD Audio Player desk accessory to play your music CDs. Visit your QuickTime Settings control panel, described in Chapter 4, where you'll find the on/off switch for the *auto-play* feature. It makes a music CD begin playing automatically when you insert it.

In fact, in the coming years, we may see auto-playing CD-*ROM* discs, too — not music CDs, but regular Mac games, software installers, and other computer data — that also auto-play when inserted. (They must be specifically designed to do so before the QuickTime auto-play feature will work on them.)

The green-magic-marker trick

You may have heard, and chuckled at, the high-end audio world's particular brand of psychic phenomena: that if you outline the edge of an audio CD with a green magic marker, that disc will sound noticeably purer and better. We're not going to make too much fun of this concept; despite its flimsy scientific foundation, we know some music fans who absolutely swear by it.

However, we *can* say that this doesn't work on CD-ROM discs. The colors in Myst don't get any brighter, the entries in the electronic encyclopedias don't get any livelier, and no additional fonts appear on Adobe's Type-On-Call disc.

Protecting your discs

Our advice here is the same as it was for SyQuest cartridges: *Keep them in the case.* One scratch across the plastic (on the underside, that is — which is the *only* side that counts, actually) and your disc is dead meat.

Take your discs out of their cases only when you want to play them, and handle them by the edges (or by sticking your finger through the hole in the middle).

Instant menu access to your songs

The Apple Menu Options control panel (introduced with System 7.5) makes your menu sprout submenus. Now, insert an audio CD into your player. When its icon appears, click it, choose Make Alias from the File menu, name the alias something like "Current CD," and stick the alias into your Apple Menu Items folder.

Now, whenever you choose Current CD from your menu, the submenu shows a list of the songs on that CD, even if it's not the same disc you originally inserted.

Unfortunately, even if you name the songs (using AppleCD Audio Player), they still show up in the submenu as being called Track 1, Track 2, and so on. Still, this menu setup is a handy table-of-contents shortcut to your favorite songs.

Make a QuickTime audio track

Launch a QuickTime movie program such as Movie Player (see Chapter 23). Choose Open from the File menu, and select a favorite track on a music CD. You'll be asked to save the incoming file; select your hard drive, type a name, and save away. Now wait for the (lengthy) conversion process.

When it's all over, you'll see a strange sight: a movie's controller bar with no movie! Click the Play button, though, and you'll realize that you have a QuickTime soundtrack that you can manipulate as you would any QuickTime movie. Play it, import it into Premiere as music for your other movies, slap it into a Word document, and so on.

Determine the playing time of an audio CD

Everyone knows that the readout on the AppleCD Audio Player can tell you the total playing time of the audio CD you currently have inserted in your CD-ROM

drive. But there's an easy way to figure out how long a CD will play without leaving the Finder. Just click on the Audio CD icon and choose the Get Info command (either from the File menu, or by pressing ⌘-I, or by Control-clicking the CD icon and using the contextual pop-up menu). The total playing time of the CD is displayed in the comments field of the Get Info window (See Fig 32-1).

Playing multiple-CD games with IDE drives

Most CD-ROM drives are SCSI devices, but certain models (such as the CD drive that comes with the PowerBook 1400c) are IDE devices. (For a discussion of SCSI and IDE, see the next chapter.) Normally, the SCSI and IDE drives behave exactly the same, but not always. We've noticed one oddity that rears its ugly head when it comes to playing games that require you to switch CDs mid-game. It seems that with some IDE drives, when a game prompts you to insert a second CD, the drive fails to spit out the first CD — making it impossible to switch and continue the game!
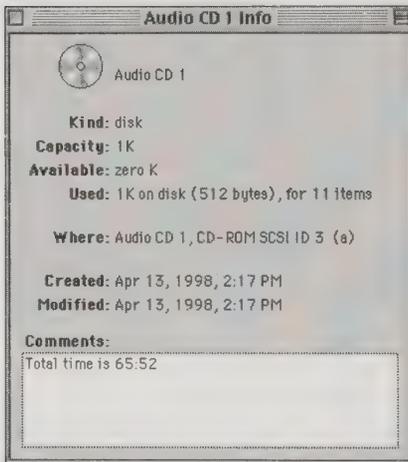
Fig. 32-1: At last, the comments field in the Get Info window serves an actual purpose — revealing the total playing time of an audio CD.

Here's how you can get around this messy situation: Before you start playing, insert the last of the CDs required for the game. Once its icon shows up on the desktop, eject it — but not by dragging it into the trash. If you're running Mac OS 8 or later, eject the CD by holding down the Option key and choosing "Eject and Leave Behind" from the Special menu. This pops the CD out of the drive but leaves its ghosted icon on the desktop. (If you're running System 7.6 or any earlier version, just choose Eject from the Special menu, or press ⌘-E, to achieve the same result.)

Repeat this process with each of the CDs needed to play the game, so that you have ghosted icons for all the discs mounted. Finally, insert the first CD and start playing. Now the CD will pop out as it's supposed to when the game prompts you for the next disk.

ANSWER MAN

Extensions off?

Q: OK, I've got you. You wrote that I have to have all those Apple extensions (ISO 9660, High Sierra, blah blah blah) installed in order to have CD-ROM discs show up on my Desktop. But the CD that came with my Power Mac shows up just fine, even when I've started up with all extensions off! It's soooo satisfying to catch you guys making an error.

A: Not so fast, smart guy.

Apple's done you a favor. It's provided each PowerPC-based Mac (see Chapter 13) with a secret, *invisible* extension, called ".AppleCD," that's programmed *not* to get turned off when you hold down the Shift key at startup. (Holding Shift, of course, turns off all *normal* extensions.)

That was done so that, in times of strife, you can start up your Mac from the CD even when you're having extension problems.

Q: Oh, yeah? So how come I can't get any other CD-ROM discs to mount when I've turned extensions off?

A: Think about it: except for the system-software CD-ROM that came with your Mac, what other discs *have* that invisible CD-mounting extension *on* them?

Q: Um . . . none, I guess. Sorry to waste your time.

How to destroy your keyboard with a CD-ROM

Strange But True

We fervently hope that you haven't been so unfortunate as to discover this disastrous combination: An internal CD-ROM drive, a keyboard — and a cup of hot coffee. The scenario is as follows: 1) You insert a CD into your Mac's built-in CD-ROM drive. 2) You place a cup of coffee on the desk in front of — and several inches away from — your computer. 3) You eject the CD, dragging its icon into the Trash. 4) A moment later, the CD-ROM drive tray obediently slides out, colliding with your coffee cup and dumping its contents directly into your keyboard. The next thing you know, your dripping keyboard won't type any characters except a semi-colon and a lower-case F.

We're aware that this is a decidedly low-tech tip, only peripherally related to CD-ROMs. But we've seen this happen to people on several occasions, and one of your cheerful authors (*hint:* It wasn't David) has mangled at least one keyboard this way, too. Thus a hearty *Mac Secrets* warning: Keep the path in front of that CD-ROM drive clear of all obstacles.

(On the other hand, we're not as dumb as the guy who called Apple to complain that his "cup holder" had broken off. *He'd* been putting his coffee cup *into* the CD-ROM tray!)

Chapter 33

The SCSI Chain, IDE, and FireWire

S*CSI* is short for Small Computer System Interface. It's the name given to the circuitry in almost every Mac ever made that lets you hook up hard drives, removable disk (Zip/Jaz/SyQuest) players, scanners, CD-ROMs, tape drives, high-end color printers, and other external devices to your Mac. (In the beginning, it was originally pronounced either scuzzy or sexy. We prefer the latter. Most people use the former.)

SCSI, as all world-weary Mac veterans know, is used in all kinds of terminology. There's the SCSI *port* on the back of the Mac. There's a SCSI *device* (any equipment plugged into that port). There are SCSI *cables.* Unfortunately, the terms you hear most are SCSI *conflicts* and SCSI *problems.* Of all Mac components, SCSI is the most user-hostile, the one most likely to cause problems, and one of the very few ways an unsuspecting user can actually damage a Mac by being underinformed.

Why do these problems arise? SCSI is a system of sending information incredibly fast through a very narrow set of wires. Worse, SCSI messages can be sent to several different devices, all on a single cable; you may have a Zip drive, a scanner, and a CD-ROM player all chained together. Electronic confusion can result, along with bizarro symptoms ranging from the blinking question-mark at startup to seeing your hard drive icon show up *twice* on the desktop.

There are rules for safe SCSI connections. You've probably read them before; Heaven knows, we've read them plenty of times. The secret we wish to impart, above all, is that these rules are made to be broken in the world of SCSI. You may have to experiment. You may have to plug and unplug devices. You may have to explicitly violate one of those golden rules of SCSI. But with

a little patience, almost any chain of SCSI devices can be made to work together—and after it's set up, you don't have to mess with it again.

Fortunately, if you have no SCSI devices at all, or if you have an iMac or another model that doesn't *have* a SCSI jack, you'll never have to troubleshoot a SCSI chain. You don't know how lucky you are.

The Importance of Drivers

The SCSI standard allows up to seven devices be connected together, one plugged into the next, in a *daisy chain.* If hooked up properly, your Mac recognizes these peripherals when you power them all up.

Each device communicates with the Mac through a software program called a *device driver.* On a hard drive, the driver is installed by the formatting program (such as Apple Drive Setup; see Chapter 8). This driver gives the Mac its instructions about reading data from, and writing data to, the SCSI device you hooked up. A scanner's driver is usually a system extension that allows it to work with your Macintosh, as do CD-ROM drives and other peripherals.

If this extension is ever absent from your System folder, the corresponding SCSI gadget simply won't work. Try it yourself: take the icon called Apple CD-ROM out of your Extensions folder and restart the machine. Now you can insert CD-ROM discs from now until doomsday, and they'll never show up on the desktop. Another extension is required for Zip and Jaz disks; another, probably, for your scanner; and so on. Fortunately, you can't mistakenly throw away the driver extension for your all-important *hard drive;* this driver is invisible.

The Three Rules of SCSI

As we mentioned, SCSI holds great potential for creating problems on your Mac. We also mentioned some rules that, when followed, are supposed to protect you against these problems.

Rule #1: Termination

The first golden rule of SCSI: A *terminator* must be on each end of the chain of devices. A terminator, loosely speaking, is a shock absorber that absorbs the messages pushed out of your Mac's SCSI jack down the SCSI wire. It prevents power from hitting the end of the cable and bouncing back, creating an echo. This signal reflection could result in all sorts of unsavory consequences, as we'll explain later in this chapter.

The first and last

Your Macintosh's internal drive already has terminator resistors installed. If you ever open up your Mac to look at its internal hard drive, you'll see

several little, usually orange, electrical components plugged into the bottom of the drive. Those are your terminators. The internal drive is generally the first device on the chain.

Mac Basics

Termination must also be installed on the *last* device in the chain, whether it's a hard drive, scanner, or whatever (see Figure 33-1). Usually, it comes in the form of a fat gray plug that gets plugged into the empty jack on your last SCSI gadget. If there's only one set of jacks on the device, you can get what's called a "pass-through" terminator that has a plug on one end and a jack on the other. The jack is for your SCSI cable. See Figure 33-2 for a photo of some SCSI terminator plugs.
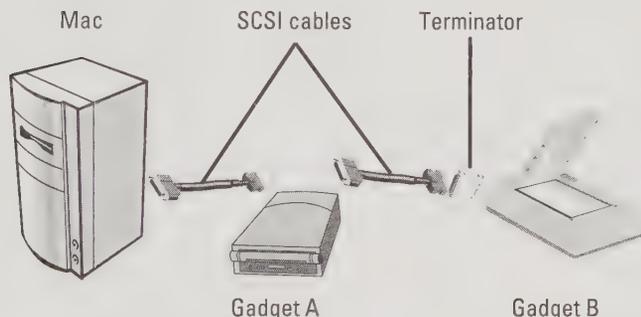
Figure 33-1: Standard SCSI setup. Because the Mac (at left) already has internal terminators, all you have to do is put a terminator on the last physical SCSI device.
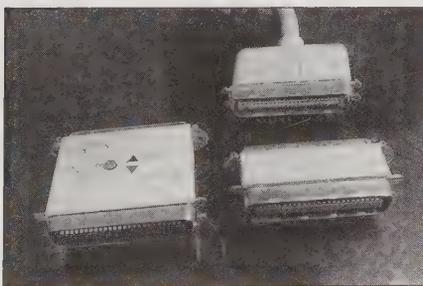
Figure 33-2: Left: An APS SCSI Sentry — a terminator plug that automatically turns itself on or off as needed. Right: A standard SCSI terminator plug, posed here next to a SCSI cable.

External drives, internal terminators

Fortunately, the days of cheapskate manufacturers are nearly over; in the early years, some companies sold *internally* terminated hard drives and scanners. That meant you couldn't string such a drive together with other SCSI devices unless it was the *last* item in the chain. Other cheapskate manufacturers let you switch termination on and off, but required you to flip a tiny, confusing set of DIP switches to do so.

More exceptions than rules

As we said, termination rules on the Macintosh are not cut in stone. Here are a few exceptions to the Termination Rule.

PowerBook: PowerBook models (except those with IDE internal drives) have what Apple calls "a small, built-in terminator" attached to the internal drive. But this terminator isn't sturdy enough to handle a large SCSI chain. So here's the oddball recommendation: If you have more than one SCSI peripheral attached, connect a terminator to the first external device *and* the last one! If you count, you'll realize that you then have *three* terminators attached (including the internal one). Chapter 14 provides more details about PowerBook termination.

Mac Plus: The Plus doesn't have any internal connections for a hard drive. Therefore, the first hard drive you plug into it must have termination. You still need a second terminator at the end of the chain if you add additional devices.

Macintosh IIfx: For this model, Apple designed the infamous *black* terminator, a 200-ohm terminating resistor, which includes a capacitor that supposedly absorbs power spikes. A

regular terminator, according to Apple, can cause problems.

Tower-style Macs: Many Quadras, tower G3s, 9500s, and other tower-style models make life even more difficult. They each have *two* SCSI buses: one chain for the internal drives and another for the external devices. But because the SCSI chip is addressing both banks as though they're one gigantic chain, you're still limited to seven devices on the chain. Talk about confusing!

To add to that confusion, the *internal* SCSI bus is already terminated at the beginning and end. So if you're installing any additional hard drives into the commodious drive bay of these models, you must first *remove* the internal termination, or you're asking for trouble. .

Quadra 800: This model self-terminates its own chain, but only when SCSI devices are installed *internally,* within its large drive bay. If you install an *external* SCSI device, the 800's active termination is automatically disabled, and you're back to the usual inconvenient SCSI termination ritual.

Today's best SCSI appliances — Zip drives come to mind — have a termination on/off switch, which at least saves you the cost of a terminator plug.

Active termination

Active termination, found on such classy SCSI gadgets as the Jaz drive and hard drives sold by APS, is circuitry that turns termination on or off *automatically* as needed. We wish all other SCSI manufacturers would adopt this headache-relieving technology.

Rule #2: SCSI addresses

Remember, the Mac can send information to up to six attached pieces of SCSI equipment. To make sure that each SCSI device receives the correct messages from the Mac, each must have a unique *address* or *ID* number.

CD

Your Macintosh reserves ID number seven for itself. Apple always sets the internal drive's ID to zero and the built-in CD-ROM, if there is one, to three. That leaves the numbers 1, 2, 4, 5, and 6 available for your add-on gear. (Of course, some *non*-Apple internal drives are sometimes set to different SCSI numbers. If you're not absolutely certain, install the SCSIProbe control panel included on the CD-ROM with this book and check for yourself. See the appendix.)

Mac Basics

The key to SCSI address numbers is that *every device's ID number must be different.* If two or more devices have the same ID number, the instructions to the drives will get confused. The drives, your Mac, and you are all likely to crash.

How to physically change the addresses

External devices usually include a switch, dial, or set of DIP switches that let you change the address number (see Figure 33-3). (We prefer the dial. Although it's a little harder to change, it's less apt to be changed *accidentally* when you move or reconnect the drive. Memo to manufacturers who use those hateful DIP switches: Get with the program. This is the Mac.)

Remember: Before turning on your Mac, make sure that there are no duplicate SCSI ID settings!

Figure 33-3: On the Zip drive, your choices of SCSI addresses are limited: 5 or 6 (left). On normal SCSI gadgets, you can choose anything from 1 to 6 using a wheel or pushbuttons (right).

How to choose the address numbers

The last actual device on your SCSI chain doesn't have to have the highest or lowest ID number. The physical order of the devices can be independent of their ID numbers. The main thing is to give every device a *different* SCSI address.

However, Apple recommends that you give higher numbers to the devices you'll use most frequently — give ID 6 to an external hard drive you start up from, for example — and lower numbers to SCSI devices you'll use less frequently — give ID 1 to a tape backup machine, for example.

Rule #3: Cabling

Cables are often ignored as a source for SCSI-related troubles. But over time, internal wires can fray and jacks can become damaged, causing unexplained havoc across your SCSI chain. (We actually have a client who *threw away* a 500MB hard drive that he couldn't get to work. We rescued it from the garbage and discovered that its SCSI cable had become pinched by a heavy piece of equipment. The drive, on the other hand, was fine.)

The first rule here: Keep the cables as short as possible. Although the Mac SCSI standard allows you to use up to 18 feet of cable, you must subtract from that figure the amount of cable *inside* an external SCSI case. With so many fragile electronic signals traveling so fast and so far, it's not uncommon for troubles to occur even if the overall length of the cables is within the limit. Furthermore, you'll have problems using a SCSI cable longer than *two feet* with any PowerBook model.

Almost every new external SCSI component comes with the cable you need to connect it to your Mac. That's usually a smallish, 25-pin connector on the Mac end (called a *DB-25* connector) and a very wide 50-pin (*Centronics-style*) connector at the other. A few drives (such as most Zip drives) have the smaller, 25-pin jacks just like the Mac; an appropriate SCSI cable (small connector on each end) is usually provided.

What is usually *not* included with your new gizmo is the cable you need to daisy-chain it to another device. If you have SCSI peripherals already, before you buy another SCSI device for the chain, buy another cable, too. And make sure you buy the correct kind: 25-to-25 pin, 25-to-50, or 50-to-50, depending on your setup.

Worth Learning

One more SCSI truth: the quality of the cables you use to connect SCSI gadgets can make a huge difference in the success of your operation! The thick, shielded SCSI from Apple and APS are the most expensive and the most reliable we've ever used. They're worth every penny. Since the first four editions of this book appeared, 50 readers have written us to confirm this: A new, shielded, Apple or APS cable instantly solved an otherwise baffling SCSI problem.

The Great SCSI power-off myth

Ever since the Mac was introduced, every book, manual, and article pounded the following warning into our soft little brains: Never connect or disconnect a SCSI device while the Mac is on! According to the myth, you'll crash your computer or even damage your Mac's SCSI controller chip.

Speed Tip

Well, we have some shocking news. We asked an Apple hard-drive engineer about this famous bit of Mac lore. Know what he said about "hot-plugging," as he calls it? "I've been hot-plugging hard drives daily for ten years, and I've never had a single problem. We hot-plug hard drives all the time."

ANSWER MAN

On and off

Q: Do I have to have all my SCSI-chain equipment turned on when I use my Mac? It seems like I'm wasting a lot of electricity if I'm not going to use my scanner today.

A: Talk about frequently-asked questions!

The answer to this one is: you can if you can. That is, you *may* be able to leave some of the SCSI devices off without problems, depending on the individual pieces of equipment.

The only way to tell whether a device will bring down the entire SCSI chain when the power is off is to try it. (This kind of experimentation won't hurt your Mac or your SCSI chain.) Apple claims that PowerPC-based Macs require a fully powered chain—yet simple experiments show that this rule rarely holds true.

On the other hand, most of these devices draw very little current, and their life expectancy is at least several years. If it turns out all your gadgets need to be on before the Mac turns on, don't lose sleep over it.

It's true. If you're careful, it's perfectly possible to plug and unplug SCSI devices while everything's on.

So where did the great Power-Off Myth come from? Even our engineer friend concedes that it's possible to cause damage if you don't hot-plug correctly. And what's "correctly?" All the pins of the SCSI connector should arrive or depart at the same moment. In other words, don't pull the right side off, and then the left; attach the SCSI connector flat, all at once, face-to-face with its jack. If the connector is attached or removed unevenly, you risk creating a power surge on the subset of pins that are momentarily in contact with the jack.

CD

The Myth arose for a second reason, too: If a hard drive isn't already attached as the Mac starts up, the drive's icon won't show up on the Desktop. This would certainly alarm the novice. If you hot-plug a hard drive without restarting the Mac, its icon still doesn't automatically appear. However, you can use SCSIProbe, included on the CD-ROM with this book, to "pull" its icon onto the screen after it's attached. (That's how the Apple engineers do it.)

One additional caveat: If a new hard drive you're attaching has the *same SCSI address* as one that's already attached (see Rule #2), the Mac may very well wipe out the new drive's folder hierarchy. This is no myth.

Obviously, then, it's safest to follow the official Apple guidelines—to turn off the Mac and all SCSI devices when connecting or disconnecting them. But, if you're savvy, or impatient, there's no reason to be terrified by the Great SCSI Power-Off Myth.

SCSI Secrets ───────────────────────────────────────■

Mount a cartridge without a driver, method 1

Speed Tip

As described earlier in this chapter, you generally can't use a piece of SCSI equipment without a corresponding piece of software — the SCSI *driver* for that gadget. For example, if you insert a Zip, Jaz, or SyQuest disk after the Macintosh is on, its icon won't *mount* (appear on the desktop) unless the corresponding driver extension is in your System folder.

But here's a trick for mounting such removable disks. When you're caught without its driver, restart (or start) the Mac — and insert the disk *just after* the "Welcome to Macintosh" sign appears. By the time you arrive at the Finder, you'll find that your Zip, Jaz, or SyQuest disk is neatly mounted on the desktop. Moreover, you can now remove that disk and replace it with another; as far as the Mac is concerned, that SCSI gadget is a fully accredited component of your setup for as long as the Mac is on.

Mount a cartridge without a driver, method 2

CD

SCSIProbe, included on the CD-ROM with this book, can bring a Zip, Jaz, SyQuest, or similar disk onto the screen if you've started up the Mac without the appropriate driver extension installed — *and* didn't remember to put a disk in the drive, as described in the previous secret.

After inserting the disk, open the control panel and type the letter M (or click the Mount button). Your Zip/Jaz/SyQuest pops onto the screen. (The program included with Zip and Jaz drives called Iomega Guest does the same thing, by the way, but takes longer and isn't always easy to find in a pinch.)

Two ways to know what's going on

Want a great education about your Mac's SCSI chain in five minutes? Choose Apple System Profiler, which is listed in your menu in System 7.5 and later. Once it launches, choose Volume Information from the Select menu.

As shown in Figure 33-4, you're shown a wealth of detail about your SCSI gadgets, including which SCSI chain each is on; what its ID number is; how big it is (and how full it is); and more.

A quicker, but less detailed, display is available in, of all things, the PC Exchange control panel (see Chapter 4). It shows a quick summary of all of your attached SCSI gear and, in rare circumstances, may even be able to mount them.
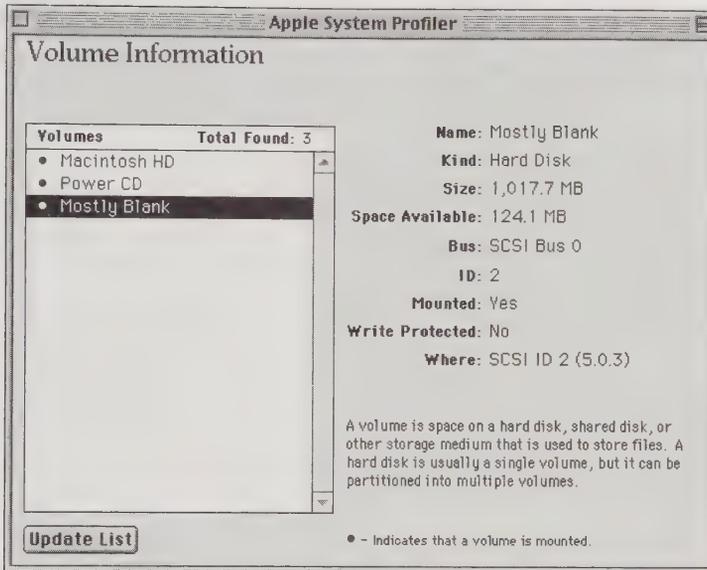
Figure 33-4: Apple System Profiler shows all your SCSI gadgets, on all chains; click one to read all about it.

SCSI Troubleshooting

If all goes well, after you have your SCSI chain set up, you can turn on everything and start your computer. After your Desktop pattern appears, you should see the icons for all your external hard drives in the proper places at the right side of your Mac's Desktop.

If every component and every cable is textbook-perfect, you can get back to work or play on your Mac without any further incident. There are times, though, when things just don't work the way they ought to work, and you begin to learn what the term "SCSI hell" is all about.

Sometimes SCSI troubles are very obvious. Sometimes they're so subtle you don't even suspect SCSI. So let's take them in turn.

Spotting the symptoms

You won't believe how many different kinds of Mac troubles *can* be caused by SCSI glitches. These include a completely frozen, empty gray screen at startup; the blinking question-mark disk icon at startup; a Sad Mac icon at startup; a freeze when the Happy Mac icon appears; or a freeze at the "Welcome to Macintosh" startup screen. Sometimes a specific SCSI device's icon won't show up on your desktop, or you get random freezes when you attempt to save or copy large files onto a specific hard drive.

ANSWER MAN

Mac-to-Mac SCSI

Q: I want to transfer stuff from one Macintosh to another. Can I connect them back-to-back with a SCSI cable?

A: No, no, for God's sake, no! Don't do it! You have so much to live for!

You'll fry one or both of your Macs.

There's one exception to that dire warning: you *can* connect one Mac to another if one of them is a PowerBook, as described in Chapter 14. Even then, though, you must use a special adapter to convert the SCSI signal.

Q: OK, well, then, can I share one SCSI gadget — my scanner, say — between two Macs?

A: Absolutely — one at a time. You can't leave two Macs connected to a SCSI gadget *simultaneously.*

A SCSI conflict can affect a system software installation, too (for example, the Mac won't recognize one of the installation disks). If something bad is afoot in your SCSI chain, the installation process can come to a screeching halt.

Solving the problems

First, determine if it's really a SCSI problem. As explained in Chapter 36, begin by pressing the Shift key during startup (to turn off all your extensions). Disconnect the SCSI cable from the back of your computer. Now you have *no* external SCSI gear. Try to start up again.

If your computer works, then you've confirmed that something in the SCSI chain is wrong. If your computer still won't work, then perhaps the problem is with your internal drive or system software. Try starting up with the startup CD-ROM, or the Disk Tools floppy, that came with your Mac.

If you're able to start successfully, you may simply have to update your internal drive with your formatting software (see Chapter 8 for more on hard-disk drivers and updating them). Damaged or incompatible hard-disk drivers — software — are sometimes responsible for all sorts of ills that are blamed on the hardware. Sometimes one crash can do a device driver in. Frequent crashes when you are trying to access data from your hard drive or write data to it may indicate a damaged driver.

Which SCSI device is it?

If the trouble lies in the SCSI chain, disconnect the newest device on the chain. Recheck your cables and termination again and then power up. If it works, then you've narrowed the problem down to that new device. To isolate the problem, connect *only* that device to your Mac and see if it works. This is the time to check the manual. It may tell you that your new device is internally terminated or that it works best in a certain SCSI chain location.

If you're still having no luck

Take a deep breath. Review each of the following steps, in order. If you follow them all, you will solve what's wrong. You may never know *why* things weren't working, but you'll be pleased enough that everything finally works.

1. Make sure that every device is plugged into a power outlet. Make sure that they're all switched on. Check that each connector is firmly attached to its SCSI jack.

2. Change the ID numbers of your SCSI gear. Try reversing the numbers, for example — but be absolutely certain, before you turn on the Mac, that there's no numbering conflict. Use SCSIProbe, included on the CD-ROM with this book, to see what's going on.

3. Change the termination. As we said, not everything in SCSI-land is clear-cut. First, try removing all terminator plugs from your external drives. (You can't hurt your equipment by having too few terminators.) If that doesn't work, put a terminator plug on the last device in the chain.

4. Suspect your cables. Check their length. The total combined length can't exceed 18 feet; 12 feet is safer. Swap the cables among the devices in your chain. Replace them, if you have spares. Try Apple cables.

5. Place your SCSI devices in a different physical sequence. Put the last device on the chain first or somewhere in the middle. (But don't forget: When you make these changes, reinstall the termination on the last item in the chain and check for secure connections and correct ID numbers.)

6. Make sure that you've installed the proper software driver for each device. Without the driver, your Mac may not even know that a SCSI device is there.

7. Put a terminator in the middle of the chain.

What if the drive just won't mount?

You restart your computer, and everything *seems* to be working fine — except that the hard drive icon doesn't appear on your Desktop!

At times like this, you really need a utility that lets you examine your SCSI setup. One such tool is SCSIProbe, provided on the CD-ROM with this book. SCSIProbe shows you the SCSI address numbers of your various devices and whether or not they're mounted. In this case, if you didn't turn on your external device soon enough before booting your Mac, SCSIProbe's Mount button will actually pull your external drive's icon onto the Desktop.

If SCSIProbe doesn't work, or your system crashes when you try to mount the drive, try replacing the device driver with your formatting software first and see if it works.

If you still can't get the drive to mount, use Apple's Disk First Aid or a commercial set of hard-disk repair/recovery tools, such as Norton Utilities. For greater insights into hard-drive lore, consult Chapter 8.

SCSI voodoo in action

One of your cheerful authors tells the following illustrative tale. He wanted to attach an external drive to a Macintosh that already had a SyQuest drive and a scanner. The new external drive was connected directly to the Mac, the removable drive was in the middle of the chain, and the scanner was at the end of the chain, properly terminated.

The way it's written, this setup should have worked. In fact, the Mac started up fine, and the drives mounted properly. But every so often, when a lot of data was being written to or from one of the drives in the chain, the Mac froze and the activity light on that drive remained lit. The Mac had to be restarted.

He did the usual SCSI troubleshooting dance: moved drives to different spots in the chain (with appropriate changes to the termination); swapped cables; and juggled ID numbers. The drives and removable cartridges were reformatted. But the problems persisted.

On the suggestion of an Apple technician who specialized in SCSI voodoo, the new drive was placed last on the chain, with *double* termination — one terminator block *ahead* of the drive and one attached to the empty SCSI jack at the rear of the drive. And the problems vanished!

The moral: When the rules of SCSI let you down, break the rules of SCSI.

Beyond SCSI

The Macintosh Plus was the first personal computer to offer a SCSI jack. It took 12 years for the Mac's SCSI equipment to improve since that 1985 moment.

Fast, Wide, and Ultra

Today, the original SCSI electronics have been fondly dubbed *SCSI-1* — because most high-powered Mac models today come with improved electronics called *SCSI-2*. There's only one difference that you should care about between SCSI: the Next Generation and the original: speed. You can buy SCSI-2 equipment in any of several flavors, each with a cute and unhelpful name.

As you read about them, remember one key buying point: With all add-on SCSI products, you need *both* a circuit board (such as a PCI or NuBus card) that lets your Mac "talk" this new standard *and* the corresponding kind of *hard drive*. The card and the drive together cost $2,000 or more — which may, nonetheless, be a reasonable price to pay if you're in a speed-dependent business such as video digitizing, setting up a Mac to serve a large network, prepress, or large database applications.

SCSI-2 Fast (10 megs per second)

This kind of equipment sends data twice as fast as regular SCSI, with a maximum speed of 10MB per second instead of 5MB. Most high-end Macs

(such as recent Power Macs in the 7000, 8000, 9000, and G3 series) offer *two* SCSI chains — an internal and an external. On these models, the internal SCSI chain has Fast SCSI-2 circuitry, saving you the cost of a SCSI-2 card for these models. Such models also come with a Fast SCSI-2 internal hard drive to take advantage of the circuitry, meaning that these models can transfer up to 10MB per second to or from the Mac's brain.

SCSI-2 Wide (10 megs per second)

SCSI-2 Wide is another way to double regular SCSI's speed. This kind of equipment has wires 16 bits "wide" instead of 8, so it can shove information through them twice as fast. Actually, there aren't any SCSI-2 Wide products available for the Mac — only Fast/Wide (read on).

SCSI-2 Fast/Wide (20 megs per second)

Combine the doubled speed of SCSI-2 Fast with the wider "pipes" of SCSI-2 Wide, and you get this high-speed conduit, whose top speed is 20MB per second. You can buy certain Power Macintosh G3 machines with a Fast/Wide PCI card (and matching huge hard drive). If you're into digital video, huge Photoshop files, or just not waiting for things, that hard drive speed — coupled with the G3's own fast processor — are key components of the speed demon's dream machine.

SCSI-3 Ultra Wide (40 megs per second)

Welcome to the '90s. This modern, goosed-up SCSI system can flood your Mac's little brain with *40* megabytes per second — at this writing, the fastest possible hard drive system available for the Mac.

No Mac comes with Ultra Wide circuitry directly from Apple. You have to buy it, in the form of PCI card/hard drive bundles from such companies as MicroNet, Atto, LaCie, and APS; at this writing, the card and hard drive together cost about $1,200.

SCSI comprehension (0 megs per second)

The main things to remember when you go questing for better SCSI speed are, first, faster is more expensive; and second, get a card and hard drive together. If you don't, you're in for trying to understand instructions like these from a recent *Macworld* article:

> Remember that if you use, for example, a SCSI-2 Fast drive on an Ultra Wide SCSI port, you'll be limited to SCSI-2 Fast's 10-MBps transfer rate. You can connect an Ultra Narrow SCSI drive to an internal SCSI-2 Fast connector and an Ultra Wide SCSI drive to an internal SCSI-2 Wide connector (which some SCSI cards have), but you'll need an adapter to connect to an external SCSI-1 port or to connect a Wide drive to a non-Wide connector or a non-Wide drive to a Wide connector. Ultra Wide SCSI cards come with both Ultra Wide and Ultra internal connectors, but if you use both internal connectors, you won't be able to use the external connector.

Got that?

How fast is your Mac's SCSI port?

Apple doesn't bandy about official figures as to just how fast the SCSI port is of each Macintosh model. However, here we've listed a few examples. Speeds are dependent on the kind of storage device installed, the kind of formatting software, extensions, SCSI setup, the size of files being transferred, and so forth.

Model	Maximum SCSI port speeds
Macintosh II, IIx, IIci	1.25MB/second
Macintosh LC family	1.5MB/second
Centris, Quadra 605 through 900	5MB/second
PowerBook 100/500 series	1.5MB/second
Duo 200 series	1.5MB/second
Power Mac 6100, 7100, 7200	5MB/second
Power Mac 7300 and higher	10MB/second (internal bus; 5MB/sec. external)

IDE: Cheaper, Sooner, and Less Flexible

For years, it was safe to assume that if it was a Mac, it had a SCSI hard drive inside. No longer. More and more new Mac models (such as the 6000 line, recent PowerBooks, and the basic Power Mac G3 models) come with a completely different kind of device-chain circuitry inside — a protocol borrowed from the world of DOS clones. It's called the *Intelligent Drive Electronics* design — IDE for short.

Apple uses IDE circuitry primarily because IDE drives are cheaper than SCSI drives (because of competition in the DOS world). Anyway, Apple figures that most people won't know or care that an IDE drive is inside. You still get the standard SCSI jack on the *back* of your computer, into which you can plug the usual assortment of SCSI devices. They'll work perfectly well with (and independently of) the internal IDE hard drive.

You don't need to fuss with terminators or addresses in the world of IDE. In the unlikely event that you want to expand your IDE chain, you'll be limited to *one* additional device. (An IDE chain can have only two devices — a master and a slave. A slave drive can't start up the Mac, by the way.)

If you wish, you can replace your IDE hard drive with a larger one. Unfortunately, though, now you'll be trafficking in the icky world of PC clones, where nothing is standard and everything is incompatible. When shopping for a new IDE drive, you must buy one that meets the following technical criteria, even if you don't know what these things mean:

- The drive must support the *identify* command.
- It must work at least at *PIO mode 2* performance level.
- It must have *write caching* on so that *auto-reallocation of new spares* is invoked.

Apple suggests that drives manufactured by IBM, Quantum, Conner, Seagate, or WD (Western Digital) will give you the best luck.

FireWire

Whoever elected SCSI, anyway? It's awkward, it's a headache, it's limited.

Fortunately, America's best engineers are designing improvements. Most of these improvements have to do both with improving the *speed* of data transfer and relieving the headaches of setting up SCSI gadgets. For example, there's talk these days of something called Fiber Channel, which uses fiber-optic or copper cable that can be 100 meters long, with no ID numbers or terminators to worry about, 127 devices per daisy chain, and data-transfer rates of up to 100MB per second.

But believe it or not, there's a new technology already in stores that makes SCSI look like your father's data bus. What if you could connect your hard drives, CD-ROMs, printers, videotape recorders, scanners, and other devices — up to 63 in a chain — to a single jack on the Mac? What if you could connect and unplug them freely, without even having to shut down the computer? What if the cables were smaller, cheaper, and longer than SCSI cables? What if transfer speeds approached 50 megs *per second?* And — while we're dreaming — how about eliminating the hassles of termination and ID switches forever?

That's FireWire: a new, six-pin, multimedia-oriented system of connecting Mac peripherals. Otherwise known in the industry as spec P1394, FireWire is far less expensive and easier to work with than any flavor of SCSI. Apple developed this new standard with Texas Instruments. It's available as a PCI card for older Macs, and comes built into current PowerMac models.

The digital video revolution

FireWire's first significant presence is primarily in digital video products. Products such as Radius MotoDV and ProMax's FireMax are FireWire PCI card/software kits that let you transfer movies from a *digital* camcorder (not the usual 8mm or VHS) to your Mac. You can edit this video on the Mac as you would QuickTime (see Chapter 23) and then send it back out to the digital camcorder. The resulting video shows none of the picture degradation generally associated with making copies of copies — because the data is digital all the way. (If you're going shopping for a digital camcorder, make sure it comes with a FireWire jack built in.)

FireWire isn't just for Macs; it can also send data to Windows machines (Microsoft Windows 98 has FireWire drivers) or directly to other FireWire gadgets — camcorder to camcorder, for example. Video and film-making buffs are ecstatic.

Beyond video

Of course, utopia won't truly arrive until FireWire moves beyond movie-making and begins to show up in standard add-on gear: CD-ROM drives, Zip and Jaz drives, hard drives, scanners, printers, and so on. Frankly, we can't wait; we don't care if we never see a SCSI terminator again.

Chapter 34

NuBus, PCI, and Other Slots

What if you had a Windows PC instead of a Mac? If you wanted to install a new video card or modem board, you couldn't just open the PC's case and insert the card. No, you might have to fiddle around with a bunch of little jumper plugs and DIP switches, and then you'd have to configure the software to tell your computer that something had been installed.

With your Macintosh, you just insert the board in the slot, reboot your Mac, and you're in business. Although you sometimes may have to install a control panel to make some settings to the board, a NuBus or PCI device is self-configuring. But that easy setup process belies the sophisticated technology behind it.

NuBus Cards

The expansion slot standard used on Macs until late 1995 was called NuBus (pronounced *new* bus, which, at the time, it was). The technology was originally developed in the 1970s at the laboratories of MIT and was perfected by Texas Instruments for use in workstation computers. Apple's version of NuBus wasn't released until March 1987, when the Macintosh II was produced. The Mac II (and its successors, the IIx and IIfx) contained six expansion slots; no model since has had as many.

The big idea

The theory behind NuBus is simple: It's a *bus* (an electronic pathway) that lets you expand your Macintosh. Without having to buy a new computer, you can add features as you need them.

By far, the most common NuBus component is a *video card* (see Chapter 11 for more on monitors) — a circuit board into which you can plug your monitor. Today's Mac models have built-in video memory, but Macs of the '80s and early '90s required a video board to provide 24-bit color or graphics acceleration.

Some other reasons you might buy a NuBus card:

■ To hook your Macintosh to an Ethernet or Token Ring network

■ To speed up SCSI transfers (see Chapter 33 for details on SCSI-2 and -3)

■ To capture video images, either still frames or movies, for processing on your Macintosh (using a *video capture board*)

■ To replace some of the functions of your Mac's main logic board in the pursuit of accelerating your Mac (using an *accelerator board*)

■ To put a PC inside your Mac so that you can run DOS and Windows programs without buying a whole new computer (see Chapter 16)

PDS Cards

Certain Mac models — such as the LC series — have a *Processor-Direct Slot* (PDS) instead of a NuBus slot. The PDS is another way of expanding your Mac's capabilities. A card installed in this slot hooks directly to your Mac's main logic board; the PDS board becomes, in effect, a part of that logic board. (A NuBus board, on the other hand, can be a computer unto itself.) A PDS card is ideal for less ambitious hardware add-ons, such as cache boards and accelerators.

Unlike the NuBus board, which can work in most any Mac with slots, the PDS board has to be designed to support a specific model or range of models. (There are, however, adapters that let you plug NuBus cards into some PDS slots.)

The PCI Revolution

NuBus is out. Beginning with the late-1995 Power Mac models, Apple introduced a new expansion-card technology to the Mac. It's called the Peripheral Component Interconnect (PCI) Local Bus. Over 150 other companies have also endorsed this new technology. All of today's desktop Macs — and even PowerBooks — feature PCI circuitry instead of NuBus.

In some ways, PCI and NuBus are very similar: Visually, for example, there's not much difference. Where a NuBus card has a plastic connecting plug at the bottom, the PCI board's "pins" are etched into the bottom edge of the board itself. Installation is simply a matter of sliding the board securely into its slot. Likewise, PCI cards perform much the same jobs as NuBus cards — adding

high-speed networking, accelerated video display, video digitizing, high-speed SCSI data transfer, or DOS/Windows capability to your Mac.

In other ways, however, PCI and NuBus are worlds apart.

Why PCI?

There were three reasons behind Apple's decision to adopt the PCI standard. First, speed: A PCI card today runs at 33 MHz (compare with NuBus: 10 MHz) and can transfer data to your Power Mac about twice as fast. This speed is extremely valuable to people who depend on networks, work with digital audio, or make digital movies.

But if speed were the only issue, Apple could have done better, adopting one of many slot designs floating around in today's technology circles — things called FutureBus, S-Bus, or the VESA Local Bus. A second reason was cost. In theory, at least, PCI cards are cheaper than NuBus cards, largely because they're so popular already in the competitive PC clone market.

The final reason for Apple's switch to PCI was political: Apple needed to reach a compromise with IBM in the design of the new hybrid "PowerPC Platform" (CHRP) computers (see the end of Chapter 13). To create such machines, Apple and IBM had to choose components that would work with any operating system — and NuBus wasn't among them. Of course, the CHRP initiative ultimately fell through — but PCI is one pleasant lingering aftereffect.

PCI futures

Despite the PCI technology's superiority, NuBus didn't disappear overnight. NuBus boards will still be manufactured for several years to satisfy the needs of millions of Mac users who haven't migrated to PCI-equipped Macs. Even with a PCI-only Macintosh, your previous investment in NuBus cards isn't worthless; for $600 or less, Second Wave (512/329-9283) will sell you an Xpanse PN, a PCI card with a 30-inch cable to an external box that holds two NuBus cards. (They also sell four- or even eight-NuBus-card models, all connected to a single PCI slot.)

How to Install a Card

If you follow instructions, you don't endanger your warranty by installing a card yourself. Although directions may differ from model to model, here are the basics:

First, turn off the Mac and all connected equipment. Leave the power cord plugged in, however, to act as a ground. You're usually told to let the Mac sit for a few minutes to give the storage capacitors in the power supply a chance

to drain current. That's just to prevent you or the card from getting "zapped" with some stray electrons. (We've never known any Mac or owner to be zapped from not having waited long enough after shutting down the machine, however.)

Then open your Mac. Depending on which model you have, you may need a screwdriver to remove one or more screws to get the Mac's case off. Place them in a safe place (such as an ashtray) so that you can find them later. Truth be told, we know plenty of people with desktop-style machines who change their expansion board lineup so often they never bother to reinstall the screws.

This, by the way, is the moment when you're happy you bought one of Apple's 1997-or-later tower models — the ones that fold open like a book, instantly making all interior components accessible without further dismantling.

Losing charge

Before you touch anything inside your Mac, touch the power supply case (the large silver metal cube inside the Mac where the power cord attaches from the outside) to discharge static electricity from your body. If your work area has a carpeted floor, or you're living in a dry climate, you might get a tiny, harmless shock. Your hair won't stand on end (if you still have hair and it's not already standing up).

Some kinds of PCI or NuBus cards have external connectors that are designed to protrude out the back of the Mac (a jack for your monitor or a camcorder, for example). In that case, remove the plastic or metal cover plate at the rear of your Mac. It pushes out from inside. We recommend that you pop it out with the end of a pencil, however, having had our knuckles ripped too many times by those sharp little prongs. Save the plate, in case you intend to remove the board later on. (We learned this lesson the hard way, when the day came that we wanted to sell a Quadra 800 and couldn't find the missing back-panel slot plate. The buyer put up a fuss.)

The board meeting

Remove the card from its antistatic bag, holding the board by its edges or by the metal faceplate, if it has one, at one end of the card. Take the card to your open computer. Look at the bottom of the Mac to spot the actual thin rectangular slot connector. Then align the card so that the matching connector on one long edge of it mates with the slot on the Mac floor. The components on the board (all the little transistors and things sticking out of one side of the board) usually face the power supply.

Using a PC PCI in a Mac

Q: Can I use PCI cards sold for Windows computers in my Power Mac?

A: In general, yes. There are conditions, however. First, the PCI card must, of course, come with a software extension — a driver — that tells your Mac how to communicate with it.

Second, cards that need to load at startup, like video cards and hard drive controller cards, must

be "Open Firmware"-compliant. (Open Firmware-compatible cards automatically work in any Open Firmware-compatible computer, such as the Mac.)

If the card doesn't need to be loaded when the Mac turns on — a network card, for example — it doesn't have to be Open Firmware-compliant.

Gently press the card until it's seated on its connector. Wiggle it back and forth slightly, to see that it's connected firmly. If you can't get the board to fit inside the connector slot, first check whether you're dealing with a NuBus, PCI, or PDS board (the connectors are all slightly different). Don't force it; you don't want a big repair bill if you bend or break the connector. If you can't seat the board in its place, call the manufacturer or dealer or your favorite Mac guru for assistance. Most PCI slots must now be screwed into the brace attached to the back-panel opening.

After the board is installed, close the Mac's cover. *Before* replacing and tightening the screws, hook up your accessories and start up the Mac, just to be sure everything is working. (It's perfectly okay to start up your Mac without its cover on.)

Removing the card

Removing a card works almost exactly like installing one: you open the Mac's cover, wait a few moments (if you believe in that), and touch the power supply. If it's a PCI card, unscrew the screw that fastens it to the Mac's slot frame.

Then grasp the card at two points: the metal clip at the rear of the Mac and the other bare corner of the card. (If it's not a card designed to protrude out the back of the Mac, there may not be a metal clip. Grab that back upper corner instead.) Tug upward, using the metal clip as your main handle. We usually find it easier to pull a card out diagonally, with the back end (with the clip) coming up first.

ANSWER MAN

What's a DAV slot?

Q: Yeah—what IS a DAV slot? My 8500 has one.

A: Though one of your cheerful authors would like to reply that DAV was named in honor of him, it actually stands for *digital audio/video*. This connector is found in certain "AV"-equipped Macs: the 5400, 5500, 6400, 6500, 7500, 7600, 8500, 8600, and G3 tower, for example.

The DAV connector accommodates certain video compression/decompression cards, notably MPEG boards sold by Apple and by Wired Inc. (Visit Wired's Web site, www.wired.com, for an amazingly complete discussion of MPEG and DAV slots.) For now, all you need to know is that MPEG boards play full-screen, extremely high-quality movies on your screen *from a CD-ROM.*

Chapter 35

The Networking Chapter

The Wiring Setup

Feel free to lord this fact over your Windows-loving pals: Every Mac model ever made comes with built-in networking circuitry and built-in networking software. For free. And because the cable is the same one you use to hook up a printer, you can connect Macs together without buying a single additional component.

And why would you want to? So that you can transfer files from one Mac to another without needing disks. So that you can send e-mail from one part of your building to another. So that the four of you in your small-business office can share the same laser printer. And so that everybody can tap into the same FileMaker Pro database, calendar program, or fax modem.

Mac Basics

In this chapter, you'll learn about the two different ways to wire Macs together using *Ethernet* (expensive but fast) or using *LocalTalk* (dirt cheap but slower). We'll also let you in on some dramatic shortcuts you can take if you're interested in transferring stuff between two of your *own* Macs — a PowerBook to a desktop Mac, for example — without having to go through a long song-and-dance of passwords and software setup.

MACINTOSH SECRET

Terminology made simple

In this chapter, we'll bend over backward to avoid the geeky lingo that infests most networking chapters. But unfortunately, the moment you leave the safety of this book, you'll be bombarded. Here's a primer in the italicized networking terms you're most likely to hear.

Like any other great development in technology, networks were invented, in part, out of economy. Because Apple originally charged $6,000 for one laser printer, people eagerly sought methods of sharing a single printer among multiple Macs. Therefore, today's networkable printers and modems are known generically as *shared devices.*

Then there are *file servers.* A file server is a hardware and software setup — usually another Macintosh — that lets you share files with other people on the network. A file server's icon shows up on your Mac's screen as another disk that you can open and whose files you can access. Using Apple's *AppleShare* technology, this same file server's icon can also show up on *other* people's Macs. Everyone can be working with the file server's files at once.

Today, there are other kinds of servers, from database servers (such as FileMaker) to address-book servers (such as Now Contact), all designed to let multiple Mac users access a common bunch of folders and files.

When a Mac prints out something on a laser printer down the hall, it sends the printing information over the network cables in the form of electronic messages. These messages are sometimes called *packets.*

Because networks are like streets and highways, complete with intersections and two-way movement, the activity on a network is called *traffic.* Packets can be said to represent individual vehicles as they hug the yellow line of the network cable. If the packet is a city bus, then the passengers on that bus are the data contained within the packet: instructions to a printer, an e-mail for a coworker, and so on.

After you connect several Macs, shared devices, and servers, you have yourself a LAN: a *local-area network.*

Wiring setup 1: LocalTalk

If you're on a budget, don't need to network every day, or don't plan to transfer large files, you'll probably be happy with the Mac's original, built-in networking system. It's called *LocalTalk.*

The actual cables you need for this arrangement depend on how many Macs you're connecting.

Use a printer cable for two Macs

If you're connecting only *two things,* such as a Mac to a PowerBook, you can use your printer cable — just a standard StyleWriter (serial) cable. Plug one end into each Mac's printer port.

For a PowerBook owner who returns home and wants to transfer files to a desktop Mac, simply swiping the cord from the printer (temporarily) is a convenient and quick way to create an instant two-Mac network.

Use PhoneNet connectors for multiple Macs

If you're connecting more than two machines, you'll have to get additional cables. For *each piece* of equipment, Mac or laser printer, you need a little $15 *PhoneNet connector.* (PhoneNet is actually one particular brand. If you call a computer store, or Mac Warehouse, or some other place and order "a PhoneNet-type connector," they'll know what you mean.)

Then you string the PhoneNet connectors together using ordinary telephone wire. As shown in Figure 35-1, each of the two sockets on a PhoneNet connector can accommodate the little clip at the end of a piece of phone wire. When you hook things together, hook everything into a continuous chain (it can't form a loop anywhere). As far as hooking up the network is concerned, Macs and laser printers are treated exactly alike.

You must also insert a *terminating resistor* into the empty socket of the PhoneNet connector at each end of the equipment chain. The terminator plug just looks like a little end-of-phone-wire clip that's been broken off, as shown in Figure 35-1. Without it, you may get errors when sending files or messages, and some network devices may not function at all. The terminating resistors at each end of the wire absorb any stray electrical signals; otherwise, these signals may bounce back down the wire, confusing your Macintosh and other devices with phantom signals.

And where do you get the terminator plugs? Whenever you buy a PhoneNet connector, a terminator is included in the plastic package.

The total length of the phone wires is about 3,000 feet, and the total number of Macs involved can't exceed 30. Beyond those limits, you need Ethernet wiring instead (described in the next section).

Once you're wired, read "Setting up the software," later in this chapter, for the next step.

ANSWER MAN

Who's doing all the talking?

Q: Look, as long as I'm getting all this terminology at once, how about defining the difference between LocalTalk and AppleTalk? I'm totally confused.

A: After SneakerNet — running to a coworker's Mac, bearing a floppy disk in hand — the most common method of Macintosh networking is Apple's LocalTalk.

LocalTalk and AppleTalk aren't, of course, the same thing. LocalTalk is the *wiring;* AppleTalk is the *kind of message* that travels over it. AppleTalk could be likened to the spoken word, and LocalTalk to the telephone and wires that carry the spoken word.

Figure 35-1: A PhoneNet network connector, complete with terminating resistor.

Wiring Setup 2: Ethernet

A LocalTalk network works well for a handful of Macs. But the larger the network gets, the slower it gets. In other words, copying a file from one Mac to another slows traffic to a crawl, especially if someone else on the network is also copying files. In time-critical businesses, this kind of delay can be disruptive and annoying.

Fortunately, for companies that are network-dependent, there's a much faster, alternate kind of wiring system: Ethernet, which is rapidly taking over the world of Mac networks.

Ethernet and speed

Messages travel at about 230,000 bits per second on a LocalTalk network. They travel at up to *10 million* bps on an Ethernet setup. (For some perspective, this page contains about 20,000 bits.)

According to our figures, then, Ethernet network speed is 43 times faster than LocalTalk. In practice, however, the true throughput bogs down, depending on the level of network traffic, the type of data being exchanged, and so on. In real life, Ethernet runs about three times faster than a LocalTalk connection, with a total capacity of 3 to 5 times that of LocalTalk networks.

Setting up an Ethernet network: the hubs

In general, Ethernet is slightly harder to set up than LocalTalk—for two reasons. First, if you intend to include more than two Macs or printers in your network, you must connect each directly to a central gadget called a *hub.* (The result forms a *star pattern;* an octopus diagram. Contrast with LocalTalk, where each Mac is hooked up to the previous one, in a *daisy chain.)*

ANSWER MAN

The network already in your walls

Q: In the last edition of this book, you promised you'd tell us how to set up a LocalTalk network using the telephone wires already in the walls of our houses — and yet you never did! What's the story?

A: Well, let's just mumble something about early senility, and leave it at that. Meanwhile, here's how you do it, thanks to free book winner Henry Miller-Jones.

The purpose of this stunt is, yes, to let you network Macs in different rooms of your house without having to rip open the walls. The trick works on a little-known fact: each phone cable buried in the walls of your house is composed of *four* tiny wires: yellow, black, red, and green. But only *two* of them are needed for your actual phone line. If you have two lines, you're out of luck — all four of these wires are in use. But if you have only one phone line, read on.

Separate the wires that lead to your phone jack. The red and green wires are used by your actual phone line. Connect the yellow and black wires (the unused ones) to a two-line splitter (or a separate phone-jack plate) from Radio Shack. Now run a piece of telephone wire from each Mac's PhoneNet connector to this newly created wall jack, and you should be in business!

Technically, you can pull off this stunt if you have *any* odd number of phone lines, but figuring out which of the many wires is the unused pair is more difficult. For example, you must ensure that the unused pair of wires completes a loop within the house, and isn't connected to an outside line.

This hub looks like, well, a hub: a small box with jacks for five, ten, or more Ethernet cables (see Figure 35-2). (An Ethernet cable, known as *10BaseT* or even *100BaseT*, looks like a slightly overweight telephone cable, with fatter versions of phone-cable clips on each end. These jacks and clips are called RJ45 connectors by the telephone installers, who you may want to involve in wiring your office for Ethernet.) A hub costs from $75 to $500, depending on its features and number of jacks, and comes from a mail-order outfit or a computer store.
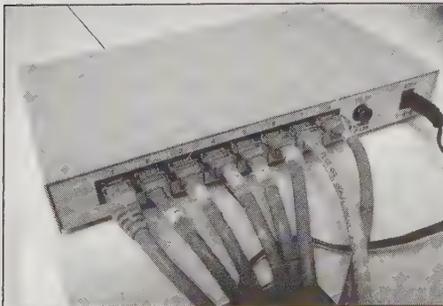
Figure 35-2: An Ethernet hub accommodates five or more Macs and printers; in professional installations, this gadget is generally hidden in a wiring closet somewhere, along with the office's phone switch box.

Hubs are likable gadgets for three reasons:

- Hubs aren't platform-specific — there's no Mac/Windows distinction.

- When your network gets big, you can plug one hub directly into another, as though your octopus patterns are sharing arms.

- If you have multiple hubs, and one of them goes bad (or some loose connection develops), the rest of the network remains intact.

Setting up an Ethernet network: the Mac jacks

The other part of what makes Ethernet slightly more complicated than LocalTalk is the fact that, unlike LocalTalk, not every Mac has the appropriate jack. (After all, *every* Mac has a printer port!) Various Mac models have come in any of three different Ethernet-ready states:

- **No Ethernet at all.** Older Macs, such as the Mac II series, didn't come with any Ethernet circuitry. You must buy an Ethernet NuBus card, insert it into the NuBus slot, and hope for the best.

  Recent PowerBooks don't have Ethernet jacks either, but are Ethernet-ready. You need only to buy an Ethernet PC card, such as the Global Village 56K Combo PC card.

- **AAUI jack.** Most Quadras and first-generation Power Macs offered this kind of jack: it's shaped like a monitor jack, rectangular with sloping right and left sides, but it's smaller, about $3/4$ inches wide. Into this jack you plug a $30 adapter that offers jacks of its own — 10baseT jacks (the ones that look like fat telephone jacks).

- **10baseT jacks.** These jacks, the very same telephone-wall-jack-style jacks described above in our discussion of Ethernet hubs, are the most convenient of all. They come on most of today's Mac models, and they mean that you don't have to buy transceivers, as you do for Macs with AAUI jacks. You simply plug an Ethernet cable directly into the Mac.

Once your Ethernet setup is complete — you've bought your hubs, adapters (if necessary), and Ethernet cable and set up your star patterns — the software setup is exactly the same as that described in the remainder of this chapter.

Wiring Setup 3: Token Ring

Token Ring is a rarely used alternative to Ethernet. A Token Ring network can be more effective than Ethernet at keeping network traffic humming under heavy load conditions. But it's also more expensive than Ethernet, more difficult to expand in networks with large numbers of nodes, and requires a great deal more planning and thought while designing. As a result, Ethernet is still the preferred high-speed choice of most Macintosh networks.

MACINTOSH SECRET

Connecting two Macs with Ethernet on the cheap

In Chapter 30's "PostScript printer secrets," you can read our money-saving trick for connecting a single Mac to a single printer without having to buy PhoneNet connectors: just use a simple StyleWriter cable. But you can use a variation of the same trick for a two-device Ethernet hookup. Here, though, you save even more money, because you don't have to buy an Ethernet hub.

The principle is the same: if you're connecting only two Macs, or one Mac and one Ethernet-ready printer, you don't have to buy a hub. You can connect them with a special cable called a *twisted* Ethernet, or crossover, cable. (You can get such a cable from a mail-order joint such as the Global Computer Supplies, 310-635-8144, for under $10.) One wire — no hub, no transceivers — instant Ethernet connection!

File Sharing Basics

Once you've got your wiring set up (with Ethernet or LocalTalk), you must now turn your attention to the software on the Macs involved. The Mac's networking software is amazingly sophisticated. You could spend days setting up passwords, different degrees of access to different folders on each Mac, and so on — and many professionals do.

There are lots of uses for a network: e-mail, sharing a database or calendar, and so on. One of the most popular features, however, is *file sharing*, which simply makes certain files on your Mac available to people using other Macs. What's especially great about file sharing is that, for once in your Macintosh life, you don't have to spend any extra money or add any extra gear to get it. This feature is built right into every Mac.

Apple calls this feature *Personal File Sharing*. It lets up to 30 people share files on each others' Macs; no dedicated Mac is required, as it was under previous file-sharing schemes. (Apple still sells a separate product called AppleShare, however. It turns a dedicated Mac into a centralized file server that can share files among thousands of Mac, Apple II, and DOS computers.)

In the next section, we'll first show you how to hook *one* Mac to one *other* Mac — a frequent operation for small offices or PowerBook owners. Later in this chapter, we'll show you how to go full bore, setting up a complete office network.

The Software Setup: File sharing for one

The discussion later in this chapter emphasizes the levels of security you can set up for each disk or folder that you want to share. But if you're the only person who uses your Mac, all that rigmarole is overkill. If you have two Macs — one PowerBook and one desktop Mac, let's say — then you're probably more interested in some fast-and-easy system of transferring files between them.

ANSWER MAN

Ethernet and LocalTalk simultaneously

Q. My Mac's printer port is connected by LocalTalk to a LaserWriter, but my office has an Ethernet network. When I select Ethernet in the AppleTalk control panel, my Mac doesn't see the LaserWriter. Can I access Ethernet and LocalTalk simultaneously?

A. Yes. Solution A: Buy a $250 gadget called a Dayna Mini EtherPrint. It basically turns your laser printer into an Ethernet gadget, so that everyone in the office can use it.

Solution B: This solution is free, but only one Mac can then use the laser printer. What you need is Apple's free LaserWriter Bridge 2.0 software; its sole purpose is to give an Ethernetted Mac a secondary connection to LocalTalk. Once it's installed, use the AppleTalk

(or, on older Macs, Network) control panel to choose Ethernet as your main network protocol, then open the LaserWriter Bridge control panel to set up a secondary LocalTalk connection.

If LaserWriter Bridge didn't come on your System CD-ROM, you can get it as part of Network Software Installer software from Apple's Web page (www.support.apple.com/wwwdocs/apple_sw_updates.html).

As noted above, though, only *your* Mac will be able to access that laser printer — not any other Macs on the network. That is, not unless you also buy Apple's $100 LocalTalk Bridge software, which can connect LocalTalk and Ethernet networks.

For your benefit, here's a greatly shortened version of the usual file-sharing saga. We'll assume that you're interested in maximum convenience and minimum security, so the steps are vastly streamlined.

For clarity, we'll pretend that you're seated at your Power Mac and want to bring the *PowerBook's* icon onto the screen. You could just as easily reverse the procedure, of course, and access the desktop Mac from the PowerBook.

Another note: You only have to go through all of the following steps *one time!* Thereafter, you'll be able to connect the Macs with a quick double-click.

Setting up the PowerBook

Follow these steps on the PowerBook:

1. Open the PowerBook's Chooser (from the menu). Make sure AppleTalk is Active.

2. Open the AppleTalk control panel. (On older Macs, it's called Network.) Choose the kind of network you're using — Ethernet or LocalTalk. On a PowerBook, the "Modem/Printer" option means LocalTalk. Close and save.

3. Open the File Sharing control panel. (On older Macs, it's called Sharing Setup.) In the dialog box, enter your name and a name for the Macintosh. *Hint:* If you're the only one who uses this Mac, use a short, easy-to-type

name for yourself, such as your initials or "me." (You don't need a password for this security-free scenario.)

4. Click the upper Start button. Close and save.

Setting up the desktop Mac

Your PowerBook is ready for action. Now connect it to your desktop Mac, as outlined at the beginning of this chapter. After the Macs are *physically* connected, here's how you bring the PowerBook's icon onto the Power Mac's screen. (Follow these steps on the *desktop* Mac.)

1. Open the AppleTalk (or Network) control panel; make sure the correct wiring type is selected (Ethernet or LocalTalk). Close and save.

2. Open the File Sharing control panel. (On older Macs, it's called Sharing Setup.) Enter the same name or initials as you did in step 3 of "Setting up the PowerBook." Close the window.

3. Open the Chooser. Make sure AppleTalk is on. Click AppleShare.

4. On the right, you see the name of your PowerBook (see Figure 35-3). Double-click its name. A window like the middle one in Figure 35-3 appears. Click OK in this dialog box and the next.

5. The PowerBook's icon should now appear at the right side of your Power Mac's screen. You can open the PowerBook's window and use its contents as usual.

Mac Basics

To save time the next time, make an alias of the PowerBook drive icon (which is now on your desktop Mac's screen). The *next* time you want to hook up, you won't have to bother with *any* of the steps we just outlined. Instead, just double-click the alias you just made. The PowerBook's actual icon pops onto your screen.

MACINTOSH SECRET

More streamlined yet

Obviously, we're not the only ones who think that the usual File Sharing mechanism is way too complex for just transferring files between Macs. In its latest PowerBook (and iMac) models, Apple has reduced this procedure to a graceful art — you just aim the PowerBooks' infrared (IR) lights at each other, run the included IR File Exchange, and fire away; your files are neatly placed into a folder on the other PowerBook in folders called, for example, "From Steve Jobs." No wires, no control panels. Nice.

And if you're trying to zap your files from a PowerBook to a *desktop* Mac, you can buy a Farallon AirDock for $70, which you plug into your desktop Mac, thus equipping it with its own infrared transceiver. Unfortunately, the AirDock connects to your modem port — and the last thing most people need is another appliance fighting for the modem jack. Until Apple starts putting an infrared transceiver on *desktop* Macs, too, wireless network nirvana is attainable only by PowerBook and iMac owners.
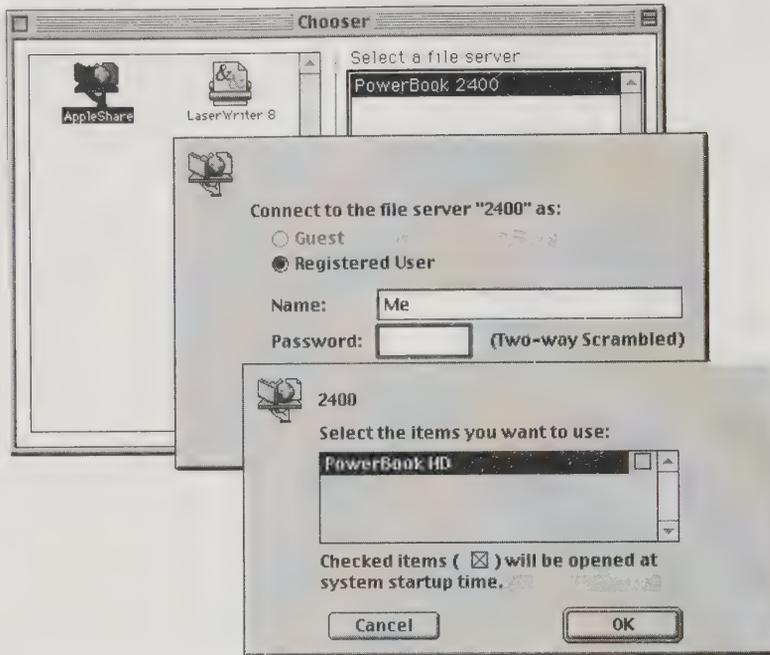
Figure 35-3: Logging on to your PowerBook starts at the Chooser (top left); you're then asked to select which machine you want (middle), and finally which hard drive you want (lower right).

File synchronization

Now that you have two Macs, you have a new problem: how to keep track of duplicate sets of files. Suppose you're writing a book. You work on Chapter 3 on your PowerBook during a trip; when you return home, you'll have to remember that the Chapter 3 on your PowerBook is *more recent* than the one on your desktop machine. Multiply that situation by the hundreds of files you may have, and you can get an idea of the problem.

We can think of several schemes for keeping track of which files are most recent, but they all involve extreme discipline (keeping the files you modify in a single PowerBook folder, for example). It may be simpler to use a *file-sync* program, whose job it is to bring the files on *both* computers up to date with each other. Apple's own file-sync software, File Assistant, should do the trick; it comes with System 7.5 and later.

If you have Mac OS 8.5, you can use the File Synchronization control panel instead (see Chapter 4).

The Software Setup: File Sharing for an Office

Now you've seen how easy it is to connect just two Macs. Setting up a more secure, more flexible system involves more steps — but thanks to Apple's software design, every step is logical.

Step 1: Set up the AppleTalk Control Panel

The Macintosh can use several different network types: LocalTalk, Ethernet, infrared beaming, and so on. But only one can be active at a time. To switch from one to the other, you go to a control panel (see Figure 35-4). Which control panel you have for this purpose depends on whether or not you've installed *Open Transport,* described at the end of this chapter.

Open the AppleTalk control panel (if you have Open Transport) or the Network control panel (if you don't). Specify the kind of network you have: Ethernet or LocalTalk. (If you plan to use LocalTalk, choose the Printer Port menu item, as shown in Figure 35-4.) Close and save.
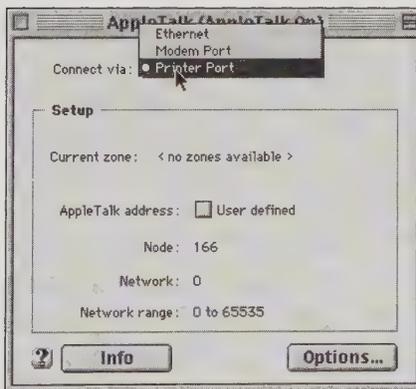
Figure 35-4: In the AppleTalk control panel, specify the kind of wiring you plan to use. (If you don't have Open Transport, use the very similar Network control panel instead.)

Step 2: Set up the File Sharing control panel

Next, open the File Sharing control panel. (On older Macs, you have a Sharing Setup control panel instead.) Type in your name. Also type in the name of your Macintosh as you want it to appear in the Chooser windows of *other* Macs trying to gain access to your drives. (See Figure 35-5.)

You can leave the password field blank, but the control panel will scold you. If you do turn on file sharing without having entered a password, anyone on your network who knows your name (as you entered it in the Owner Name blank) has access to all of your files. (Of course, if it's just you in your little office, by all means leave the password blank — you'll save a lot of time over the coming weeks.)

Finally, click Start. The Mac begins making itself ready for file-server mode. This process can take a few minutes, depending on the number and size of the disks you're sharing. (This feature uses up memory, too. The more files and disks you share, the more memory it uses. It's a good idea for PowerBook users to turn off file sharing, therefore, when on the road.)
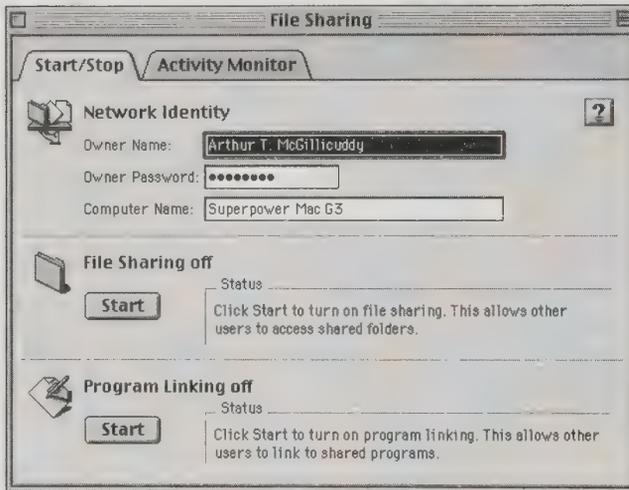
Figure 35-5: The File Sharing control panel (on older Macs, Sharing Setup) offers you the chance to enter your network identity, set a password for yourself, and turn file sharing and program linking on or off. This illustration shows both features in their *off* state.

When file sharing has started completely, the button in the File Sharing box changes to say Stop. As you may have already surmised, clicking Stop turns off file sharing, thereby making your Macintosh invisible to other network users.

Close and save the control panel.

Step 3: Set up Users & Groups

If you're the only person who will be using your little network — for example, connecting a PowerBook to another Mac — skip this step.

ANSWER MAN

What are all those network choices?

Q: OK, I'm in the AppleTalk control panel like you said. I see that Ethernet is a choice there. But what are all those other things?

A: The choices in the AppleTalk or Network control panel represent *drivers*. A driver is the software used to translate the communications between the Mac and an external device. Of the many available network drivers, the following are the most common:

■ **Printer Port.** This driver is installed in every Macintosh — it's the LocalTalk driver. It lets you use the Mac's printer port as your network connection. On a PowerBook, it probably says Modem/Printer Port, since a modern PowerBook has only a single jack for both purposes.

■ **Ethernet.** This driver appears only if your Mac has an Ethernet jack, as described at the beginning of this chapter. (This choice may say EtherTalk instead.)

■ **TokenTalk.** Use this driver if your Mac has a Token Ring card installed. (Probably not.)

■ **Infrared Port (IRTalk).** Got a PowerBook? This choice tells it to use the built-in infrared transmitter as its networking port. See Chapter 14 for details on using infrared beaming.

■ **Remote Only.** This driver gets installed when you install the program called Apple Remote Access, which comes on today's system-software CDs. For details, see the Apple Remote Access section of this chapter.

Actually, we should have called the Remote Only icon a *non*-driver. When you click it, the software actually *disconnects* the LocalTalk connection at the computer's printer port, freeing that port for non-networking functions such as using a modem (yes, on the *printer* port).

Otherwise, having switched on file sharing, you present a virtual doorway to everybody else on the network — but you have yet to provide them a key to that door. That's where the Users & Groups control panel comes in.

This control panel provides a switch to grant or deny access to your computer's shared functions for each of the people on your network. Those functions are file sharing, program linking, and (if you installed it) remote access.

Strange
But True

The Users & Groups control panel actually doesn't look much like a control panel when you open it. It looks like a window, as shown in Figure 35-6 (but you see your own name on the top icon).

The Mac creates a Guest and an Owner icon automatically after you turn on file sharing. However, only you create *User* icons. You're supposed to create one for each person who may want to connect to your Mac.

ANSWER MAN

Why anyone can be you

Q: I think I've caught a mistake in your book. You just said that if I don't give myself a password, then anyone on the network can get at all of my disks. But I happen to know that no disk gets shared until I click on it and choose Sharing from the File menu.

A: You *do* have to turn on sharing for each folder or disk independently — to let *other* people in.

But when file sharing is turned on, the system software automatically makes *all* mounted drives available to the owner. That usually means *you*.

Isn't that a nice gesture? If *you* try to access your own Mac from elsewhere on the network,

you can open all the folders and disks on your own Mac, even if you *didn't* turn on sharing for any of them!

Therefore, as we said, leaving your password blank essentially lets anyone else on the network impersonate you just by typing your name. They are free to root through, read, change, and *trash* anything on your hard drive (or drives).

If your sole purpose in networking is to connect your own PowerBook to your own Mac, this feature can actually be a time-saver. But if you really don't know everyone on your network, it's not such a fun thought.

OS 8 To do so, choose New User from the File menu (or, in Mac OS 8 and later, click the New User button). When you double-click a User icon, it opens into a configuration window (see Figure 35-7).
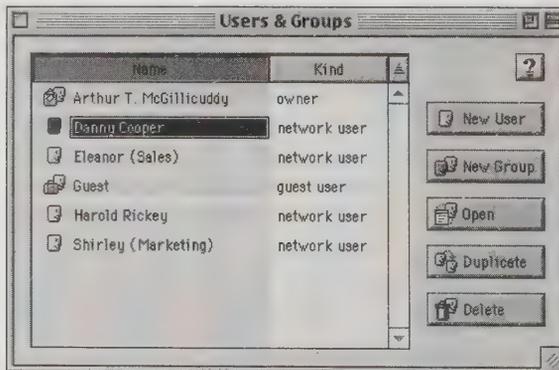
Figure 35-6: The Users & Groups program. Note the word "owner" next to the first name; it identifies that user as this Mac's owner. You can't change the owner's name in the Users & Groups control panel; you can only do that in the File Sharing control panel. You can change other users' names, however, exactly as you'd change any icon's name.
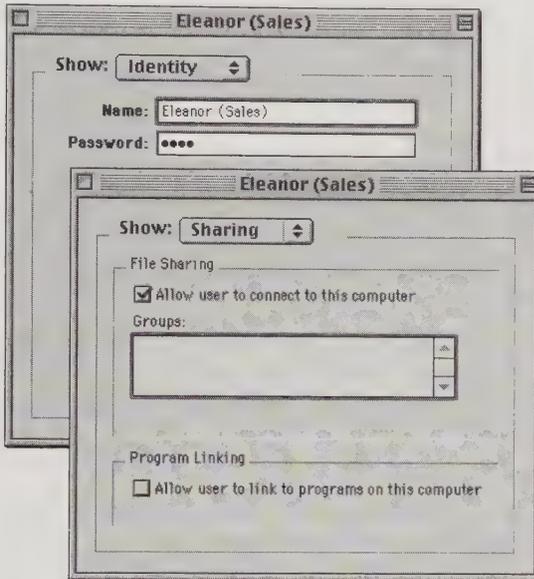
Figure 35-7: The settings panels for one of the Users & Groups icons. Upper left: the Identity panel, where you give each of your coworkers a password. Lower right: The Sharing panel, where you specify how much access each person has to your Macintosh.

Here are the options you can set for each coworker who might want to log onto your Mac:

- **Allow guests to connect.** This check box determines whether or not someone can see the files in your shared disks or folders at all.

  If you turn off this option for the Guest icon, then when somebody on the network tries to log on to your Mac, the Guest button is dimmed in the Chooser (see Figure 35-3).

- **Program Linking.** This option controls other people's access to the linkable programs on your hard drives. There aren't any such programs, as we'll explain later in this chapter. Ignore this.

- **Remote Access.** You only see this option if you installed Apple's dial-in network software, Apple Remote Access. We'll discuss this software later in the chapter.

The Owner icon

In Mac OS 8 and later, your name appears at the top of the list, and it's labeled *Owner*. (Before Mac OS 8, it has a unique icon, distinguished by a bold outline.) When you double-click your own icon, the resulting window has some extra settings not available to other user types. Here's an overview of the on/off switches that govern your own access to your Mac from elsewhere on the network:

- **Enable user to connect.** We don't know why you'd want to keep yourself from getting to the contents of your own machine, but you can turn this feature on and off here. This option affects only file sharing (the capability to mount your hard disk icons onto the desktop of another Macintosh on the network).

- **Enable user to change password.** Of course, you can change your password any time you're seated at your own Mac; just use the File Sharing (or Sharing Setup) control panel. This option, however, lets you change your password *remotely,* from the Chooser of another Mac on the network.

- **Enable user to see entire disk.** As we mentioned a moment ago, this option is only available to you, the Mac's Owner.

    For anybody else on the network, even when file sharing is turned on, your Mac's disks are completely inaccessible and invisible *unless* you select each disk and turn on Sharing (from the File menu).

    Under normal circumstances, however, *you* are allowed to get at your disks from any Mac on the network even if you *don't* turn on sharing for any of them. As you see by the wording here — "Allow user to see entire disk" — you're also allowed to see *everything* on your disk, even if you've only specifically shared a folder or two on it.

    If you turn *off* this check box, however, you'll be treated just like any other user out there on the network. You'll be unable to see any of your disks (from another Mac on the network) unless you first turn on sharing for each one.

- **Program Linking** and **Remote Access.** As we mentioned, Program Linking is useless. We'll get to Remote Access later in this chapter.

You don't have to enter a password, but it's a good security precaution. Unlike almost everything else on the Mac, the password is case sensitive. The passwords *Fish, FISH*, and *fish* are considered three different passwords.

The Guest icon

The *Guest* icon is the biggest security hole in the system. If you set up the Guest icon to permit access to your Mac, then *anyone on the network* can get access to your shared disks without having to know *any* legitimate user's name or password. Use with discretion unless (a) you're the only person who uses your network, or (b) you trust your friends.

Groups

Whenever more than one user needs access to a particular folder on your system, you can save time by creating a *group.* The group contains the names of all the users who belong to it — one for each project team or department, for example. Each user can be a member of more than one group. The great advantage of a group is that, in a single step, you can adjust the access levels for everybody who's part of it.

After you create icons for all the individual users, you create a group like this:

1. Open the Users & Groups control panel.

2. Choose New Group from the File menu (or, in Mac OS 8, click New Group). A new double-headed icon appears, called New Group. Simply start typing to rename the group.

3. To make a user part of this new group, drag the user's icon onto the group icon. It's almost like dropping a file into a folder, except that the user's icon both stays in the window *and* goes into the group.

To see what groups a user belongs to, double-click the User icon; in Mac OS 8 or later, then choose Sharing from the pop-up menu (see Figure 35-8).

To see which users belong to a group, double-click the group's icon. To remove a user from a group, drag the user's icon out of the Group window and into the Trash.
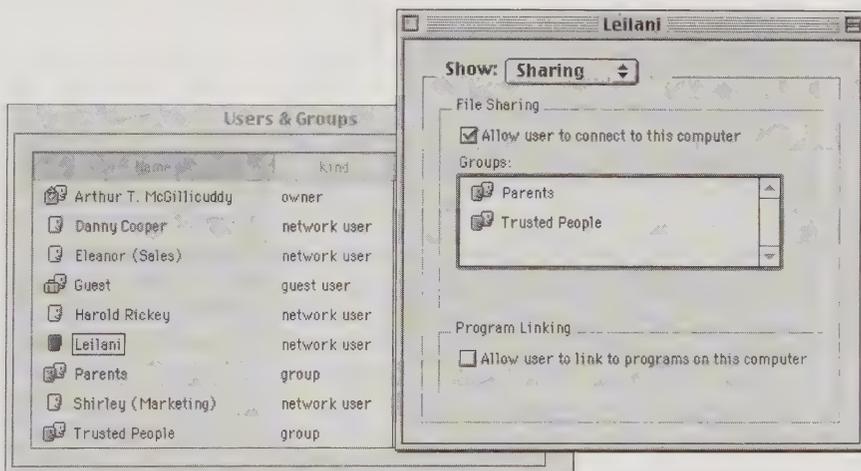
Figure 35-8: The user window on the right shows the groups to which Leilani belongs, Parents and Trusted People. Opening the Parents group icon shows Leilani as a member, as you would suspect.

Step 4: Sharing Specific Folders

Even after all of this setting up, no one but you, the Macintosh Owner, can access the files on your Mac! You have yet to designate which files and disks you want to make available to others. (You can't share individual *files* with others on the network, only folders and disks.)

For each disk or folder you want to share, you must perform the following steps:

1. Highlight the folder or disk icon you want to share with the network.

2. Choose File ⇨ Sharing. (If you haven't already turned on File Sharing in the File Sharing control panel, you'll be asked to do so now.)

3. In the dialog box that appears, specify *how much* access you want to provide to this file or folder. (See the next section.) Close the window. Click Save.

The Sharing window

Just deciding to share a folder isn't the end of your decision making. You can also specify what *degree* of access you want to grant. For example, you can say that it's OK for people to *look* at the contents of a folder, but not to change anything. Or, they can look and change things, but they can't throw anything away. (We'll be honest: This stuff may be tough reading. It's easier to grasp when you actually do it.)

The Sharing window appears when you highlight a disk or folder, and then choose Sharing from the File menu. (See Figure 35-9.)
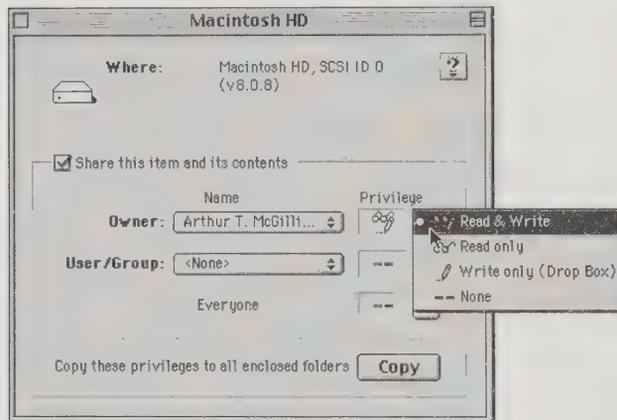
Figure 35-9: The hard drive's Sharing window.

The *privileges* — Read & Write, Read Only, and Write Only (Drop Box) — are the pop-up menu options at the right side of the dialog box, as shown in Figure 35-9. (Before Mac OS 8, these options are checkboxes called See Folders, See Files, and Make Changes.) The *clients* are listed in the pop-up menus. They have the names Owner, User/Group, and Everyone.

Already things get confusing. Ready for this? The *Owner* in this window has absolutely no relationship with the Owner of the *Mac!*

Here's the explanation. Even if it's your shared Mac, *other* people can create new folders on *your* hard drive. The person who creates a new folder on your Mac is, of course, the Owner of that folder. Other than you, he or she is the only one who can change the access privileges for that folder. He or she can also transfer ownership to somebody else, using this same Sharing window.

The *Owner* in this Sharing window, therefore, refers to the Owner of the individual folder or disk, not to the Owner of the Mac. (Nonetheless, if the

folder is on *your* Mac, then you still have full access to it, too.) Odd though it may seem, you can actually let somebody else on the network be the Owner of a *disk* attached to your Mac, too.

Why would you want other people to have their own folders on your hard drive? Well, suppose you're the editor of a newspaper. You may want each of the newspaper's departments — Editorial, Advertising, and so on — to be able to maintain its own folder on your central Mac.

Different degrees of access

After you open the Sharing window for a certain folder or disk, you can control how much access each network member has. You have options for each folder or disk. In this explanation, let's suppose that you choose a network member named Dad from the User/Group pop-up menu. You therefore specify how much access Dad has to a selected folder when he accesses your Mac from his.

- **Read & Write.** If this option is selected, Dad has full access to the folder. He can open and save changes to the files in it. (Called **Make Changes** before Mac OS 8.)

- **Read Only.** If this box is checked, Dad can see the file icons within this folder — but can't do anything to them. For example, he can open documents, copy stuff from them, and even edit the documents — but if he tries to *save* any changes, all kinds of bizarre error messages result. They range from "Out of memory" to "This document is read-only." (Called **See Files** before Mac OS 8.)

- **Write only (drop box).** If this option is checked, Dad can see your folder. (It shows up with the belted icon shown in Figure 35-10.) But he can't open it. He can drop other icons *into* it, however. This arrangement is ideal when, for example, several department heads are supposed to turn in reports to you (but you don't want them to read each *others'* reports). (Called **See Folders** before Mac OS 8.)

  Note, by the way, that you can't make a drop-box icon the *only* shared folder on a disk. Your networked coworkers can't even *see* a drop-box icon unless it's *inside* a folder that has more access privileges. Therefore, put your drop-box folder inside a hard drive or folder for which "Read Only" or "Read & Write" has been selected.

As shown in Figure 35-10, others on the network know, with a glance at a folder's icon, how you've set it up. In fact, even the opened *windows* for shared folders and disks have telltale visual cues to indicate their security status. If you have full Read & Write access to a window, the upper-left corner looks normal. If you have Read Only access, however (where you're not allowed to save changes to anything inside), you see the slashed pencil icon shown in Figure 35-10.

And what about the drop-box option? What icon do you see in the upper-left corner of *those* windows?

Trick question. If the drop box (Write Only) option is on, you create a completely locked folder. The user can't even *open* the folder icon, and, therefore, no window for it can ever appear!

Figure 35-10: A tale of icons. Top row: a normal Mac OS 8 folder; a folder that's being shared; a folder that's being shared *and* being accessed at the moment; and what somebody else's hard drive looks like when it's brought onto your screen. Bottom row: a folder that's *inside* a shared folder (the black tab lets you know that although you haven't explicitly turned on sharing for this folder, it's inside one for which you *did* turn on sharing); a drop-box folder; and the window-corner icon that tells you: No Changes Allowed!

Open for business

If you've followed this discussion, your Macintosh is now a full-fledged file server — even if there aren't actually any other Macs connected to it. (We'll cover how you *connect* to this Mac in a moment.)

A few additional thoughts about sharing the folders and disks of your Mac: First of all, you can use the Sharing command to set up different degrees of access for a maximum of ten folders and disks. Of course, that's really not much of a limitation, because any one folder or disk can contain hundreds of other folders that all switch on simultaneously.

Sharing Command Secrets ━━━━━━━━━━━━━━━━━━━━━━━━━━━━■

Who's Everyone?

When you set up your sharing levels for a certain folder or disk, you can set privileges for Everyone. Keep in mind that Everyone refers to guests *and* all other users you set up in your Users & Groups control panel. People often think Everyone means only guests and may inadvertently grant access.

Give the Everyone category the *least* access of any.

Turn RAM into speed

Speed Tip

As you can read in Chapter 9, the ultimate means of speeding up access to files is to copy them onto a *RAM disk*. Nowhere is this speedup more noticeable than in file sharing. Both you (the user of the shared Mac) and your coworkers (who log onto your Mac to share the files) will notice a dramatic acceleration of

opening, copying, and saving any files you've put onto a shared RAM disk. (See Chapters 9 and 21 for instructions on creating the RAM disk.)

A dangerous option

Strange But True

The check box in the Sharing window called "Make all currently enclosed folders like this one" can be a tad dangerous if you're not thinking. It immediately nukes the access-level settings for any folders *inside* the folder for which you select this box.

More than one Mac user has spent hours setting up explicit access privileges for some folders — and then wiped out all that work with one click! Use this option only if you mean to. It has no Undo button!

How to find out which inner folder is shared

If you try to turn on File Sharing for a disk or a folder, you may sometimes get the message shown in Figure 35-11.

"Macintosh HD" could not be shared, because there is a shared folder inside it.

OK
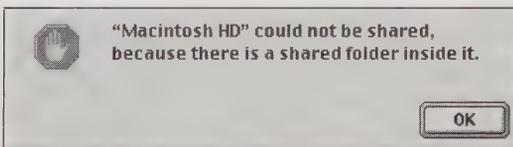
Figure 35-11: The frustrating message. Somewhere, some folder is being shared. But which one?

This message indicates that, at some point, you turned on sharing for some folder somewhere within your disk. This can be a royal pain if you don't remember *which* folder — perhaps buried deeply somewhere in your hard drive — is being shared.

Fortunately, there's a quick way to hunt down the offending item. Open the File Sharing control panel and click the Monitor tab. (On pre-Mac OS 8 systems, open the File Sharing Monitor control panel instead.) The list at left shows all your shared folders. Note the name, close the window, and find that folder. Turn off sharing for it. At last you can turn on sharing for the enclosing disk or folder.

Monitoring and ejecting network denizens

After you open your Mac for business, others on the network can begin to tromp through your files (to the extent you've let them, of course). It may reassure you to know that the Mac gives you an easy way to keep track of who's doing what on your disk.

The key to these features is the File Sharing control panel's Monitor tab (or, before Mac OS 8, the File Sharing Monitor control panel). See Figure 35-12.
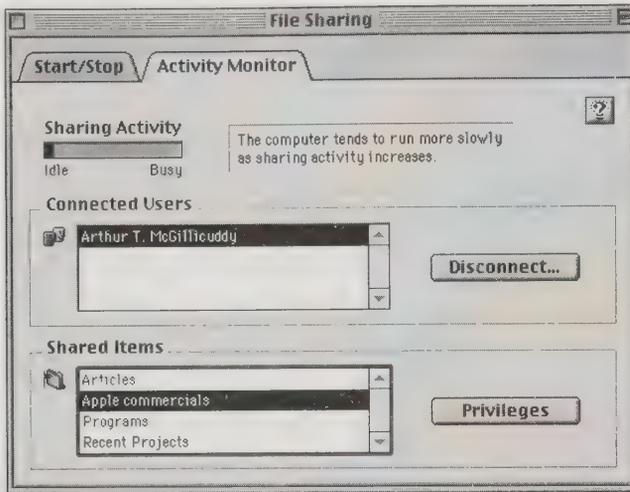
Figure 35-12: The File Sharing control panel's monitoring tab lets you keep track of what people are doing on your Mac.

At the top, you see a list of all the network Mac users who are connected to your Mac. In the list at the bottom, you see each folder or disk you are sharing. (Don't forget that all the items *inside* each folder or disk are also shared.)

If you decide to boot somebody out of your system, click that person's name (or Shift-click to select several) in the top list, and then click Disconnect. You're asked how much warning you want to give these people that they are to be disconnected — type 0 if you want them off *now* — and click OK.

This unceremonious network dump is only a temporary solution, however. After you disconnect someone, he or she can merrily log right back on to your Mac. (If you really want to keep somebody out, change the appropriate Users & Groups icon settings.)

Your FREE network chat software!

The File Sharing control panel described in the previous secret harbors an even more secret secret that lets you send America Online-like "instant messages" to anyone else on the network!

As free book winner Paul Schreiber discovered, all you have to do is open the File Sharing control panel and Option-click the name of anyone who's listed there (that is, anyone who's connected to your Mac). Up pops a never-before-seen window in which you can type a message to that person!

Step 5: Logging on to Other Macs

So far, we've exclusively discussed how to set up *your* Mac for *other* people to access. But you can only play host for so long; sooner or later, you'll want to be the visitor, working with files on other Macs on the network while seated at your own.

The table of contents for your network is, of all things, the Chooser (or, in Mac OS 8.5, the much nicer Network Browser described in Chapter 3). Most people think of the Chooser as a mechanism for selecting a *printer.* In fact, it's called the Chooser (and not, say, Printer Choice) because you also use it to select *other* kinds of external devices attached to the Mac: network modems, fax/modems, and electronic mail servers, for example — and, in this case, a file server.

Here are the steps for logging on to another Mac on the network:

1. Open the Chooser. Click the AppleShare icon. The names of other network Macs show up in the right side of the window, provided their owners are sharing them (see Figure 35-3). (If no Mac names show up here, see the Troubleshooting section at the end of the chapter.)

2. Double-click the name of the Mac whose contents you want to see. The name-and-password window appears, as shown way back in Figure 35-3.

   If the owner of the Mac permits access for guests, then the Guest button is available. Otherwise, Guest is dimmed, and you must type in your official name and password — as it's been *previously established* on the other Mac. If in doubt, chat with its owner, open up its Users & Groups control panel, and see that you're represented there by an icon whose name and password are what you want.

   The password is case sensitive; enter it here exactly as it originally was set up. If (in the Users & Groups control panel on the other Mac) your User icon was set up so that you're allowed to change your password, you also at this point can click the Set Password button to change your password.

3. Click OK. Yet another window appears (at right in Figure 35-3), showing all the shared folders or disks on the Mac you selected.

4. Click the name of the folder or disk that you want to open. Shift-click to select more than one, or type the first letters of its name to scroll directly to it.

   If you plan to log onto this folder or disk every day, you can save yourself all the trouble of these first five steps if you click the check box to the right of a volume's name. The Mac automatically brings that folder or disk's icon onto your Mac's desktop the next time you restart your Mac (if the other Mac is turned on).

5. Click OK.

At last, you've broken through. The icons for the folders or disks you've selected now appear on *your* Desktop exactly as though they were disks attached to the Mac. A network-accessed volume always looks like the one in the upper right of Figure 35-10, regardless of whether it's a disk or a folder, and no matter what its *actual* icon looks like (on its home-base Mac).

If something didn't work right, march over to the owner of the Mac you're trying to work with. Check the Sharing menu item for the folder or disk in question. Consult the Users & Groups control panel. Make sure you have the correct privileges for the folder or disk you're trying to work with.

File-sharing Secrets

Log-on shortcuts

When you visit the Chooser to log on to another Mac, you can use a few clever shortcuts to reduce the whole affair to a few keystrokes.

Speed Tip

For example, instead of clicking the AppleShare icon in the Chooser, you can just type the letter A to select the icon. Now press Tab to activate the File Server window — the list of Macs on the network. (Actually, if you're in a big corporation, pressing Tab now activates the *Zones* pane, which appears at the lower left of the Chooser window. Zones are like sub-networks; type the first couple of letters to select the one you want, and then press Tab again to highlight the list of individual Macs.)

Type the first letter (or letters) of the name of the file server you want. Press Return to open the next dialog box, in which you type your password or log on as a Guest.

If you want to log on as a Guest, just press ⌘-G. If the Guest radio button is selected and you want to log on as a Registered user, press ⌘-R to activate the Registered User option. Then type your password and press Return.

Password secrets

Mac file-sharing passwords can be a maximum of eight characters long. Capitalization counts.

If security matters to you, don't use a password that anyone can guess (like your name or spouse's name). A good trick is to substitute the number 1 for the letter L (or I) and the number 0 for letter O in an ordinary word — B1NG0 instead of BINGO, for example. This trick foils hackers who have programs that try every word in the dictionary until they break your password.

When No One's Home: Remote Access

Apple Remote Access (ARA) is a program from Apple that lets a modem-equipped Macintosh connect to an AppleTalk network *over the phone.* Using the Mac's file-sharing feature, you can copy or read files on the home-base Macs. You can even *print* things — from your PowerBook in Tulsa, you can print on the LaserWriters in Toledo.

The Mac doing the dialing has every bit as much access to the network as any Mac that's actually in the office. You can check e-mail or retrieve data from a database. All you need is a fast modem on each end of the line.

ARA comes free with every Mac — well, half of it does; you generally get the part that does the dialing, called ARA *Client.* You still have to purchase the ARA *server* software, the part that can *receive* calls. In any case, you might, for example, install the ARA Client on your PowerBook and the host portion on your host Mac.

Remote Access Secrets ──────────────────■

Disconnect the local network

When you're using ARA on a networked Mac to dial in to a distant network, you wind up connected to two networks at once — the one where you are, and the one you're dialing into. From your view in the Chooser, your Mac is connected to both networks at once.

You can, if you want, disconnect from the local network and see only the remote network. You may need to do this, for example, if you run into a *network number conflict* (when a device on the remote network has the same number as one on the local network). More commonly, you may want to disconnect from the local network so that you can use your printer port for a *printer* (like a StyleWriter) instead of being hooked up to the local network.

To disconnect from the local network, open the AppleTalk control panel (called Network on older Macs). Choose Remote Only. Now, in effect, you've got AppleTalk turned *on* for your dial-up modem connection, but *off* for your actual printer port.

Switch on your Mac automatically

Unless you relish high electric bills, you probably don't want to leave your home Mac on, awaiting calls from your PowerBook, during your entire six-week trip to the Alaskan tundra. Fortunately, it's easy to turn on the home Mac from wherever you are and shut it off when you're finished remote accessing — if you're willing to spend $50.

The device is called a PowerKey Remote (from Sophisticated Circuits, 800-827-4669), a one-inch, inconspicuous gadget that goes between your Mac and the modem. When a call comes in, it turns on your Mac, and you're in business. It comes with a software control panel that automatically shuts down the Mac a few minutes after you hang up.

If you have a Mac model that can't be turned on with the keyboard power button, you also need the regular $119 PowerKey (a surge-protected multi-outlet box that lets you turn on the Mac from the keyboard). Actually, even owners of Macs that can be turned on with the keyboard should consider the PowerKey; it lets you power up not just the Mac but any attached hard drives, Zip drives, CD-ROMs, and other peripherals with the same phone call.

Expanding the Net

In the really big companies, people want to connect more than 10 or 20 Macs; they want to join several LANs together — or to break one increasingly unwieldy network into several smaller ones. This is where *bridges* and *routers* come in. These gadgets connect two or more LANs together. The resulting jumbo-network is sometimes called an *intranet.*

After they're connected by these devices, the networks are said to be in *zones.* (If they're present in your company, you'll see a list of zones at the lower-left of your Chooser when you click the AppleShare icon.) Network traffic generated by somebody on one floor isn't passed through the router to any other floor unless it's *supposed* to (for example, if you send e-mail to somebody on a different floor). And even then, only the floor with the destination device experiences network traffic; the other floors' routers and bridges ignore the signal.

Routers are smart little devices. First, they can join networks of different types: an Ethernet system on one floor, LocalTalk on another, and so on. Second, routers send data along the best-available wiring routes, based on traffic levels, availability, and the general status of wide-area connections.

When connected by a router, separate networks remain independent, but you can still easily access any device anywhere on any of the networks (see Figure 35-13).

Like routers, *bridges* connect networks — but only networks of the same type (LocalTalk to LocalTalk, Ethernet to Ethernet, and so on). A bridge's primary job is to monitor the network traffic on either side and pass only data intended for the other side. The benefit of a bridge is that network traffic isn't passed on to the opposite side of the bridge unless its destination device actually resides there.
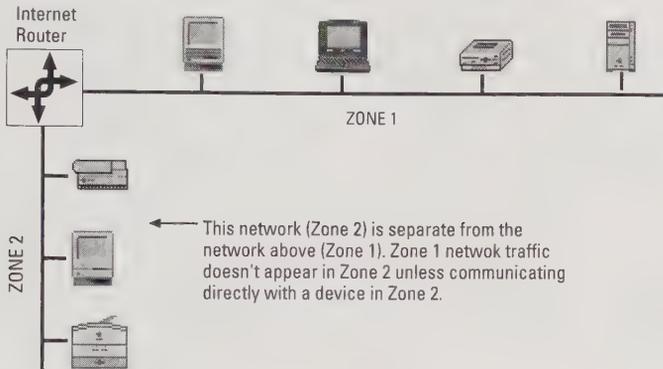
Figure 35-13: The PowerBook in Zone 1 does not affect network traffic in Zone 2 when it communicates with the Power Mac in the same zone as itself. However, when the PowerBook prints, its AppleTalk printing traffic passes through the AppleTalk Internet Router to the LaserWriter in the lower zone.

General Networking Secrets

Reducing traffic on the network

Of all the types of network traffic, printing is one of the most common.

If your network has more than one zone, put a LaserWriter (or other network printer) in each zone where printing is heavy. As a result, the printer traffic in one zone doesn't affect AppleTalk traffic in any other zone. The result: lower overall traffic and a faster, more efficient network.

Installing system software over a network

In the beginning chapters of this book, we mentioned that Apple's system software Installer doesn't work over a network.

Depending on your point of view, we lied. See Chapter 5 for our trick that, in essence, lets you use the standard Apple Installer to install a System Folder onto another Mac over the network.

What Else a Network is Good For

Now you have a bunch of equipment wired together. In this section, we'll show you what you can *do* on a network: file sharing, print serving, sending

messages to friends and coworkers at other Macs, and teaching your applications to communicate with one another.

File servers

Next to sharing printers, the most common advantage that a network offers is the accessibility of *file servers.* A file server acts as a remote hard drive for network users. Sitting at their Macs, several people can open files from that server at once. A server's icon appears on each user's Desktop just like an ordinary disk. If you've read this far in the chapter, you already know what Apple calls its built-in file-server software: *file sharing.*

Print servers

Print servers are another kind of network service. We mentioned print spoolers (such as PrintMonitor) in Chapter 30. A print server is little more than a print spooler that does spooling for more than one user, and the files are stored on a networked computer instead of in your own Mac's PrintMonitor Documents folder.

One of the primary differences between a local print spooler and a network print server is that the server can accept and control print jobs for multiple printers. This difference can be a very real time-saver for print-happy users in a large office.

E-mail

Electronic mail is one of the most ingenious and practical uses of a network. You open a desk accessory or application, click the name of somebody in your office, type a message, and click Send — and your message (or maybe just a notice) pops up on the recipient's screen. If that person's away from the desk or busy, the e-mail waits patiently until he or she returns, even if the Mac isn't turned on!

E-mail beats voice mail for several reasons. You can ignore it. It forces people to get to the point. It can be printed and saved forever. It can be sent to a group of people simultaneously. It can be forwarded to somebody else. It can include a Macintosh document or a voice recording. You can request a *receipt* e-mail back, so you can make sure that your e-mail reached its destination. You can check to see whether or not someone has read your e-mail.

The best known e-mail programs are Lotus cc:Mail, Quarterdeck (formerly Microsoft) Mail, CE Software's Quick Mail, and FirstClass (from SoftArc). They're remarkably similar — and indispensable in any office. And more and more offices are now using Apple Internet Mail Server (sometimes called MailShare) as a free solution, running Claris Emailer or Eudora as *clients* (the receivers of information sent by a server).

Net modems

For people using Macs in offices, a modem and a dedicated phone line for it aren't exactly standard employee perks. Even with just ten people in the office, installing modem phone lines for everybody would cost over $500, plus $1,200 for no-frills 56K modems. Then, just maintaining standard service on the phone lines would incur monthly charges of at least another $400 or $500 — plus long-distance charges.

Enter the *net modem*. Hook one of these to its own phone line, and you and your coworkers can dial up your favorite bulletin boards, online services, or connect to an Internet service provider with ease, without installing phone lines and modems on every computer.

A net modem requires only a single phone line, yet it can be shared over a LocalTalk or Ethernet network, exactly like a laser printer. The network administrator can even grant access privileges to each user on the network, allowing password-protected access to the modem through the Chooser. A net modem can be shared not only as a dial-out modem among everyone *in* the office, but can also be used by people *outside* the office to dial into the office network (using Apple Remote Access, described earlier in the chapter).

Net modems are more expensive than standard modems, but the fact that they can be shared makes them cost-effective for larger offices. A Global Village OneWorld network modem, for example, costs just under $1,000, connects to a single phone line, and provides modem services for an entire office connected via Ethernet.

The only real drawback of a net modem is that only one person on the network can use it at a time.

Fax servers

Fax servers are based on the same concept as net modems, allowing an entire network of users to share a single phone line and modem. The fax server lets a group of network users send and receive faxes, right from their own computers, through a single fax modem attached to one Mac on the network — the *fax server* Mac. The fax server receives job requests from the network, lines them up in a queue, and then attends to the task of imaging fax pages, dialing the modem, and transmitting the data, one fax at a time.

In most cases, sending a fax on a network equipped with a fax server is as simple as printing the document to a LaserWriter or StyleWriter. You simply target the fax server as your printing device instead of your regular printer. (Most fax software lets you switch from your standard printer driver to the fax server driver with a single keystroke, bypassing the Chooser.) You add the name and phone number of the destination fax machine on your screen, click Send, and you're finished — the fax server does the rest. Because the fax server handles the job of imaging the fax pages and connecting to a remote fax machine, your Mac is freed for you to continue working right away.

As with net modems, the drawback with a fax server is that you're still stuck with a single phone line that must be shared by multiple users; the systems can send no more than one fax at a time. However, with a fax server, faxes are automatically sent in the order they are received, so you don't have to wait to send a fax. All you have to do is zap the job to the fax server and forget about it. Eventually, the fax server will send a message back to your Mac, telling you whether or not the fax was successfully sent.

Fax server packages are expensive, but they're cheaper and much more stable than they used to be. A package that includes a standard fax modem along with software for up to 50 users costs about $1,500. And as with normal fax modems, the recipients of your faxes are generally astounded at the crisp print quality: because the faxes began life on your Mac (instead of being scanned in by a cheap, crummy fax machine scanner), they don't have the crumbly-edged look of traditional faxes.

Program linking

If you've tried the Mac's built-in File Sharing networking features (described earlier in this chapter), you may have encountered a strange, mostly undocumented item in the File Sharing (or Sharing Setup) control panel called *program linking*.

Program linking is a system of letting one Mac program control another Mac program, even if they're not on the same Mac (across a network, for example). For example, using a shareware utility called Remote Shutdown, you can restart or shut down any Mac on the network without leaving the comfort of your own Mac.

When System 7 was first released, Apple evangelized the power of program linking to developers. One day, companies were told, there'd be no such thing as a 13MB word processor such as Microsoft Word — each company would sell tiny, efficient modules, each dedicated to one small task, all working together via program linking. (This vision was part of Apple's so-called OpenDoc technology, a now-abandoned system of interlinking different applications.)

To date, though, not very many programs use program linking for more than simple remote-control functions, such as the Remote Shutdown example we mentioned.

PowerTalk, R.I.P.

The concept of PowerTalk, included with "System 7 Pro" through 7.6, is brilliant. Imagine that you have a folder full of icons on your Desktop, each representing a person you deal with. One may live in a straw hut in Pakistan, reachable only via the Internet. Another may be in the Marketing department three floors below you.

Now, suppose that you want to send a file to one of them. You polish up your design in, say, Photoshop, and then you drop the file's icon on top of the Pakistani's icon. The Mac takes it from there, automatically dialing into the Internet, entering all the necessary password information, correctly addressing and sending your file electronically, and hanging up — without any further help from you.

Furthermore, suppose that you have an In Box icon on your Desktop. You can double-click it to see, represented as an icon, *all* your incoming stuff: faxes, e-mail, and so on. And imagine having to remember only *one* password for all your various online services and e-mail accounts.

That was the promise of PowerTalk: to reduce to invisibility the complexities of networking, online services, e-mail, and so on.

Unfortunately, the actual PowerTalk rat's nest of extensions and control panels was so complex, users thought they were in a Monty Python skit. The instructions were so full of meaningless double-talk that you began to wonder if PowerTalk might have been designed by, say, Microsoft. As a result, it never caught on, and Apple eventually discontinued it.

Open Transport Arrives

Open Transport, introduced with the PCI-slot Power Macintosh models and now available for any Mac (except 68000 and 68020-based models), is a dramatic behind-the-scenes rewrite of the Mac's networking software. Its primary purpose, according to Apple, is to make *multiprotocol* networking easy — that is, connections to various kinds of computers (Macs, PCs, and so on), different networking languages (X-OTI, UNIX STREAM, DLPI), different networking "environments" (serial, dial-up network, LAN, WAN), and different "protocols" (AppleTalk, TCP/IP, serial, and so on).

If that all sounds like a lot of geek talk, you're right. The average person, though, still has reason to get excited about Open Transport. It offers plenty of advantages:

■ Open Transport offers the ability to switch among different networking systems without restarting the Mac or quitting any programs. For example, you can change (on a PowerBook, for example) how you're connecting to the Internet — with PPP or with Ethernet — without restarting the Mac. Such switching is also great if you need to switch among Internet service providers, each with its own configuration; among different cities, each with its own Internet local phone number; or even between an AOL Link and an Internet account (you know who you are).

To switch among Internet setups, all you have to do is open the TCP/IP control panel; choose Configurations from the File menu; and choose a setup (see Figure 35-14). See Chapter 25 for details on using Open Transport for Internet connections.
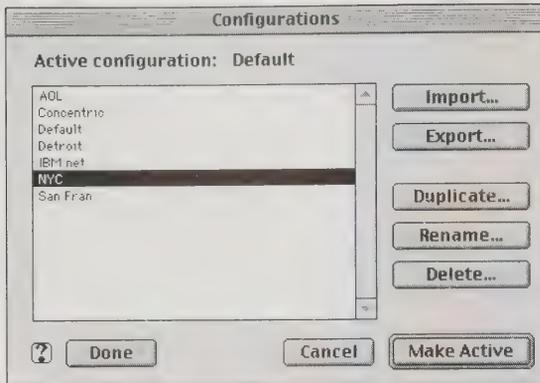
Figure 35-14: Switching from one Internet connection type to another is as easy as choosing in Open Transport's TCP/IP control panel.

■ One of Open Transport's biggest pluses is for people who manage network servers — a Web site, for example — where multiple simultaneous connections are common. MacTCP (Open Transport's predecessor) was limited to about 50 simultaneous connections, and bogged down quickly.

Furthermore, Open Transport 1.1 or later gives overall network and Internet connections a speed boost and better stability.

■ Open Transport means that programmers can more easily write programs that work with all those various networking protocols.

■ Open Transport is written in PowerPC native code, whereas the older MacTCP wasn't.

Millions of people are merrily using the networking and Internet features we've described in this book, utterly unaware that they're using Open Transport. All you actually see of Open Transport is a set of four gracefully designed control panels: AppleTalk (replaces the Network control panel), Modem, PPP (called Remote Access in Mac OS 8.5), and TCP/IP (replaces the MacTCP control panel). (Unless, of course, you stumble across the nine Open Transport *shared libraries* in the Extensions folder!)

For more detail on Open Transport, read about those four control panels in Chapter 4. Also read Chapter 25, where we walk you through setting them up for an Internet account. Beyond that information, we leave you to your network designer — and Apple, whose explanation of Open Transport is filled with writing such as this:

"Manual configuration of static AppleTalk addresses supports Mac OS products that utilize WAN datalinks where non-full-mesh topologies are important. This includes datalinks such as Frame Relay, SMDS, and ATM."

ANSWER MAN

The dang "port is in use!"

Q: I'm trying to print on my StyleWriter, but the stupid Mac keeps saying that the "port is in use — make AppleTalk inactive." But when I try to make AppleTalk inactive in the Chooser or even the Control Strip, I get the same message! What gives?

A: Steady there, pal. It's all part of the great plan.

It turns out that when Apple wrote its Open Transport software, it had to make a lot of different parts of the system software aware of the new (Open Transport) ways of doing things. But Apple forgot to notify two key components about the changes: the Chooser and the Control Strip!

Therefore, if you turn AppleTalk off using either of those two doodads, the "classic AppleTalk" circuitry *is* turned off, but not Open Transport's version of AppleTalk. When you then try to use

your printer port for a non-AppleTalk gadget such as a printer or digital camera, you get one of those delightful messages: "Printer port is in use by another application," or "Cannot find printer," or "StyleWriter requires that AppleTalk is inactive. Please make AppleTalk inactive."

Whether you understand any of that or not, the solution is simple.

Start by opening the AppleTalk control panel. Choose Edit ⇨ User Mode. Click Advanced and click OK.

Now click Options, Inactive, and then OK; close and save the window. Now, by golly, AppleTalk is *really,* really off.

If this problem is chronic, and you've got Mac OS 8.1 or later, consider setting up your Location Manager (see Chapter 4) to switch AppleTalk on and off. It's a fully modern module that turns AppleTalk *completely* on and off.

Network Troubleshooting

Things go wrong on networks all the time. You may try to print something and be told that "The LaserWriter 'Accounting' cannot be found." As in any system with as many fragile and interdependent components, chinks can develop in hundreds of hard-to-get-at spots.

Try not to think of your network as a mass of wires and computers. Think of the network as systems and subsystems. When a problem is befuddling you, try replacing subsystems — one complete Mac with all its wiring, for example — rather than components. You'll find the trouble far more quickly.

AppleTalk troubles

Even with a network as easy to use as AppleTalk, problems can still be tricky (especially as networks grow larger). AppleTalk problems usually have one of the following three components.

TRUE FACT

The disappearing control panels — magically delicious!

On the Power Mac 6100, 7100, and 8100, a special treat awaits: a little program called Network Selector. Since non-PCI Power Macs are capable of running *either* "Classic AppleTalk" networking or Open Transport, this little program lets you switch between them. (More recent Macs, those with PCI slots inside, can't run classic AppleTalk; they're Open Transport all the way.)

As we've mentioned, non-PCI Power Macs can run either "Classic AppleTalk" networking or Open Transport. Apple programmers faced, therefore, a conundrum: AppleTalk networks require the **MacTCP** control panel for Internet connections, but Open Transport requires the **TCP/IP** control panel — and yet, the two control panels are mutually incompatible. What's a programmer to do?

Here's how they solved this little user-interface problem: When you use the Network Selector program to switch to Open Transport networking, the Mac automatically makes the TCP/IP control panel *invisible!* That's right — it completely disappears from the visible surface of your hard drive. And when you switch back to AppleTalk, the Mac re-visifies the TCP/IP control panel and makes the *MacTCP* control panel invisible.

Talk about protecting us from ourselves!

Broken or loose connections

Check the network connections. Every connector should be solidly plugged in. If your network includes a networkable printer (such as a laser printer), a simple way to isolate the problem is to open the Chooser on each Macintosh. If the networked printer shows up in the Chooser, the connection between that Macintosh and the printer is good. By making this test on Macs that are successively farther away from the printer, you can discover where the connection is broken and isolate the problem.

In our experience, especially in LocalTalk networks, a telephone cable that works perfectly well as a telephone cable may not work as a network cable. If your LocalTalk network isn't working, replacing the phone wires should be one of your first thoughts.

Circular wiring

Diagramming the network is a good idea, even before you have problems, but it's also an excellent way of discovering circular or other improper connections. AppleTalk is a *bus topology* network: The network should have two (and only two) end points, each terminated, and no circular connections.

Other common problems and solutions

We can't cover every possible cause for network failures. But the following common problems and solutions may aid you in becoming a network-savvy person. If you have access to CompuServe, America Online, or Apple's Web

pages (see the Introduction), you'll find hundreds of useful articles on networking and troubleshooting in Apple's Tech Info Library.

Missing device problems

Symptom:

- Can't access file server, printer, another zone on the network, or another network.

Possible causes:

- Break in connector; damaged pins on connector box; damaged cables.
- Device turned off.
- System software versions not consistent across the network.
- Wrong networking method is selected in the AppleTalk control panel (for example, you're using Ethernet, but LocalTalk is selected).
- Incorrect or missing software printer driver, or other device drivers.

Ghosting problems

Symptom:

- Network device appears and disappears in the Chooser.

Possible causes:

- Loose connector; damaged cable or extenders.
- Improper termination.
- The cables are too long (check the user manual).
- You've got too many devices on the network.
- Electromagnetic interference from a large appliance.
- Network not designed properly.

Speed degradation

Symptoms:

- Slow printing, slow file transfer (that is, even slower than usual).
- Network appears to be dead.

Possible causes:

- You have too many devices, or too much traffic, on the network.
- System software versions not consistent across the network.
- Viruses.
- Someone on the network has turned on the Calculate Folder Sizes option in the Views control panel on a pre-Mac OS 8 Macintosh. When a Mac

with this option switched on mounts a remote volume, the host Mac must crawl through the necessary calculations and slow down the network substantially.

File Sharing problems

Symptom:

■ File Sharing won't start. You're told it "could not be enabled," or the "File Sharing is starting up" message stays on-screen indefinitely.

Possible causes:

■ Some of the required extensions (such as File Sharing Extension, File Sharing Library, or the nine Open Transport shared libraries) or control panels (such as AppleTalk or File Sharing) aren't loaded.

■ Damaged PRAM (parameter RAM) settings (see Chapter 35).

■ Damaged Users & Groups Data File, AppleShare PDS file (invisible), or other file-sharing or system software.

Mac OS 8.5: The Network Browser

For over a decade, Mac fans have signed onto other hard drives on the network by opening the Chooser, clicking the AppleShare icon, and selecting a Mac from the list that appeared. 1998 brought the end of that less-than-intuitive scheme. With the debut of Mac OS 8.5, the *Network Browser* application simplifies that circuitous route to the Macs on your network. (See "Network Browser" in Chapter 3 for an illustration.)

What you see in the Network Browser looks exactly like a Finder window — except that instead of seeing *folders* denoted by "flippy triangles," you see network *zones*. Click a flippy triangle to view the individual Macs available within each of those zones, and double-click a Mac to bring its icon onto your screen (after entering the password, of course).

What makes the Network Browser handy isn't just its logical, map-like layout. The Servers, Favorites, and Servers pop-up buttons are also available in the upper-right corner of the window (see Chapter 15). These buttons make it easy to summon a frequently used server back *onto* your screen. (You can drag-and-drop server icons onto the Favorites pop-up button, too.)

Otherwise, the features of this special application are essentially like those of the new Open and Save dialog boxes that debuted with Mac OS 8.5; see Chapter 15 for a complete tour.

Chapter 36

Troubleshooting

Principles of Troubleshooting

The Macintosh has an infinite number of cooks. There are the programmers at Apple who wrote the system software. There are the programmers who wrote the software you use, including the extensions and control panels that *modify* the system software. And then there's the hardware, complete with a number of additional software elements (in the ROM chips, for example), both from Apple and other companies.

With so many instructions being shouted at it, no wonder the Mac can get flustered and throw up its hands in frustration. The problems you may encounter vary:

■ Mysterious system crashes or freezes

■ Error messages

■ Startup problems (the blinking question-mark icon or the Sad Mac icon)

■ Application problems, when the Mac simply doesn't do what it's supposed to

■ Printing troubles

■ Disk problems (their icons don't show up on the desktop or the Mac reports that they're "not a Macintosh disk")

A word about troubleshooting

There's a certain emotional element to a Mac going wrong. The Mac, after all, is betraying you, usually at a moment when you can least afford it. We don't know about you, but when *our* Macs go goofy, we feel a rising well of frustration and loss of control. Our heart rate doesn't go back to normal until some semblance of normal operation has returned.

Therefore, our troubleshooting advice for you is to *establish control first*, even if it means that you have to strip down your system. Once you know the machine is working properly, you can restore your software and hardware add-ons, one at a time, until you discover which element is causing the problem.

Strange But True

It's important to understand that in many cases, you *never find out* what caused the problem. You may rearrange the SCSI devices attached to your Mac and find the problem gone. You may change the order in which your extensions load and find that you have no more mysterious crashes. Or, you may reinstall your system software and clear up some odd behavior you'd noticed. In all of these examples, you'll never know *why* you had a problem. You'll have isolated only the general area of the problem.

Still, you'll be just as happy that the problem is gone.

More troubleshooting

Before you become alarmed at the relative thinness of this chapter, please be advised that you'll find substantial troubleshooting chunks at the end of some chapters. Separate troubleshooting sections appear for fonts (Chapter 29); printing problems (Chapter 30); SCSI (Chapter 33); and networking (Chapter 35).

In this chapter, we hope to give you some Mac-guru wisdom on the general concept of troubleshooting, as well as mention a number of miscellaneous, mysterious, very common Mac problems and how to solve them.

The *Secrets* Rule of Three

Wouldn't it feel good to know a three-step procedure *guaranteed* to wipe out any mysterious software problems? There is such a trick. Our sure-fire solution is grounded on a simple idea: Your Mac worked when it left Apple's factory. (Some of our friends chuckle at this statement. Still, we have to start somewhere.)

Therefore, our troubleshooting concept is simple: To hunt down the problem, you restore the Mac to the way it was when you bought it. It's a three-step process.

Except in cases when something's genuinely wrong with your Mac (that is, it requires a service call), this three-step process is nearly infallible.

Step 1: Start up with the Shift key

The first things you should suspect when you're having strange system problems are the extensions and control panels you installed. These, after all, didn't come from Apple.

Mac Basics

This is an easy step. Restart the Mac. As it's starting up, press the Shift key. You can release the key as soon as you see the "Extensions off" message.

This simple step, we've found, promptly cures more than half of the mysterious system errors that plague a typical Mac. Of course, all you've achieved so far is to temporarily eliminate the problem — an extremely useful accomplishment if you don't have time to fiddle around with hours of troubleshooting steps.

CD

You still have to figure out *which* extension was causing the problem, though. And the most efficient way to do that is to use Conflict Catcher, or even the demo version thereof, which is included on the CD-ROM with this book. See the appendix for instructions.

(And if the purpose of your turning extensions off is to permit a safe, clean installation of new system software, as described next, you don't have to worry that the Shift key will turn off the very extensions needed to run your CD-ROM drive. On all recent Macs, the system software CD-ROM itself contains the extensions that allow it to mount and start your Mac. Clever, huh?)

Step 2: A clean reinstall of the System

System software, like politicians and fresh fruit, may go bad over time. Fortunately, you have an infinite supply of healthy replacement copies (your system disks or system CD-ROM).

However, as we mentioned in Chapter 5, there's more to fixing your System Folder than simply running the Installer. The Installer program, as a convenience to you, is designed to replace *only* those components of the System Folder that need updating. If your System file is already corrupted, it stays corrupted. If you have a damaged font suitcase, it remains damaged. And so on.

Mac Basics

The only way to guarantee a virgin System Folder is to perform a *clean install*. The method for doing so becomes easier with each successive release of the Mac OS.

■ **Mac OS 8 and 8.1** — Start up from your system software CD, if possible. Run the Installer. Click Continue on the welcome screen.

Now turn on the checkbox called "Perform Clean Installation" (see Figure 36-1), and then install normally.

The installer automatically checks your hard drive before proceeding, and then gives you a *duplicate,* fresh System folder. Your old, messed-up one is deactivated and automatically renamed Previous System Folder.
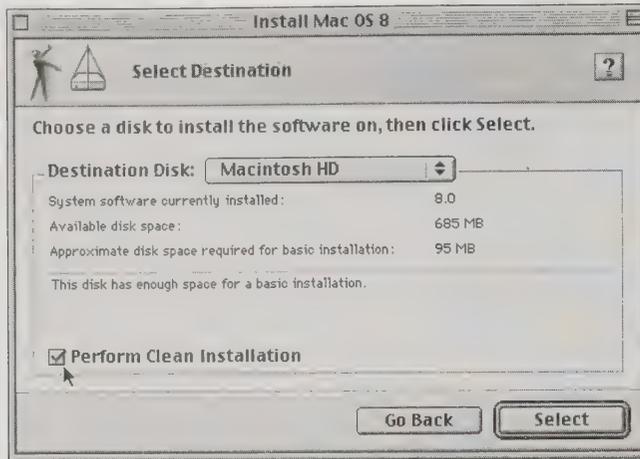
Figure 36-1: In Mac OS 8 and 8.1, the Clean Installation option stares you right in the face.

- **System 7.6 or 7.6.1 and Mac OS 8.5** — Insert your system CD. Double-click the Installer icon. After you've clicked the Start button on the Software Installations screen, click the Options button on the regular Installer screen. You'll be offered the "Create additional System folder (clean install)" option — that's the one you want.

- **System 7.5-point-something** — Insert your system CD (or the first Installer disk). Double-click the Installer icon. Click Continue. At the main installation screen — where you'd normally click the Install button — press ⌘-Shift-K. You'll be asked which you want: a *brand-new System Folder,* or just an updated *existing* System Folder. You want the whole new one. Click your choice, click OK, click Install, and then follow the directions.

- **Earlier System versions, Performas** — Before doing the clean install, you should check the hard drive for corruption. (Later installer versions do this automatically in the process of installing the new System folder.)

To do so, start up your Mac from the Disk Tools disk that came with the Mac or the system CD-ROM, if you have one. Run the program on it called Disk First Aid. (Your version of Disk First Aid can't repair any problems it finds on the disk it's *on* — nor on the startup disk — which is why you have to start up your Mac from the Disk Tools disk. Of course, if you have an external drive of some kind, such as a Jaz, Zip, or SyQuest cartridge, you can start up from that disk and run Disk First Aid off of *it.*) Disk First Aid may well discover — and fix — problems with your hard drive that have been responsible for whatever glitches you've been having.

Now you can proceed with installing a new System Folder. Open your System Folder. The purpose here is to *separate* the Finder and the System *suitcase* icon. Drag the Finder out onto the desktop, for example.

Close the System Folder window, press Return, and *rename* the System Folder. (Call it "Old System," for example.) The point of these two steps is

to make the Installer think that there's *no* System Folder on your hard drive. Thwarted from simply building a new System Folder around your old one, the Installer will build a completely new System Folder.

Now run the System Software Installer from your Apple CD-ROM (or your Install 1/Install Me First floppy) in the usual way. If you have a recent Performa, this means running your Restore System Software program (on the Performa CD-ROM). If you have a very old Performa, run the Apple Restore program.

Customizing your fresh System Folder

The new System Folder won't have any of the extensions, fonts, control panels, Apple menu items, and sounds you may have added to your original System Folder. Nor will it have any Apple system-update files (such as System 7.5 Updates). And it won't have any Preference files your software has created over the years. Re-creating all of them — your settings, passwords, toolbar configurations, and so on — could take hours. That's why your old System Folder remains with its new name ("Previous System Folder," for example).

After you've confirmed that the clean reinstall successfully restored your Mac to health, you can put those add-on components back into the new System Folder. Yet you don't want to reinstate whatever problem you were having to begin with.

Where possible, therefore — *especially* in the case of fonts — re-install this stuff from original master disks, not from your problematic previous System Folder. Preferences files are tricky; you can usually get away with dragging them out of your old System Folder's Preferences folder into the new one, but remember that corrupted Preference files are a leading cause of Mac glitches within particular programs. If you can limit your Preferences file-dragging to the programs you've spent the most time customizing (such as your Microsoft, Web browser, and QuicKeys files), you may spare yourself yet another round of troubleshooting.

ANSWER MAN

Hey! I don't have system disks!

Q: Hey! I can't follow any of your "clean install" instructions because I have a PowerBook (or a Performa) that didn't come with system disks. And no, I don't have a CD-ROM drive for it.

A: Tsk, tsk — you were supposed to have made a set of backup disks when you bought the computer. Apple even gave you a Floppy Disk Maker program on the hard drive to make this process easier for you.

If you can't borrow a set from a friend or download a set from Apple's Web site (versions through 7.1 are available), you'll have to buy a set of system disks by calling 800-SOS-APPL.

Some gurus recommend putting only a few add-on items at a time into the new System Folder, restarting each time, so that you locate the problematic component immediately after installing it. In practice, we rarely have the patience for this procedure — and rarely run into problems dumping all important items at once into the new System folder.

Speed Tip

P.S. — If you *really* want to save time, use Conflict Catcher 8. Its System Merge feature automates the process of copying all your customized goodies from your old, defunct System folder into your new, clean one.

The glory of a clean reinstall

In any case, reinstalling a System Folder can work wonders on a sick Mac. Over and over and over again, we've solved the *weirdest* problems using this technique, both on our own Macs and our friends' Macs. We've often had clients considering us geniuses after a clean reinstall, especially when we've helped them do so over the phone — "That did it! My problem's gone! You're amazing! How the hell did you fix it?!"

Many problems solved by a clean reinstall sound like they have *nothing* to do with system software: a SCSI drive that's not working; font problems; printing troubles. A clean reinstall solves it all.

In fact, if it weren't that running the Installer entails 45 minutes of inserting disks and copying add-on components from the old System Folder, we'd suggest doing a clean reinstall *first* when you start getting system troubles.

MACINTOSH SECRET

Never do another clean reinstall

If you've ever done a clean system reinstall, as directed in this chapter, we know one thing for sure: You'd much rather not have to endure that entire ordeal again the next time troubles arise. Fortunately, we have two tricks to make your future life easier.

First of all, the minute you're finished performing a clean reinstall, *back up the new System Folder!* Drag the entire fresh folder onto a Zip, Jaz, or SyQuest disk. Better yet, make a disk image of your freshly installed System folder using ShrinkWrap (see Chapter 22). Next time you're tempted to perform a clean reinstall, you'll have this fresh, wholesome System Folder ready to use (after first renaming and disabling your old System Folder, of course).

Our second suggestion: For goodness' sake, *apply a colored label to the contents of your Control Panels, Extensions, Preferences, Fonts, and Apple Menu Items folders.* As we mentioned in Chapter 2, there's a wonderful reason to apply a label from your Labels menu to everything in a fresh System Folder in this way: later, when you examine the contents of these folders, you'll see at a glance which items you or your software have added to the System Folder — as opposed to the items that were originally installed by the Apple installer. This makes it much easier to reinstate your custom components from the old System Folder to the new one.

Step 3: Unplug the SCSI chain

As you know from Chapter 33, the equipment plugged into the SCSI port on the back of the Mac can have a huge and devastating effect on your Mac's behavior. In that chapter, you'll find specific ideas for hunting down the causes of the conflict.

The first step is to figure out if you *have* a SCSI problem. Therefore, when you have a strange, repeating system problem, Step Three of our three-step troubleshooting process is to disconnect your SCSI chain from the Mac so that your SCSI port is left empty. If the problem disappears, you know where to begin your troubleshooting search, following the suggestions at the end of Chapter 33.

Other things to try

We truly believe that our three-step plan is nearly foolproof. After all, once you've turned off your extensions, reinstalled the System, and unplugged the SCSI chain, your Mac should be pretty much the way it was when you bought it!

If you're still having some unexplained erratic behavior, here are a few more treatments worth trying, roughly in this order.

Zap the PRAM

The PRAM (*parameter* RAM) is a tiny cache of memory kept alive by your Mac's built-in battery. It's responsible for keeping the Mac's clock ticking and maintaining the settings you make in your control panels — such as sound, mouse speed, memory, network, SCSI, and screen settings.

Rarely, rarely (but still sometimes), this tiny bit of memory gets corrupted somehow. Typical symptoms: Your control panels won't retain their settings; you can't print; you have strange networking problems.

To reset the PRAM, restart the Mac. As it's starting up, hold down the ⌘, Option, letter P, and letter R keys until you hear the second or third startup chord. Release the keys. (On a PCI-slotted Power Mac, turn off the Mac and hold down the keys *before* turning it on again.)

Zapping the PRAM often erases your control panel settings: your preferred mouse-tracking speed, desktop pattern, speaker volume level, and so on. Still, it's but the work of a moment to reset them using your control panels.

(PowerBook owners' note: Don't press the PRAM keys beyond the second chime. If you do, the PowerBook will shut down and can't be restarted until you press the back-panel power switch for 30 seconds.)

TRUE FACT

Whither away the Get Info comments?

For over a decade, rebuilding the Desktop file meant losing whatever comments you had typed into the "Get Info" boxes of your files and folders. Indeed, even the "Rebuild the desktop?" dialog box mentioned this unfortunate side effect. For years, Apple promised that it would get around to fixing this silly bug in some future system update.

That day finally arrived. In System 7.5.3 and later, no such warning appears in the "Rebuild?" dialog box when you press ⌘-Option at startup,

and your Get Info comments are, indeed, preserved. Hallelujah.

However, not all is yet right with the world. Experts agree that using TechTool, included with this book, remains a safer and more thorough method of rebuilding your Desktop file — but it still *doesn't* preserve your comments when it nukes your Desktop file. Guess you can't have everything — unless you use Conflict Catcher 8, which both saves your comments *and* fully replaces your Desktop file.

Rebuild the Desktop

Several times in this book, we've mentioned the Desktop file, the invisible database on every disk that stores information about all your icons — what they look like, which programs they belong to, and where they're positioned in Finder windows. If the information in this Desktop file gets mangled, it causes problems.

CD

The cure is simple: You can rebuild the Desktop file by holding down the Option and ⌘ keys while restarting your Mac — or, for a more thorough job, by using TechTool, included on the CD-ROM with this book. For a complete discussion of Desktop rebuilding, see Chapter 1.

Throw away the Prefs file

Whenever you launch a modern software program, it generally consults the *Preferences file* in your System Folder's Preferences folder before its loading process is complete. If that Prefs file is damaged, so is your work session.

Mac Basics

Therefore, if you're having trouble in one particular program, quit the program. Then open your System Folder, open your Preferences folder, and trash the program's Prefs file. The very next time you launch that program, it will automatically create a *new* Prefs file — one without any corruptions. (One reason a corrupted Prefs file often eludes diligent troubleshooters is that reinstalling an entire program generally preserves your existing Preference file, corruptions and all.)

This trick is especially useful in that most frequently used program of all — the Finder. The Finder Prefs file stores all kinds of settings important to your Mac work environment: the font and icon-layout settings used for Finder windows; list-view window settings; whether or not the "Are you sure?" message appears when you empty the Trash; and so on.

Therefore, if you start noticing weird goings-on with your icons, windows, or Trash, try discarding the Finder Prefs file. Restart the Mac to generate a fresh, clean copy.

Other Preference file-related troubles to watch for:

■ **Network problems.** If you're having trouble with networking and your hardware doesn't seem to be the problem, try deleting the File Sharing folder and the User & Groups data file, both located in the Preferences folder. Then, after restarting, go to the File Sharing (or Sharing Setup) control panel, enter a new Owner password, and turn on File Sharing. This creates a new Users & Groups data file, replacing the corrupt data. Of course, you also lose any previously defined users and group data.

■ **PC Exchange.** You've been happily mounting PC disks on your Mac for months, then, all of a sudden, your Mac won't accept DOS disks anymore. Once again, the solution is simple. Drag PC Exchange Preferences file out of the Preferences folder and into the Trash. The next time you start your Mac, a new Preferences file is created.

■ **Apple Menu Options.** If you encounter, on startup, a message that says "There is not enough memory to load all of your extensions" — and you know that you do indeed have enough memory — the likely culprit is the Apple Menu Options Prefs file. Trash it and restart.

■ **Space hogs.** Most Preference files are very small; they only contain basic settings information. But certain files in the Preferences folder can take up quite a bit of space. CD-ROM caching programs, such as CD AutoCache or CD-ROM Toolkit, for example, store in the Preferences folder directory information from the CD-ROMs you use. These directories add up quickly, especially if you use a large number of different CD-ROMs. Finally, there's the Cache folder for your Web browser (Netscape Navigator, Microsoft Internet Explorer, and AOL's browser, for example). It can quickly mount up to dozens of megabytes if you don't watch over it carefully. (You can adjust your browser's Cache-folder buildup potential in the Preferences command of the browser itself.)

If you find megabytes mysteriously disappearing from your hard drive, check the Preferences folder for such files, which can be dumped periodically.

Worth Learning
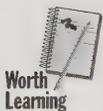
There's only one problem with the drag-your-Preferences-to-the-Trash approach to problem-solving, by the way — you lose your preferences. Cumulatively, they represent hours of work that you'll have to re-create from scratch if they become corrupt. We highly recommend backing up your Preferences folder (from inside your System Folder) religiously. When troubles later arise, you can drag the corrupt file to the Trash and replace it with the backup.

Replace the battery

Every Mac has a battery — not just PowerBooks. We refer, of course, to the built-in five- to seven-year battery that maintains the clock even when the computer is off.

Mac Basics

In the olden days, nobody thought much about the lithium battery. These days, however, it's suddenly rearing its ugly head — all over the world, millions of Macs are reaching their fifth and seventh birthdays. People's lithium batteries are dying, causing all kinds of bizarre behavior usually related to file dates. For example, if your Mac suddenly starts stamping every new or modified file with the year 1904 or 1957, you've got yourself a dead lithium battery. Other symptoms: your clock won't keep its time, your network or printer settings won't stick, your monitor color setting keeps reverting to some oddball choice.

As reader Brian Koh points out, you can save money by replacing the lithium battery of most Mac models yourself. In most Macs, the battery is a 3.6-volt battery about half the length of a standard AA; it's Radio Shack part 23-026, Apple part number 742-0011, Maxell model ER3S — and costs about $10. (If you don't feel like heading out in the rain to Radio Shack, you can also order these batteries from Resource 800 (800-430-7030, www.dallas.net/~r800.)

To install, open your Mac's case; locate and snap off the black retainer cover on the circuit board; install the battery in the same orientation as the original, and snap the black cover back on. (Because you've just "zapped your PRAM," in effect, you must now reset your control panel and Chooser settings.) Details on the process at www.academ.com/info/macintosh.

CD

Unfortunately, many previous generations of Macs use different batteries. The LC batteries are 4.5-volt with a complicated harness connector, and the earliest Macs used a regular AA, 3.6-volt battery. So how can you tell before you begin whether or not your Mac is one that's user-replaceable? By consulting GURU, a shareware program included on the CD-ROM with this book that, for every Mac model ever made, tells you whether or not you can replace the battery yourself.

If your Mac model isn't one of the lucky ones, you'll have to get the battery replaced by an Apple technician, usually at a cost of about $25.

Update your hard disk driver

Follow this step only if your Mac started life using one system version (such as System 7.0) and then was upgraded to a newer one (such as Mac OS 8).

As we mentioned in Chapter 8, not all software is compatible with new system versions — that includes the invisible software that controls your hard drive (its *driver*).

If our first three steps haven't resolved the problems your Mac's been giving you, and your hard drive is a candidate, follow the instructions in Chapter 8 for updating your driver. Fortunately, updating the driver *doesn't* involve erasing your hard drive or having to copy your files off it. Further, all of Apple's current system-software installers offer the option of updating your hard-disk driver *automatically* (click the Options button, for example, on the main Mac OS 8 installer screen).

Remove your expansion cards

If you've tried the usual array of troubleshooting steps and something still seems to be wrong, question any NuBus, PCI, or PDS cards you've installed (see Chapter 34). The point, remember, is to restore the Mac to its fresh-from-factory condition in your quest to find the problem. An out-of-date or poorly seated card could easily escape your notice.

Run a hard disk diagnosis program

Even our troubleshooting process can't solve certain hard-drive problems. They have to do with the invisible files the Mac maintains on your hard drive: the Desktop files, the list of fragmented files, and so on. If these files become damaged, a hard disk repair program may come to the rescue.

MACINTOSH SECRET

Create your own emergency disk in an emergency

Hard disk utility software (Disk First Aid, Norton Utilities, TechTool Pro, and so on) is all well and good, but it has one inconvenience: You generally can't use it to analyze or repair the disk it's *on.* And it can't operate on the startup disk, either (which is usually your internal hard drive, usually precisely the disk you want to repair).

For a while, each commercial hard disk program came with an "Emergency Disk"—a floppy containing a tiny System Folder (enough to start up the Mac) and the utility program itself. (In the case of Disk First Aid, the Emergency Disk is called Disk Tools.) This arrangement was colossally inconvenient, though. (1) If you didn't have the Emergency Disk with you when things went wrong, you were out of luck. (2) If you didn't have the exact Emergency Disk for *your model,* you were out of luck. (3) And, as new Mac models and new System versions appeared, the likelihood of your being able to create a correct, working Emergency Disk grew increasingly slim.

There's a better solution (for PowerBooks and most pre-G3 Mac models). Open your Memory control panel. Turn on the RAM Disk option. Move the slider until the displayed size is enough to hold a bare-bones System Folder

and your disk utility program. (See Chapter 14 for much more on this process.) Restart the Mac. When it comes to, you'll see a new disk icon on your Desktop: the RAM disk.

Onto this disk, copy the System suitcase file from your System Folder, plus the Finder, plus any enabler your model needs to run, plus (if you have Mac OS 8 or later) the Appearance extension. (Put all this into a folder called "System Folder" on the RAM disk.) Copy the disk-repair program onto it, too. Finally, use your Startup Disk control panel to choose the RAM disk as the next startup disk. Restart the Mac a second time. (G3 desktop Mac models' RAM disk contents don't survive a restart, alas.)

Now the Mac is running off the RAM disk. Your hard disk utility program can safely (and *really quickly)* operate on your internal hard drive, which is no longer the startup disk and no longer the disk that contains the hard disk program.

If your Mac doesn't have enough RAM to create a big enough RAM disk, by the way, consider creating a RAM disk just big enough to hold a mini-System Folder. Once the Mac is running, you can always then run the disk-utility program from a floppy (instead of copying it to the RAM disk).

Your Mac came with such a program: Disk First Aid. It's not as good as the commercial drive-repair programs like TechTool Pro. But today's Disk First Aid can indeed solve a number of these hidden disk problems. Just run Disk First Aid (after starting up the Mac from your Disk Tools floppy or Apple CD-ROM) and click the Start button.

For PowerBooks only: Reset the Power Manager

The Power Manager is a special circuit in the PowerBook that supervises the use of battery juice. When the Power Manager gets confused, all kinds of terrible things can result: problems turning on the computer, charging your battery, using the trackpad, starting up, going to sleep, and so on. Here's how you reset the Power Manager to its default state.

Always begin by unplugging the power adapter and removing all batteries. Leave the laptop that way for 10 minutes. If the problem doesn't go away when you try turning it on again, continue as follows:

■ **PowerBook 190, 1400, 2400, 3400, 5300, and G3 series** — Shut down the PowerBook. Turn it on while holding down the ⌘, Option, P, and R keys (yep, the same keystroke as resetting the PRAM, as described earlier). You'll hear a single chime, then the screen will go dark and the green Sleep light will be on. Press the reset button on the back of the machine (under the external video port, if you have one).

■ **PowerBook 140, 145, 145B, 160, 165, 170, and 180** — Unplug the power cord and take out the battery. Leave the PowerBook like this, powerless, for five minutes. Then, using two paper clips, simultaneously press and hold down the reset and interrupt buttons (the two pinholes on the back panel, next to the power button) for ten seconds. Hook up power again.

■ **PowerBook 150** — Unplug the power cord and take out the battery. With an unfolded paper clip, push the reset button in the back (the pinhole marked by a triangle) for ten seconds. Plug in the power adapter, and then *briefly* push the paper clip into the reset hole again. Finally, when you push the on button (on the back panel), the PowerBook should turn on. Reinsert the battery and charge it overnight.

■ **PowerBook 500 series** — Unplug the power cord and take out the battery. Leave the PowerBook like this, powerless, for five minutes. Press ⌘-Option-Control-power key for ten seconds. Reinsert the battery and power cord.

■ **PowerBook Duos** — Hold in the power button on the back panel for 45 seconds. (If this doesn't snap the PowerBook back into health, unplug the battery and power cord for 10 minutes.)

■ **PowerBook 190, 1400, 2400, 3400, 5300, and G3** — Turn the computer off. Restart it by holding down the reset button for 20 seconds. (On the 190 and 5300, the reset button is below the monitor jack; on the 1400, it's between the keyboard and modem/printer jack; on the 3400, it's to the left of the modem/printer jack; and on the 2400, it's above the floppy-drive connector.)

If that restarting process doesn't work, try it again a few more times.

■ **1998 PowerBook G3 Series** — Press Shift-Function-Control-power button. ("Function" is the *Fn* key at the lower-left corner of the keyboard.)

In all of these cases, you should now be able to turn the PowerBook on normally. Note, however, that this procedure deletes your RAM disk, if you've set one up.

Strange But True

And how does the Power Manager get corrupted in the first place? According to Apple, the number one cause is plugging the power adapter into the PowerBook *before plugging it into the wall!* Apple says we should always plug the cord into an outlet *before* plugging it into the PowerBook.

Who knew?

Avoiding Troubles in the First Place

Of course, it's much better to spend 30 seconds *preventing* problems than to spend three hours *solving* them. Chapter 8 contains our preventive-maintenance schedule for your hard drive. We urge you to follow it.

Mac Basics

Here's the other killer secret, which we've used to save hours of installing and troubleshooting time in the last few years: *Turn off your extensions* before you install anything.

That is, the next time you get a new program, or an updated version of an old one, restart the Mac with the Shift key down. You've just restored your Mac to its original birth condition, which is exactly how your new software expects to find it. You've just dodged a whole host of potential conflicts and corruption that can occur during the installation process — many of which may not crop up to haunt you until weeks later.

And if the software you're installing comes on a CD-ROM? Then turn off all your extensions *except* the ones you need to run your CD-ROM drive (see Chapter 4 for the list). Doing so is easy with Extensions Manager, Conflict Catcher, or a similar extensions-management program (see Chapter 22).

Ironically, this step is *especially* valid when you're installing Apple's own system-software updates.

The *Mac Secrets* Error-Message Table

Wouldn't it be great if your Mac could tell you exactly what went wrong in the aftermath of a crash? Imagine recovering from a crash and seeing a dialog box that says, "Your system has crashed due to a programming error. The Make Compost command in EnviroHelper Pro 2.0 conflicts with the desk accessory TimeKiller 3.1. Please update the desk accessory to version 3.3.2 to eliminate this conflict."

Mac Basics

In reality, the Mac's error codes aren't nearly that enlightening. For one thing, the error definitions themselves provide little information that you can actually use; knowing that your crash was caused by an "unimplemented core routine" (Error 12 or Error -4) doesn't shed much light on why a program keeps crashing. When something goes wrong deep inside the Mac, it can only report to you that something *is* wrong. It has no idea which specific series of keystrokes, mouse clicks, and software interactions actually caused the problem. Error messages are of primary value only to programmers — and not very helpful even to them. Furthermore, Mac error messages are often flat-out wrong. The Mac says you had an "illegal instruction" problem (Error 3) when in reality you simply used up all your RAM.

In the first few editions of this book, we explained all this. We said that a list of Mac error messages, and their meanings, is pointless.

Yet the mail from readers of each edition was always the same: "Please print a list of the error messages!" And so, here it is.

As you'll see, these descriptions only rarely provide a clue for action on your part (that is, *disk is full*). The rest of the time, there's a bug in your software, and there's not much you can do about it. As you'll read in the following list, many bugs result from programmers failing to clean up after themselves during programming — or being unable to anticipate their program's interactions with other software.

There are two categories of error messages. Those with positive numbers are the so-called DS errors (which originally stood for, well, *deep doo-doo* — but which Apple, concerned about its younger audiences, eventually redefined as Dire Straits). These are serious system crashes that require you to restart the machine. Errors with negative numbers aren't so severe; usually you just have to click OK to proceed.

DS Errors

By far the most common positive-numbered error codes are Type 1, Type 3, and Type 11. You can read about them below; for now, note that the primary steps to solving repeated problems of these types are (a) update or turn off your extensions, (b) update your hard disk driver, and (c) do a clean reinstall of your System Folder. All three of these techniques are explained at the beginning of this chapter. Fortunately, Type 1, 3, and 11 errors have become nearly extinct in Mac OS 8 and later.

ID=01: Bus Error (Type 1 error)

The Mac has tried to access memory that doesn't exist — for example, the program you're using assumed that the Mac has more RAM available than it actually does. This kind of glitch — probably one of the most common — is called a *bus error.* You can remedy the problem by allocating more memory to the program that crashed, adding more RAM to your system, or by simply restarting your Mac so that the RAM available isn't fragmented (but is available on contiguous chunks).

ID=02: Address Error

Mac Plus and SE only: Your processor tried to access an odd-numbered RAM address when it should have accessed an even-numbered one.

ID=03: Illegal Instruction

Your software issued an instruction your Mac's processor model doesn't understand. The cause may be an out-of-date system extension or hard disk driver.

ID=04: Zero Divide Error

When programmers test their works in progress, they might deliberately instruct the computer to divide a number by zero, to see how well the program handles errors. They occasionally forget to take this instruction *out*, as you've just discovered.

ID=05: Range Check Error

The software checked to see if a number — part of some internal calculation — is within a certain range. It wasn't.

ID=06: Overflow Error

A number was too large for the space the software allotted for it.

ID=07: Privilege Violation

This only crops up during the writing of a program. The Mac attempted to process a command in User mode instead of Supervisor mode.

ID=08: Trace Mode Error

When debugging newly written software, programmers sometimes walk through it, line by line, using what's called Trace mode. This message indicates that your Mac's processor has accidentally switched into Trace mode.

ID=09 and ID=10: Line 1010 & 1111 Trap

Once again, the software has issued an instruction that the processor doesn't understand.

ID= 11: Miscellaneous Hardware Exception

A Type 11 message is the Power Mac equivalent of a generic Type 1 error. It simply refers to an error that has occurred in the native Power PC code. Technically, Apple calls it a "hardware exception error." Realistically, it's an extension conflict, a corrupted font, or a Power Mac-hostile program. Do a clean reinstall, as described earlier in the chapter. And if you're getting *lots* of Type 11 errors, remember that Apple has been methodically eliminating them with each successive release of the system software. Keep your Mac's System Folder current.

ID=12: Unimplemented Core Routine

As with the ID=04 error, an instruction was left over from the debugging process.

ID=13: Uninstalled Interrupt

An *interrupt* is a moment during the running of a program when an external device, such as the keyboard or the disk drive, asks for attention. If there are no instructions in RAM that tell the Mac how to talk to that device, you get this error.

ID=15: Segment Loader Error

To conserve RAM, a non-Power Mac program is loaded into RAM in *segments* as needed. A system-software program called the *segment loader* oversees this swapping. If, for some reason, the segment loader can't do its thing, this error results.

ID=17-24: Package Load Error

We'll pass this along exactly as we heard it, although we make no pretense to understanding it ourselves: The Macintosh OS contains certain "packages" of routines that perform related operations. There are eight of these packages, 0-7. Errors 17 through 24 indicate failures to load the corresponding package. For example, PACK 4 (which would get an error code of 20) is the Standard File Package (the code that handles the Open File and Save File dialog boxes).

ID=25: Memory Full Error

You've probably run out of memory, although this message sometimes appears erroneously.

ID=26: Bad Program Launch

Macintosh applications come in two flavors: 68K code (for pre-Power Macs) and PowerPC code. If either of the "closets" where this code is stored is damaged, you get this error message when you try to run the program. (Time to reinstall.)

ID=27: File System Corrupted

Your Mac keeps an internal map that shows it where everything is on each of your drives. If that map gets hosed, this error pops up. Disk First Aid time!

ID=28: Stack Ran into Heap

Fancy way of saying you ran out of memory.

ID=33: Negative ZbcFree Error

The Macintosh Memory Manager software is so confused, it thinks there's a negative number of available "zone control blocks" from which to allocate memory.

Negative Error Codes

There are many more negative-numbered error messages than positive. Furthermore, they make even less sense to the nonprogrammer. (Helpful example: "Packet too large or first entry of the write-data structure didn't contain the full 14-byte header." Sure.)

Table 36-1 provides the general categories for each number range, along with a few that actually make sense to human beings. Note that some of the numbers may overlap, since these error messages vary according to the context (what you're doing at the time).

Table 36-1   The Authoritative List of Negative Error Codes

Error Number	What Causes It
0 through −8	General System errors.
−9 through −21	Color Manager errors.
−17 through −61	System errors involving files and disks (input and output).
−34	Disk is full.
−35	No such disk, or the Mac can't find the disk it's looking for.
−37	Illegal filename (for example, the name includes a colon).
−39	A corrupted file is on the disk, or the disk is having problems. Often accompanied by the message "end of file" or "no additional data in the format." It points in the general direction of a corrupt file. It means that the Mac started to process a file, but couldn't finish reading it — as if the end of the file had been chopped off. If you encounter this particular message at startup, it could mean your Launcher has become corrupt. Drag the Launcher into the Trash and reinstall it.
−41	File is too big to fit in memory.
−42	Too many files open.
−43	File not found — you're trying to open a file that's been moved or deleted.
−44 and −46	Disk is locked.
−45	You're trying to save or copy something to a locked disk.
−53 through −57	Illegal disk request.
−60	Something's wrong with the disk directory.
−64 through −66	Font problems, or the required disk (or disk drive) isn't available.
−64 through −90	Problems reading disks (timing and track troubles).
−91 through −99	AppleTalk errors.

Error Number	What Causes It
−108 through −117	Various memory-allocation errors.
−120 through −127	HFS errors (disks, folders)
−126 through −128	Menu problems.
−130 through −132	More HFS errors.
−147 through −158	Color management problems.
−185 through −199	Resource Manager errors (problems managing data).
−200 through −232	Problems with sound or sound files.
−250 through −261	Problems with the MIDI Manager.

Details on the most common error messages

Table 36-1 covers both common and obscure error numbers. Here, for your post-crash enjoyment, are more complete descriptions of the most commonly spotted error messages.

"No Co-Processor Installed"

The "no co-processor" message is almost never accurate — every Mac made today *has* a math co-processor chip (a floating point unit, FPU; described in Chapter 12), yet this message seems to crop up all time. (Power Macs don't have a separate FPU chip; that circuitry is built into the PowerPC chip itself.)

The answer is so weird it's almost funny. Whenever a software problem erupts, the Mac rapidly runs through an internal list of error messages, trying to find an accurate description. If it doesn't find anything appropriate to report, it helplessly shows you the *last error message* in its list. Naturally, the "no co-processor" error is the last one on the list.

The "no co-processor" message has *nothing* to do with whether your Mac has an FPU — or whether your software needs one.

Bus errors

If you get a system crash with the "bus error" note, you're using buggy software that's trying to save data someplace it shouldn't. (Netscape Navigator and Microsoft Internet Explorer are among the worst offenders.). Fortunately, you don't see much of these errors in today's Mac OS 8 environment.

Other sources of bus errors are extensions. Follow Step 1 in the Rule of Three at the beginning of this chapter to ferret out the cause.

"Application busy or missing" or "Application not found"

As we mentioned in Chapter 1, you get this kind of message when you double-click a document for which the Mac doesn't *think* it has the program to open it.

The possible solutions are:

■ You really *don't* have the required program. If you double-click an Excel document and you don't have Excel on any disk, this is the message you get. Except for installing Excel, there's nothing you can do.

■ You *do* have the required program, but the Mac is confused. It's an easy one to fix: Just rebuild the Desktop file (see Chapter 1). Or, you may have *two* copies of the same program, perhaps with different version numbers. Clear out the older one.

■ You have the required program, but it's an outdated version, and the document you're trying to double-click is from a newer version. Update the program.

■ You have the required program, but the document's four-letter creator code somehow has gotten zapped, so the Mac doesn't know which program it's supposed to use to open the document. You can restore the creator code by using either Drop•Info or ResEdit (both included with this book) to type the code back in. See Chapter 15 for detailed instructions, and see Chapter 4 for details on Mac OS Easy Open, which can eliminate most "Application not found" messages.

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"Application unexpectedly quit"

Usually this message means that a program ran out of memory. Normally, a program sees the end of its memory supply coming and warns you. But sometimes it gets caught unaware, like a center fielder who slams into the outfield wall going for a fly. You can try giving the program a larger memory allotment (see Chapter 9 for instructions on using the Get Info window to do so).

Then again, this might be one of the standard problems: an old version of the program; a program incompatible with your OS version; a program incompatible with virtual memory or 32-bit addressing; or Netscape Navigator/Communicator, which is just buggy all the way around.

"Port is in use," "Please make AppleTalk inactive," or "Cannot find printer"

"Port is in use by another application" is the mother of all annoying error messages. It appears when you're trying to use your printer port for an inkjet printer (like the StyleWriter), digital camera, or other printer-port-connectable gadget. PowerBook owners, you're especially susceptible to this nightmare — you have only a single modem/printer port on the back of your Mac. If the computer thinks that the port is busy, you won't be able to hook

up your PalmPilot, digital camera, modem, or *any* doodad that would normally plug in there.

The most common reasons the *modem port* is "in use" are (a) you're still online and don't know it, or (b) you have fax software that's been taught to watch the port continuously for incoming faxes. The solution to the first problem is to restart the Mac; the solution to the second is to turn off your fax software.

The most common reason that the *printer port* is "in use," however, is that you've got AppleTalk turned on. AppleTalk, as you may know from Chapter 35, is Apple's networking software. If it's on, the networking software ties up your printer port by watching it for incoming network messages. Forget about trying to use a non-AppleTalk printer, such as an inkjet.

Now, all this gets *really* interesting when you try to turn AppleTalk off (as the error message recommends) — but you *can't!* You try using the Chooser; you try to turn it off using the Control Strip; but the error message keeps appearing.

If you've fallen into this unpleasant cycle, see the sidebar "Answer Man: The dang 'port is in use!'" near the end of Chapter 25.

"The File Sharing extension is not installed"

You get this message when you choose Sharing from the File menu (see Chapter 35 for details on making your Mac's hard drive available to other Macs on the network).

Sometimes, of course, it's true — the File Sharing software *isn't* installed. Use the Installer on your system disks to install it. On the other hand, this message also appears when a much simpler problem exists: You need to turn on AppleTalk in the Chooser.

"This startup disk may not be used with this Macintosh. A newer version is required."

You see this message when you're trying to start up a Mac from a disk that contains a System folder that's too old to run your Mac. For example, Mac OS 8 is the earliest OS that can start up a Power Macintosh G3; if you insert a System 7.5 CD-ROM, the startup process may look as though it'll work — until a few seconds into the startup, when this message appears. Start it up instead with, for example, the Disk Tools or system CD-ROM that came with the machine.

"The command cannot be completed because it cannot be found"

This all-time Goofy Grammar Hall of Fame winner sometimes appears when you try to paste a new icon onto your hard drive (described in Chapter 1). Of

course, the reason you're *doing* that task is that the drive's previous icon has *disappeared.* Try as you might, pasting the new icon into the drive's Get Info box won't work.

This problem crops up when you're trying to change your hard drive's icon for the *second* time. The *first* time you pasted a new icon for your hard drive, two things happened behind the scenes. First, an invisible file called *Icon* (with a Return character before the word, if you can believe that) was created on the hard drive (you can see it using ResEdit). Second, the Mac switched on an internal toggle switch — the *custom icon bit* — that tells it to use the new icon file.

If that original invisible icon file is missing for some reason, the Mac consults the custom icon bit, goes searching for your custom icon file, doesn't find it, and displays the generic disk icon in its place. If you try to paste on a *new* custom icon, you get this message. It tells you that the Mac can't find the *old* icon (the "it" that "can't be found" in the error message) over which to paste the new one. Wild, eh?

The real solution, obviously, is to reset the erroneous bit. ResEdit won't work; it operates only on files, not disks. The simplest solution is to use Disk Rejuvenator, included on the CD-ROM with this book; it neatly solves this problem.

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"That folder is in use and cannot be deleted."

This infuriating message most often refers to an item in the Trash, especially the familiar "Rescued Items" described in Chapter 2. Here's a sneaky way to delete that which is un-deletable.

1. Drag the folder (we'll use the Rescued Items folder in this example) to the Desktop.

2. Rename the Rescued Items folder to the name of another folder on your disk. For example, if you have a Downloads folder, change the name of Rescued Items to Downloads.

3. Open the Downloads folder. Move all of the items in it to the newly named Downloads folder on your Desktop.

4. Trash the original Downloads folder. Move the *new* Downloads folder to the location of the *former* Downloads folder.

You may now be able to empty the Trash, having successfully outfoxed the Mac at its own game. After all, you're now trashing a perfectly ordinary folder.

Oddities on the Screen

Sometimes, no error message is necessary to tell you that something's gone wrong. One glance at the screen tells you that something's amiss. Here's how to handle these situations.

Generic icons

As we mentioned in Chapter 1, the solution to your files losing their icons is to rebuild the Desktop.

Confused bundle bit

Every now and then, however, you'll discover that only *one program's* set of icons is turning up blank. If that's the case, the "bundle bit" (a tiny software pointer that associates a program with its set of icons) may have become confused. You can use a shareware program like ReBundler or Save-a-BNDL, or you can reinstall the program onto your disk.

After you have the bundle problem resolved, you still have to rebuild the Desktop to make the icons reappear — unless you use this trick. Select a file whose icon is missing. Choose Get Info from the File menu. Click the icon and press ⌘-C (copy); then press ⌘-V (paste). You just pasted the generic icon back onto itself. Finally, press ⌘-X (cut) to remove the "custom" icon. This forces the Finder to reread the BNDL information from the file on disk instead of from the Desktop databases.

Parent programs on not-yet-mounted disks

If your generic-icons problem persists even after you've rebuilt the Desktop, there may be a more complex problem afoot. As you know from Chapters 1 and 15, a file's icon is stored in the resources of the *program that created it.* If PageMaker isn't on your hard drive, then all your PageMaker documents will show up blank, no matter how many times you rebuild.

If you have multiple hard drives (or multiple partitions, or a hard drive and a Zip or Jaz, say), it's possible that the *Finder* program is launched *before* all of the other disks have been brought "online." As far as the Finder knows, you don't have PageMaker at all — because the disk that contains PageMaker hasn't been brought onto the screen yet. The result: generic PageMaker document icons.

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The solution is to force all attached partitions and disks to mount *before* the Finder launches. To do so, install SCSIProbe (included on the CD-ROM with this book). Open the control panel; click Options; and turn on the "Mount Volumes During Startup" option. (Conflict Catcher 8 offers a similar option.)

Shimmering monitor

A monitor shimmer is *usually* caused by interference, such as a lamp, a fan, or other appliance that's very close to it, or an air conditioner running on the same circuit. Consider putting the a/c on a separate circuit. You can also spend $250 or so for a *line conditioner* for the Mac.

If none of these steps solves the problem, it's possible the monitor actually needs to be repaired.

Black menu

Strange But True

On a Mac with a color monitor, the menu is usually marked on the menu bar by an icon with horizontal colored stripes (Apple's logo). If it shows up as solid, puffy *black* when the rest of the screen is in color, then you've probably set your monitor to *thousands of grays* mode, which, nonsensically enough, puts your screen in *color*— except for the menu.

Finder changes don't stick

If your changes to the way the Finder displays windows and icons don't seem to stick when you restart the Mac (for example, when you change the Views control panel settings), you may have a damaged Finder Preferences file. Open your System Folder; open the Preferences folder; find the Finder Preferences file; trash it; and restart the computer. The problem should be gone now.

No Mac icon on the System Folder

The System Folder on your startup disk usually displays a little Mac icon, as shown in Figure 36-2.

System Folder   System Folder
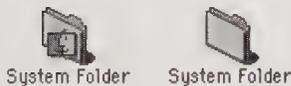
Figure 36-2: On the left, a normal System Folder. On the right: Where *is* the little Mac icon?

If the System Folder has a normal folder icon instead, there are only three possibilities:

■ You have *two* System Folders on your drive, and this isn't the one currently running.

■ You're not looking at the System Folder of the *startup* drive, but instead it's the System Folder on another disk.

■ The real System Folder is *inside* another folder (possibly this one).

Startup Troubles

There's almost nothing worse than encountering Mac problems before the thing has even *started up!* This guide will be of some assistance.

The Sad Mac icon

The Sad Mac icon can appear, among other times, when you press (or some object on your desk presses) the Interrupt switch on your Mac, either

inadvertently or on purpose. See Chapter 7 for more about the Interrupt switch.

Otherwise, your troubleshooting efforts should focus on *when* the sad-Mac logo appears. If you see the normal Welcome to Macintosh message and *then* the sad Mac face, you're in luck — your problem's with the System folder, not with the actual hardware. Just try starting up from a different system disk, or follow Step 2 of our Rule of Three.

If, however, you get the sad Mac immediately when you turn the Mac on, your main circuit board (logic board) or RAM chips are probably not seated right (Figure 36-3). In our experience, the Sad Mac most often appears just after you've installed new RAM chips or changed your SCSI-chain setup (see Chapter 33). It tells you that one of the chips is defective or improperly seated (try reseating the chips) or that your SCSI chain is improperly numbered or terminated.

The Sad Mac can also appear mysteriously as a result of a number of other conditions, most of which you can solve by following our Rule of Three (especially Step 3). In fact, the sad Mac *often* goes away by itself, even if you don't change a thing.

Figure 36-3: The dreaded Sad Mac icon.

Beneath the Mac icon there's a row or two of special codes (such as 0F000D, which you may recognize from Chapter 21 as being hexadecimal notation). In theory, they can help you figure out exactly what's wrong with the Mac. In practice, these codes are designed for techies and may not even be accurate.

For the Mac SE and all later Macs, you actually get two lines of codes that are supposed to help you figure out what's wrong. The only useful numbers are the bottom row and the second half of the top row. Table 36-2 lists some common codes and what they mean. By code, we mean here the *second* four characters on the top row.

Be aware of two things about these codes. First, they don't apply to Macs before the SE, and they don't apply to PowerBooks. Second, some of these codes may suggest something obvious for you to try: If it's code 0006, you may as well try plugging and unplugging the keyboard cable. But in general, our original words apply: The problem usually goes away by itself or goes away when you follow our Rule of Three steps.

Table 36-2   Sad Mac Codes

Code	Explanation
0001	The ROM chip is having trouble (may not be seated correctly).
0002	Something's wrong with a SIMM in bank B, if your Mac has two banks of SIMMs.
0003	Something *else* is wrong with bank B.
0004	Something's wrong with a SIMM in bank A.
0006	Something's wrong with your ADB (keyboard/mouse) jack.
0008	Again, an ADB problem.
000A	There's a problem with the NuBus slots.
000B	Trouble with the SCSI chip.
000C	It's floppy drive trouble.
000D	Something's wrong with the printer or modem port.

If it still doesn't go away, and you've even tried reseating the RAM chips, then it's time to call a dealer.

Especially long startup times

A two-second pause between the monitor's lighting up and the appearance of the "happy Mac" icon is normal. But if the standstill is abnormally long (longer than about eight seconds), or if the disk/question mark icon briefly appears on your screen before the startup process begins, you have a problem.

Fortunately, it's an especially easy one to fix. In the Startup Disk control panel, you probably selected a different disk to start up from — a disk that's no longer available, such as a Zip or Jaz disk. Open the Startup Disk control panel, click your proper startup hard drive, and the problem goes away.

The blinking question-mark icon at startup

The Mac blinks the question-mark/disk icon when it can't find a System Folder. Of course, you can always get around this by inserting your startup CD. But that's not a long-term solution — something is clearly wrong with your *hard drive,* which is supposed to have its own System Folder.

Apply the Rule of Three. Restart the Mac. Restart the Mac with the Shift key held down. Unhook external SCSI devices. (This often solves the problem; see "SCSI Troubleshooting" in Chapter 33.) Try starting up from your Disk Tools disk. Do a clean reinstall of your system software. Run the Disk First Aid program. If your hard drive still isn't showing up on the screen, get a program

such as TechTool Pro or Norton Utilities and see if *it* can bring your drive back to life.

Actually, if all else fails, the problem may be far simpler. If anything is keeping the mouse (or PowerBook trackball button) pressed as the Mac is trying to turn on, this same blinking question mark may result. Lift that stack of books/Jaz cartridge/cinder block off the mouse button, and your Mac will proceed to start up as usual.

Crashing on startup

Clearly, you've got an extension conflict. You can *temporarily* get up and running without *any* of these extensions — and without any conflicts — by following Step 1 of our Rule of Three.

To *find* and *eliminate* the conflict, however, your first thought should be to use Conflict Catcher (see Chapter 22), which automates this testing process and tells you what the conflict was.

Twilight Zone theme, car crash, or four notes

If, when starting up, your Mac plays a note-by-note chord, evil brass fanfare, "Twilight Zone" theme, car crash, or cartoony breakdown sound, it's trying to tell you that it didn't pass one of its routine startup tests. (See "The Chimes of Death" in Chapter 7.)

You most often hear these chimes just after you've installed new memory into the Mac; it means that one of the SIMMs isn't seated right (see Chapter 9 for details). The chimes also sound if something is pressing your Mac's Interrupt switch at startup (see Chapter 7).

Disk Troubles

Like all living things, hard drives and other kinds of disks have occasional bad hair days. You can cope, though, as follows.

Hard disk troubleshooting

For a huge helping of hard drive troubleshooting, see Chapter 8. In the meantime, if your hard drive isn't showing up, or is acting flaky, try these steps, in order:

- Restart the Mac.
- After starting up from a different disk (such as your system CD-ROM), run Disk First Aid. (Click the Repair button more than once; sometimes this takes several tries.)

- Reinstall the hard disk driver. (Don't initialize your drive, just update; see Chapter 8 for details.)

- Rebuild the Desktop (see Chapter 1).

- Do a clean install of the system software (see the beginning of this chapter).

- Zap the PRAM, as outlined at the beginning of this chapter.

- Check your SCSI setup (see Chapter 33).

If you've tried everything and haven't succeeded in resurrecting your hard drive, you can always wipe it out, reformat it, and start from scratch. But if there's data on the drive that's worth paying big bucks for, remember that there's one last resort: sending it to DriveSavers (415-883-4232). They have clean rooms, deoxidants, and all kinds of high-tech gear devoted exclusively to getting data off a drive, and they report a success rate of more than 90 percent.

All floppy disks show up locked

Of course, all your floppies aren't *really* locked. We've seen this in several Macs, and the problem is simple enough: dust on the drive mechanism.

If you're technically minded, open the Mac case. Use a screwdriver to gently take out the floppy-drive unit. (On some Macs, you also have to lift out the hard drive unit first. Just remember where everything came from!)

Look at it closely. You see a toothpick-like, spring-loaded, white plastic pin. This pin usually slips into the locked/unlocked hole in a disk, and it tells the Mac whether the disk is locked or not. Over time, this pin gets caked with dust and gunk and becomes less springy; eventually, it may stay in the down position, making the Mac think that the disk is locked. Clean the pin carefully, test for springiness, and reinstall everything.

ANSWER MAN

My Performa still blinks the question mark!

Q: I read your writeup of blinking question-marks at startup. But my Performa still does it even after a clean install — in fact, it was a clean install of Mac OS 8 that started the problem!

A: You must have a 5400, 5500, 6400, 6500, or Twentieth Anniversary Macintosh model.

Q: Right! How did you know?

A: We're the authors. We know all, we see all.

Anyway, you're the victim of a bug in the hard drive driver. The solution is to get a later version of Drive Setup (see Chapter 8) — version 1.3.1 or later. Launch this program, use the Update Driver command (see Chapter 8 again), and you're back in business.

You think *you've* got trouble?

Scott Gaidano of DriveSavers told us the following true story about one of his clients.

In early 1993, a cruise ship was just starting its 1,000-mile cruise up the Amazon. Three hundred passengers were on board. Just as the ship set out, it struck an underwater barge and sank. (It was the same day as the World Trade Center bombing, so there wasn't much news of it.)

Two of the passengers were a couple, a juggling team, who had been hired as onboard entertainment. The story of their journeys was painstakingly written up — on their PowerBook 100, now deep underwater in the sunken cruise ship.

Two days after the ship sank, the guy persuaded his fiancée to get into scuba gear and swim down into the lime-green, piranha-filled ship. She swam down two flights of stairs, down the corridor, and into what had been their stateroom. Sure enough, there was the PowerBook on the desk. She also grabbed, from the dresser drawer, the diamond ring her great-grandmother had given her, a bag of juggling equipment, and her contact lenses that were bobbing in their case on the ceiling of the stateroom.

She brought it all to the surface. She sent the PowerBook to Scott, whose staff decontaminated it, desalinized it — and successfully rescued the files!

File, Desktop, and Icon Troubles

This section of our encyclopedia of woes pertains to files and icons that go awry.

Can't empty the Trash

If you can't empty the Trash, try one of the following:

- Hold down Option as you choose Empty Trash.

- Quit your programs and try again. (Maybe another program is using the Trash.)

- Restart the Mac without any extensions (see Step 1 at the beginning of this chapter) and try again.

- Try the stunt described under "That folder is in use and cannot be deleted," earlier in this chapter.

- Try a different startup disk. Also try a clean system reinstall.

Keyboard Ailments

As we mentioned in Chapter 10, your keyboard is actually a computer unto itself. As such, it gets problems all its own.

Dead key

When we say "dead key" here, we *don't* mean one of those Option-key characters. We mean a broken key.

You can get the keyboard repaired professionally, of course. But chances are good that the problem is just a gummed-up contact, which you can clean.

Turn off the Mac. Carefully pry the plastic key off its stem. Then take a can of WD-40 aerosol lubricant (available at hardware stores). Insert the narrow plastic WD-40 tube into the point where the key plunger enters the black body of the key. Give a short spray. Press the key plunger a few times and then hook everything back up to see if the key works. If the key still isn't fixed, repeat a couple more times.

Crazy slow typing

If the Mac suddenly gets incredibly slow to respond to your typing, chances are that the culprit is one of the following:

■ The Key Caps desk accessory is open somewhere in the background. It's intercepting every keystroke, displaying the appropriate symbols, and gumming up everything. Close it.

■ You're multitasking. The Mac is splitting its focus between your typing and its background task (printing, copying, or downloading files, for example).

■ If your Mac is on a network, bad equipment or frayed wiring may be transmitting garbled signals over the network lines. Disconnect yourself from the network and see if the slowdown persists. If the problem vanishes as soon as your Mac is cut loose from the network, you know you've got a network problem on your hands. See Chapter 35 for some tips on network troubleshooting.

■ Your SCSI chain is acting up. See Chapter 33 for instructions on solving SCSI problems.

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How to pinpoint suspect extensions

After having read literally tens of thousands of e-mails and BBS postings, we know one thing for sure: A huge percentage of crashes, freezes, and incompatibility problems are caused by the same culprits. Over and over again, the problem turns out to be an outdated or incompatible copy of one of the following programs. Pay special attention to these offenders when you upgrade anything on your Mac, such as the system software or the Mac itself.

How can you cultivate instincts about which extensions are causing your headaches? Think

about how deeply your software is designed to modify the normal system software. Consider how radically it changes the Mac's behavior. The more dramatic the interference, the more likely an extension is to be a troublemaker.

Fax software, font-management software, screen saver, virus checkers, anything-Doubler, software that changes your Mac's whole look (like ClickChange and Kaleidoscope) are the first things we suspect.

When All Else Fails

If you can't find your trouble described and troubleshot in this chapter, and you have access to the Internet, visit Apple's Technical Information Library on the World Wide Web. It contains a searchable collection of thousands of tiny articles on techie subjects that aren't available anywhere else. (You might search, for example, for "PowerBook 2400 and batteries.") The address is http://til.info.apple.com.

If you really think something's mechanically or electrically wrong with the equipment, don't forget that Apple is taking especially good care of you and your Mac lately.

If you bought a PowerBook and it's less than a year old, Apple will send someone to pick it up, ship it overnight to their repair facility, fix it, and air-express it back to you. Free.

The number to call, both for help and for repairs, is 800-SOS-APPL.

Appendix

The Secrets Software

We understand that despite the countless hours your cheerful authors have spent researching and writing this book, you may well consider the software supplied with this book to be the main course. Bon appetit!

What You've Got Here

This CD contains three categories of software: commercial software, shareware, and freeware.

Commercial Software: These are full-fledged, non-demo versions of commercial programs. You may get the actual, current software package (such as OneClick) or a previous shipping version of something (such as Color It). In exchange, the software companies hope you'll want to upgrade to newer versions as they appear.

They've made doing so attractive, too, by including coupons with special offers at the back of this book.

Shareware: Shareware lets you try out the programs without paying a dime up front. Then, if you like the software and want to continue to use it, the honor system dictates that you pay them the small fees their authors request (usually between $5 and $35).

In exchange for paying the fee, some authors give you a password to unlock additional features or eliminate persistent reminders to pay up. Often you'll get a manual or a disk back by mail, containing the newest version of the software, along with a selection of other products in the author's line.

Freeware: Some of the programs on our disks are designated as freeware; no payment is requested. The author retains the copyright.

Disclaimer

We've tested every program here on PowerBooks and standard desktop Macs. Still, here's about the only guarantee we can make: this stuff works on our machines. We can't promise that it all works smoothly with whatever junk you've already got in your System Folder. Strange as it may sound, we also can't promise that it all works *together* without a little experimentation — you've got to be pretty bold to throw 90 control panels into your System Folder at once.

Some of the potential problems are common sense: don't install Action Files if you already have Super Boomerang. Don't install Hidden Finder Features (which gives Mac OS 8-type features to System 7.5) if you have Mac OS 8. And so on.

If you have trouble, here are four ways out. First, consult our own troubleshooting chapter (Chapter 36), where you'll find out how to do basic conflict-hunting (holding down the Shift key works wonders; doing a clean re-install works miracles).

Second, contact the company or shareware author who created the program. You'll find phone numbers, e-mail addresses, and Web-page addresses in the folders of the individual programs on this CD.

Finally, if you have no luck, e-mail us. While we don't know each program as intimately as the people who wrote it, we'll see what we can do to help.

How the CD-ROM Is Organized

These folders are on the CD-ROM:

Mac SECRETS Electronic Edition — The electronic version of this book, provided in Adobe Acrobat format, so that you can search the entire text for specific topics instantly.

As a bonus, we've also included the entire text of the *previous* edition, in case you're interested in reading up on an older topic (OpenDoc, Word 5.1, or Cyberdog, say) that's no longer covered in the current edition. (If you do decide to peruse that 4th Edition, be sure to install its special font before proceeding, as directed by the Read Me file.)

Complete Software Collection — All the *Mac Secrets* software, in alphabetical order (exactly as it appears in this chapter). Each program is in a folder with its own on-disk manual and other information.

Listed by Chapter — Aliases of the same software folders, grouped in folders corresponding to this book's chapters. This way, if you've just read about something in the book, you can find it instantly on the CD-ROM.

Listed by Category — Aliases of the same software, this time in folders organized by the kind of software inside: Games, Utilities, Fun Stuff, and so on.

Commercial Software — Actual, fully functional software provided by commercial software companies — OneClick, CanOpener, MacLinkPlus, and so on.

Icons, Sounds, Graphics, Movies — From Nova, Zedcor, Component Software, Olduvai, and others: sampler sets of commercial graphics, sound, and icon collections.

Shareware & Freeware — Aliases to all the non-commercial software.

In the following discussions, we're assuming you're running System 7.5 or later.

The Secrets Software Described

Action Files 1.1P

(Commercial software from Power On Software.) Action Files enhances the look and feel of the standard Open and Save dialog boxes. It makes them movable and resizable, for example, and adds a menu across the top. These menus create new folders, make aliases, duplicate files and folders, rename items, or move any item to the trash. Action Files's Find command finds files by name, size, kind, label, creation date, modification date, file type, creator and more — without ever leaving the Open or Save dialog box.

Action Files also adds columns of file information to the Open and Save boxes, including a file's size, date, label, and kind using any font. You can sort the list by name, size, date, kind, and label.

Note: This version of Action Files is essentially a demo. When you install it, you'll be asked for a serial number. If you haven't purchased a serial number, you can still use Action Files for a 30-day free trial. After 30 days, most of Action Files' features are automatically disabled.

A few goodies remain, however: you can still change the text font and style used in your Open and Save dialog boxes; change the sorting order; specify which columns you want shown; use the pop-up menu of disks; and so on. (The commands that turn off after 30 days turn red; the commands still listed in black continue to work.)

If you decide to buy a serial number, thus preserving all of Action File's features beyond the trial month, see the coupon in the back of this book for a special offer.

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║  │ 📄 ACTION Files Read Me  6 K M│ │ 📁 System Folder 8.0               │
║  │ 📄 ACTION Files Reviews  6 K W│ │ 📁 On Guard                        │
║  │ 📁 Brainstorming Docs  -  T   │ │ 📁 LAN Commander                   │
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║  │ 📁 LAN Commander       -  W   │ │ 📁 Brainstorming Docs              │
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Anagrams

(Andrew Trevorrow, Nick Spencer, $15 shareware.) An *anagram* is a phrase created by scrambling the letters of another phrase. For example, an anagram of information superhighway is "New utopia? Horrifying sham!"

You just type in a word — your name, for instance — and this program automatically spews out thousands of English phrases, or pseudo-phrases, composed of those rearranged letters. Anagrams (the program) offers several clever methods of weeding out the junky nonsense phrases, making it much easier for you to locate the meaningful ones.

Apeiron

(Ambrosia Software, $15 shareware.) Apeiron is a wild high-speed arcade-style variant on the old Centipede game. According to the author: "During a port through the looking glass, the mirror shatters and your ethereal energy (you know, the stuff that allows you to get up and go to work on a Monday morning) is trapped within one of the crystal shards. Immediately the residents of the mushroom patch sense your presence. Led by the Pentipede, these critters relentlessly hunt the crystal, intent upon sucking the trapped energy out. With plasma cannon blazing, you must hold out as long as possible."

AppDisk

(Mark Adams, $15 shareware.) AppDisk is a RAM disk application. What is a RAM disk? It's a piece of software that lets you use some extra RAM memory as a really fast hard disk (and extend the life of a PowerBook battery; see Chapters 9 and 14). The disk appears on your desktop just like any other

hard disk, and you can copy files to it normally. When you turn off your Mac or restart, the contents of the RAM disk are lost — so AppDisk has several options to automatically save a copy of the RAM disk contents onto your hard disk.

To launch AppDisk, double-click its icon. AppDisk instantly creates a RAM disk on your desktop. (To change the RAM disk's capacity, change AppDisk's Get Info memory size before launching it.)

Apple Spec Database

(Apple Computer, free.) Without adding another 1,300 pages, we weren't able to fill Chapters 12 and 13 with as much detail about every Mac model ever made as we would have liked. If you really, really want to know about the possibilities of a particular model, or when it was introduced, or how much VRAM it has, consult this amazingly complete database from Apple. (Apple occasionally posts new versions of this database at `http://support.info.apple.com/applespec/applespec.qry`.) AppleSpec Database © 1998 Apple Computer, Inc. Used with permission. All rights reserved.

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A hot AppDisk secret

We've discovered that AppDisk can be extremely useful for extending the life of any copy-protected software you've purchased.

Some of today's copy-protected software uses a hard-disk install method: you're permitted to install the program one or two times onto a hard drive. Once there, it behaves exactly like any other program. If you choose not to install it onto a hard drive, you're asked to insert the original key floppy disk every single time you run the program. This scheme is used by Performer, Vision, Final Draft, and other niche-market software.

Trouble is, floppies go bad; your key disk may stop working. Worse, standard hard drive maintenance, such as defragmenting or repartitioning, loses your precious hard-disk-installed copy forever. Using AppDisk, however, you can protect yourself. We'll use Performer in this example.

Using AppDisk, create a RAM disk large enough to contain a copy of Performer. Use the hard-disk installation procedure to install a copy of Performer onto the RAM disk. Quit Performer.

Now use AppDisk's Save command. You've just preserved the installed commercial program forever, in its no-key-disk-required condition!

Run Performer's installer a second time, and this time uninstall Performer from the RAM disk! You've now reclaimed that precious installation back onto the floppy. Finally, quit AppDisk and do not save changes!

At this point, you have a good hard-disk installation left on your master floppy and a RAM disk that, as long as you never save changes, has a permanent supply of HD installs. You can make as many copies of the AppDisk as you want.

AppleScript Utilities

(Apple Computer, free.) To find out more about AppleScript, the Mac's built-in automation/macro feature, see Chapter 22. This collection of finished AppleScript serves both as productive tools and as a demonstration of AppleScript's power. (For more scripts and information about how you can take advantage of this remarkable tool, visit http://applescript.apple.com.)

This collection includes such AppleScripts as **Add Prefix/Suffix to Files, Total Size of Selected Items, Trim File Names, Go to Website, Desktop Picture Slideshow, Set View Prefs for All Folders,** and so on.

This folder also contains the OSA menu, a free extension that adds a list of AppleScript commands to your menu bar, making your finished AppleScripts always available.

AppleScript Utilities © 1997 Apple Computer, Inc. Used with permission. All rights reserved.

AppSizer

(Peirce Software, $20 shareware.) If you read Chapter 9, you know the drill when it comes to changing how much memory a particular program uses when it's running — highlight its icon, choose File ⇨ Get Info, and so on. AppSizer, however, lets you change how much RAM a launching program will use on the fly — just press the Control key as it launches.

Avara

(Ambrosia, $20 shareware.) Are you prepared for battle? With its fast and furious action and unique 3D game play, you can't help but be absorbed in this game. Using both the mouse and keyboard, you have complete 360-degree control to counter-maneuver and quickly target your enemy. You're not limited to sliding around in predetermined mazes, as in many of the older 3D games. Avara's maneuverability is unique, allowing warriors to freely climb, jump, and run on any of the structures in the battlefield.

Add to this Avara's networkablity — play over the Internet or your office network — and the game gets even more interesting. Develop your skills and strategy in the many solo levels, and when you're ready, access the Avara Internet Tracker to locate worthy opponents. The Tracker offers users a continually updated list of Avara games in progress all over the Net.

BeHierarchic

(Fabien Octave, shareware $10.) BeHierarchic is a powerful menu enhancer. It lets you see more than five levels of submenus (for folders nested in folders); can change the font and size used for your menu; can group and rearrange the items in your menu; adjust a program's memory appetite as it's launching; list the items on your Desktop; and much more. (Don't be fooled by the fact that BeHierarchic has been around along time,

having been originally designed as an add-on to give Mac OS 8-style submenus to any folders listed in the menu; this version works at least through Mac OS 8.1.)

Big Picture

(John Montbriand, $20 shareware.) Big Picture is the ultimate drag-and-drop graphics-file opener and slide-show maker. Whatever it is you've just downloaded from the Web, Big Picture can show it to you. Understands GIF, PICT, MacPaint, BMP, JPG, StartupScreen, and QuickTime file formats. Also generates double-clickable, standalone slide-show documents.

Biorhythms

(Andrew Regan, $20 shareware.) According to popular legend, our minds, bodies, and emotions are governed by three natural cycles known as biorhythms. Once we realize how we are affected, we can plan our lives accordingly, so that we take advantage of our peaks of energy and exercise special caution on "critical" days.
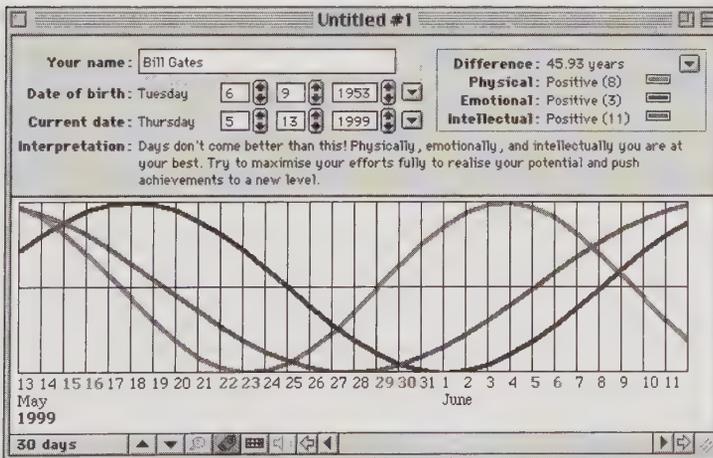
Biorhythms is generally agreed to be the most powerful, attractive and original biorhythms program available on any platform. Supports Apple events and Macintosh Drag and Drop.

Brian's Sound Tool

(Brian Scott, free.) A quick, clean, drag-and-drop program that converts sound files between Mac and Windows (such as .WAV) formats. Converts between almost any Mac format (System 7 sound file, FSSD file, any file containing *snd* resources, Sound Mover suitcases, Mac CD files, and many

others) and Windows formats (.WAV files, Sound Blaster .VOC files, Sun(/NeXT) µ-Law, Amiga 8SVX, and AIFF).

Cache-22

(Newer Technology, free.) As you may remember from Chapters 12 and 13, nothing gooses a Mac's speed like a high-speed memory cache. But how do you know if your Mac has one? And if you just installed, say, a Level 2 cache into your Power Mac, how do you know if it's working?

This program tells you what PowerPC chip you have, what caches, and how big they are.

CanOpener

(Commercial software from Abbott Systems.) CanOpener is an indispensable utility that gives you emergency access to any file. It lets you copy text, pictures, or sounds out of any file, including foreign files, corrupted files, and mystery files. It's a lifesaver for recovering text from damaged files. See Chapter 22 for details, and see the discount coupon in the back of the book to upgrade to the latest version.

Chiral

(Ambrosia, $15 shareware.) Cross the addictive real-time flipping action of Tetris with the thinking of molecular science, and you've got Chiral, a visually stunning game from Ambrosia Software. Your test tube is filling up with atoms. Can you bond them into molecules fast enough — and keep your molecules stable?

Clean Install Assistant

(Marc Moini, free for individuals.) As you can read in Chapter 36, a clean system install is one of the most useful troubleshooting steps you can take. Unfortunately, it often takes a lot of time, because you need to figure out which files to move to the new system and which ones to leave behind (extensions, control panels, printer drivers, application-specific items, special folders, etc.).

Clean-Install Assistant does this sorting and moving automatically, using its list of factory-issue Mac OS files. It'll carefully collect your additions and move them to a separate folder so you can update the System Folder, then it'll move them back to the right places in the new System Folder with a single click!

(Yes, we know that Conflict Catcher 8 offers this feature in a much more streamlined way — but this one's free.)

Clip Jokes

(Pogue & Schorr, free.) A bunch of jokes downloaded from the Internet, in text-clipping format. We just threw 'em on here for fun.

Clockometer

(Newer Technology, free.) Clockometer tells you exactly how fast your Mac is running, in MHz. If you've installed a clock-speed accelerator (such as the Newer Technology MacClip or PowerClip), then at what speed is that computer running? Or what if someone installed the accelerator in one of ten 6100s in the office? How do you quickly determine which one it's in? Clockometer answers the question in one second.

Color It!

(Commercial software from MicroFrontier.) Color It! is a powerful 24-bit painting and retouching program. It's along the lines of Photoshop — but it's quicker to load, simpler to learn, offers multiple Undos, and requires half as much memory.

Color It! lets you either create new color paintings or retouch scanned photos — from black-and-white all the way up to millions of colors. It reads MacPaint, PICT, TIFF, Photoshop, and EPS files and offers an impressive list of features: multiple Undo; work with multimegabyte files even with limited RAM; editable tool palette; custom patterns; image masking; and image-processing filters.

By the way, whenever you launch Color It, your new painting window will be filled by a colorful ad encouraging you to upgrade to Color It! Version 3. Just double-click the Eraser tool to nuke the message.

Conflict Catcher 8 Demo

Conflict Catcher 8 is a startup-file manager. If you press the space bar as your Mac starts up, you're shown a list of every extension and control panel in your Mac. At this pause in the Mac's start-up sequence, you can switch extensions on or off (by clicking); rearrange the loading order (by dragging); view them sorted by type, name, or loading order; group them into mutually required, or mutually incompatible, clusters; or group them into named subsets. Conflict Catcher can actually show the names of your extension icons as they load.

Best of all: if you're having some mysterious glitch or crash, you click on CC's Conflict Test button. After a few restarts, CC triumphantly names the problem extension and offers to turn it off for you. Conflict Catcher 8 also offers the Clean Install System Merge feature described in Chapter 36 — after clean-installing a new System Folder, Conflict Catcher can reduce to only a few minutes the task of bringing your customized fonts, sounds, control panels, preferences, extensions, and Apple menu items into the new System Folder.

This demo version expires a week after you first use it — long enough to get out of whatever extension conflict you're currently suffering. (The clean-install feature doesn't work in the demo version, however.)

Control Strip modules

These modules add additional functions to Apple's Control Strip (see Chapter 4 for installation and removal discussions).

Control Panels Strip (Ammon Skidmore, free) provides a fast, easy way to open control panels, and access to items in the Extensions, Control Strip Modules, and Startup Items folders.

Terminator Strip (Ammon Skidmore, $5) provides a variety of functions, including hiding or showing of the Control Strip depending on the mouse location, quitting all applications, quitting the Finder (saving precious RAM), shutting down, and much more.

BunchOApps (Patrick McClaughry, free) lists the most recently run programs (and also programs you want to remain permanently in the list). Selecting an application from either list launches the application.

CoolViews

(Quadratic Software, $20 shareware.) CoolViews is a utility for MacOS 8.0 and 8.1 that gives you more control over the list views in Finder windows (as described in Chapter 1). With CoolViews, you can reorder and resize columns, use solid background colors in lists, override date formats, and create global list view preferences. (Mac OS 8.5 offers several of these features; check the Quadratic Web site, www.quadratic.com, for an updated version that works with Mac OS 8.5.)

DemoGod

(Bill Karsh, $25 shareware.) DemoGod lets educators and presenters use eye-catching effects to enliven and clarify demonstrations of Mac software. At any time while using the Mac, you press a single key to freeze the screen — and now you can paint or type on the screen, draw fat red marker lines, isolate a single window (hiding everything else), focus an animated spotlight on a particular area, and more. Try it — you won't believe how cool this *Mac Secrets* exclusive software can be.

DeskPicture

(Peirce Software, $20 shareware.) *For systems before Mac OS 8:* DeskPicture lets you display full-screen pictures on your desktop and manipulate them to your taste, exactly as you can in Mac OS 8 and later.

Desktop Patterns (Wraptures)

(Commercial software from Form & Function — a *Mac Secrets* exclusive.) We dearly love the ability to tailor our desktops with the control panel called Desktop Patterns (System 7.5 through 7.6), Desktop Pictures (Mac OS 8 through Mac OS 8.1), or Appearance (Mac OS 8.5 and later). But we're really tired of the set of boring patterns that Apple provides. Therefore, we welcome these 19 amazing, photo-realistic desktop patterns from Form & Function.

They're adapted from Wraptures, a gorgeous collection of photo-realistic backdrops for multimedia and Web creation.

To install, drag one of these clipping files into the mini-desktop window of the appropriate control panel (Desktop Patterns, Desktop Pictures, or — in Mac OS 8.5 — Appearance). Click the Set Desktop Pattern button to install the pattern onto your actual desktop.

Desktop Picture Gallery

Sick of staring at teddy bears or Bondi Blue as your desktop background? Then try installing any of these much more imaginative desktop "photos." To install, just drag-and-drop onto the mini-desktop in Desktop Pictures control panel (Mac OS 8 through Mac OS 8.1), or the Desktop tab in the Appearance control panel (Mac OS 8.5 and later). If you have something before Mac OS 8,

use DeskPicture, also included on the *Mac Secrets* CD, to install these pictures instead.

This folder contains desktop pictures by three different artists:

■ **Ira Altschiller** ($10 shareware) — Ten original images inspired by the Hubble space telescope.

■ **Shay Fulton** ($5 shareware) — Desktop Pictures Galore, fifteen originals to suit every taste.

■ **W.B. Johnston** (free) — Ten stunning full-screen backdrops featuring brilliant 3-D perspective.

There's also Shark, the man-eating, open-jawed shark photo featured on the screens of 1998's G3 PowerBooks in Apple's advertisements.

Disinfectant

(John Norstad, free.) Disinfectant, a freeware application and extension, is one of the best antivirus programs available for the Macintosh. It recognizes and eradicates 25 Mac viruses and all known variations. Disinfectant also recognizes many possible unknown variations. It detects the viruses and, when possible, repairs infected files. It also includes a virus-protection extension that loads at startup and continually protects your Mac from infection by any of the known non-HyperCard Mac viruses.

Note: Disinfectant doesn't protect against the AutoStart virus described in Chapter 22, nor against Word macro viruses (also discussed there) — in fact, this is the final version of the program. Still, we find it extremely useful in eradicating all previous virus types.

Disinfectant's manual, by the way, is all electronic. Launch Disinfectant, then choose ⬛ ⇨ Disinfectant Help.

DiskTracker

(Mark Pirri, $20 shareware.) DiskTracker is an extremely powerful and flexible disk cataloging and management system. With DiskTracker, you can quickly and easily create a catalog of every file on your floppy disks, Zip disks, Jaz cartridges, SyQuests, hard drives. CD-ROMs, optical drives, servers, or whatever. DiskTracker even "sees" the files in StuffIt and Compact Pro archives and self-expanding applications.

After scanning your disks, you can then search the catalog at high speed with the powerful searching facility. You can easily create disk labels, scan disks in the background, launch files directly from the program, search on almost 20 different criteria, locate the disks with the most free space at a glance, and more!

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│ 52 items                        973.0MB free on "Macintosh HD" │
│ Free  │        Name        │ Size │ Modified Date │ Scanned D│
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│8.0MB   ▽ ▭ (103) Old archives     86.7MB  Fri, Mar 8, 1996   Fri, Mar 8, 19│
│        ▷ 🗀 Backup              1.1MB   Wed, Jun 14, 1995 │
│          🗋 Club Introduction    3K     Tue, Jan 11, 1994 │
│        ▷ 🗀 Expo movies         49.6MB  Tue, Feb 15, 1994 │
│        ▷ 🗀 Iomega Zip Install 4.2  3.8MB  Mon, Apr 24, 1995 │
│        ▷ 🗀 OLD FLOPPY ARCHIVES  23.6MB  Sun, Dec 19, 1993 │
│          🗋 Sondheim clip        7.8MB   Tue, Apr 21, 1992 │
│        ▷ 🗀 Trash                OK     Fri, Mar 8, 1996 │
│        ▷ 🗀 Trip materials       684K    Tue, Feb 15, 1994 │
│59.3MB  ▷ ▭ (105) June 96 backup   35.3MB  Fri, Aug 23, 1996   Fri, Aug 23, 1│
│4.2MB   ▷ ▭ (106) Tokyo Expo       90.4MB  Fri, Mar 8, 1996    Fri, Mar 8, 19│
│59.8MB  ▷ ▭ (107) newsgroups       34.9MB  Thu, Jul 11, 1996   Thu, Jul 11, 1│
│4.7MB   ▷ ▭ (108) SECRETS/MFD      89.9MB  Fri, Mar 8, 1996    Fri, Mar 8, 19│
├───────────────────────────────────────────────────────┤
│ 🖳 All Disks  ▼ □ □   OK (0 items) selected  ⇦▥    ⇨ │
└───────────────────────────────────────────────────────┘
```

DragAnyWindow

(Alessandro Levi Montalcini, $5 shareware.) Doesn't this always seem to happen? There's some information you need to see in order to finish filling in a dialog box, but the information is covered by that very dialog box, and the dialog box is not movable! DragAnyWindow changes that by letting you, well, drag any window.

DragClick

(Greg Friedman, free.) Macintosh drag-and-drop is the best thing to happen to the Mac OS since System 7. (See Chapter 1 for more about how great it is to drag highlighted text into and out of your word processor windows.) Only one problem: not all programs support Drag-and-Drop.

Well, they do now. DragClick adds automatic text dragging to almost any program that uses the normal Mac routines for the display and manipulation of text — including Word 5, America Online 2.7, and other non-drag-and-drop-savvy programs. Just click on selected text, and drag to the desktop or into a program that does support drag-and-drop.

DropStuff

(Aladdin, $30 shareware.) DropStuff makes the creation of StuffIt compressed archives a piece of cake. Simply drag the file you'd like to compress onto the DropStuff icon. The program automatically compresses it, creating the new compressed file and adding ".sit" (which is universally used to let people know that they're dealing with StuffIt compressed files) to the end of the original document name.

As a bonus, DropStuff (whose full name is "DropStuff with Expander Enhancer") adds a vast array of new downloaded-Internet-file-opening smarts

to its companion program, StuffIt Expander (which is also included with this book): it lets StuffIt Expander open *.gz, .z, .uu, .ARC, .ZIP,* and *.uu* files, too. (As with any utility, check the Web site — in this case, www.aladdinsys.com — for updates if you're using Mac OS 8.5 or later.)

Dvorak Keyboard Layouts

(Dvorak International, free.) When Charles Sholes designed the 100-year-old typewriter keyboard layout we still use today, he was trying to design something as clumsy as possible — he didn't want fast typing to jam his prototype typewriter. August Dvorak, in 1930, designed an improved layout, in which all the frequently used letters are directly beneath your fingers. Typists swear that the Dvorak layout lets them type faster, more accurately, and with far less finger movement than the traditional layout.

Fortunately, you have a Mac; you can see for yourself. Simply drop this keyboard layout icon onto your System Folder and select it with your Keyboard control panel (see Chapter 4).

After installing this layout, consult the chart (provided in the Read Me file) or your Key Caps desk accessory to learn the new locations of the keys.

eDOC

(Michel & François Touchot, $25 shareware.) EDoc is along the same lines as Adobe Acrobat, but far faster, less expensive, less memory-hungry, and more flexible. It lets you create standalone, double-clickable documents that other people can read, search, copy from, or print — without needing a word processor. Documents in eDoc format maintain their original layout, complete with graphics, styles, colors, fonts (if present on the recipient's machine), and so on; in other words, eDoc files are great for distribution via Web page, e-mail, disk, CD, and so on. No matter what kind of Mac the recipients have, they'll be able to double-click your file and read its contents — looking exactly the way you had originally designed it.

Escape Velocity

(Ambrosia, $20 shareware.) Escape Velocity combines elements of classic "trading" games, arcade space shoot-outs, and strategy simulations. Whether you choose to build a trading empire, aid the Rebellion in a civil war, or strike out on your own as a ruthless pirate, Escape Velocity provides a multitude of options for the game connoisseur. This open-ended game play allows each player to chart his or her own course while playing. There is no "right" way to play Escape Velocity, as long as you have fun.

Extensis PhotoBevel

(Commercial software from Extensis Software.) This plug-in for Photoshop (and Photoshop-plug-in-compatible programs, such as Color It) does one thing very well: it creates raised-looking lettering (and other raised-looking images) right in your artwork document. It's one of the plug-ins in PhotoTools 2.0 for the Mac, a $130 program.
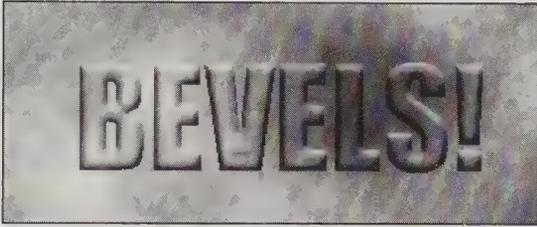
EZNote

(John Holder, $20.) Have you ever needed to jot down a note quickly and be able to easily find it later? Ever wanted to save some text while Web browsing for later reading? EZNote can do these things and more at the touch of a key or click of a mouse without making you leave the application you're in. Hit another key at any time to bring up a list of all your notes, which you can edit, delete, search, replace, print and move from category to category with ease.

FileTyper

(Daniel Azuma, $10 shareware.) FileTyper is a very popular, small, "drop box" program that you can use to quickly change Type and Creator codes, attribute flags (such as invisibility status), and date stamps of your files and folders. It includes many powerful features such as batches, filtering, and directory searches. (See Chapter 15 for a complete discussion of Type and Creator codes, and Chapter 1 for a discussion of making files invisible with this program.)

Finder View Settings

(Alessandro Levi Montalcini, $10 shareware.) Finder View Settings is ideal for Mac OS 8 through 8.1. This control panel makes it much easier to manage the MacOS 8 folder-specific view settings. It can globally override all of your folder-specific view settings, making MacOS 8 behave more like System 7 or Mac OS 8.5, or easily change the requested view settings for single folders or entire disks.

FinderPop

(Turlough O'Connor, free.) This amazing control panel, an essential for Mac OS 8 and later, is discussed in detail in Chapter 2. In short, it extends the Mac OS 8 Finder's Control-click (contextual) menus. Now you can choose a font and size for your contextual menus; have contextual menus pop up when you click and hold (no Control key required); switch programs from a contextual menu; list your favorite files and folders in a universal contextual menu; and much more.

Even better: for fans of the discontinued commercial PopupFolder utility, FinderPop lets you ⌘-click a folder to view a pop-up menu of its contents — which you can use to open, Get Info on, trash, or otherwise manipulate the files inside. You gotta love this kind of freeware!

Flash-It

(Nobu Toge, $15 shareware.) Flash-It is a shareware screen-capture utility — the program, in fact, we used to take all the screen illustrations in this book. Flash-It defines up to five screen-capture key combinations (called HotKeys). Each HotKey performs one of the following functions:

- Captures a portion of the screen image to the Clipboard.
- Leaves the captured image in the Clipboard or saves it to a PICT-based disk file or to the Scrapbook or sends it to the printer.
- Lets you choose the destination of the image on the fly.

Flash-It works even while menus are being displayed. It can capture only the frontmost window (or alert/dialog box) or only the displayed menu; if you want, you can capture the pointer (or cursor) as part of the image.

Font-O-Rama!

(Henry Starr, $10 shareware.) Font-o-rama dramatically simplifies font selection. If you spend any time at all scrolling through font menus, testing different font styles, or trying to get just the right font size, then Font-o-rama will save you time.

It's a dialog box (which you can summon with a single keypress) featuring a huge multi-column list area that's big enough to display all your fonts at once. You don't have to scroll through a long font menu looking for "Garamond Ultra Italic" — just click on it. You're instantly shown what the font looks like, including some useful statistics. Better yet:

- Font-o-rama works in common applications, like PageMaker, QuarkXPress, or Microsoft Word.
- Font families are grouped together and sorted by style.
- You can select fonts, sizes, and styles using only the keyboard.
- You can print catalogs of fonts in various styles and sizes.

Fraction Fonts

(Tom Schmidt, $10 each or $15 together.) *SansFractions* and *SeriFractions* were created to fill a numerical void in the font world: the lack of fractions. SansFractions is very similar to Helvetica, and SeriFractions is similar to Times. Each font has a full set of diagonal and vertical fractions for $1/2$ through $8/9$, and also 16ths and 32nds. Each also has a partial set of mathematical symbols, including the true multiplication symbol. (Most people just use a lowercase x.) Both TrueType and PostScript versions are included.

FreePPP

(Rockstar Studios, free.) This is the software your Mac needs to connect to the Internet. Use it if you *don't* have Open Transport, Apple's own dialing and networking software (which comes with System 7.6 and later). See Chapter 25 for details on Open Transport and FreePPP.

GoMac

(Proteron, $20 shareware.) As hostile as we Mac fans may be toward Windows, some people appreciate the occasional nice feature in that Dark Side OS. GoMac is for those people. It imitates the look and behavior of the task bar in Windows 95. Below are outlined the primary features of the Program Bar, Start Menu, and Keyboard Switcher.

The Program Bar lets you switch among open windows; it also serves as a drag-and-drop launcher for icons on your desktop. You can also quit or hide running programs by Control-clicking their buttons on the Program bar. And (our fave!) clicking on the clock pops up this month's calendar.

The Start Menu offers an menu-like launcher for your favorite files and programs. (GoMac adds a Start Menu Items folder to your System Folder.) It also offers Find, Shut Down, and other useful commands.

The Keyboard Switcher lets you switch among running programs by pressing ⌘-Tab (or another stroke of your choice).

Actually, GoMac does lots of other stuff, too — in a very clean, well-implemented way.

Googol Eyes

(Bohm S. Kim, free.) The search is over! For all of us who have been desperate to have a pair of onscreen eyes follow our cursor around, Googol Eyes is the answer. Actually, this little program can be more than a silly RAM-waster: if you have multiple monitors or a PowerBook screen that's hard to read, this short program can help you find those "lost" cursors.

If you'd like to have Googol Eyes launch every time you turn on your Mac, drag its icon (or alias) into the Startup Items folder in your System Folder. If you'd like to have more than a single set of eyes staring at your cursor, duplicate the program, rename the copies, highlight them all, and double click 'em.

GraphicConverter

(Thorsten Lemke, $35 shareware.) GraphicConverter is one of the world's most popular graphics programs. It can open, edit, manipulate, color-correct, and export virtually any graphic format the world has ever known, Macintosh or not: PICT, Startup-Screen, MacPaint, TIFF (all types), RIFF, PICS, 8BIM, 8BPS/PSD, JPEG/JFIF, GIF, PCX/SCR, GEM-IMG/-XIMG, BMP (RLE compressed BMPs also), and 50 more you've never heard of. Also does slide shows. An outstanding, must-have addition for anyone who doesn't own Photoshop.

GURU

(Newer Technology, free.) GURU is a fast, slick program that tells you about your Mac model's RAM possibilities: the amount of RAM your computer can handle, how many slots you can fill, and what combinations of chips you'll need to reach a certain maximum amount of RAM.

Harry

(Ambrosia Software, $20 shareware.) Join Harry, the Handsome Executive as he scoots and kicks his swivel chair through the halls of ScumCo in this action game. The path to job security is fraught with many perils: Harry must avoid dart-throwing middle managers, rebellious customer service drones, crazed chemists, and a host of other enemies. All the while, he must maintain corporate favor or risk the feared pink slip.

Harry is not without his own weapons: he can acquire explosive soda cans from vending machines, and he knows how to handle an industrial-strength staple gun. Meanwhile, ScumCo's President, Dr. Ubermann, has orchestrated a top-secret chemical manufacturing project. Perhaps uncovering it will help Harry answer the question that has been plaguing him since his first day on the job: "Just what does ScumCo *do,* anyway?" Harry features a sizzling MIDI instrument set, active panning stereo, 360-degree scrolling, and more.

Hi-Res Map

(Göran Svegler, free — a *Mac Secrets* exclusive.) The Map control panel is all very well, but the map it shows you is, let's face it, pathetic. Try to zoom in (as described in Chapter 4), and all you get is a blotchy mess.

But paste in Göran's Hi-Res Map, a huge, color, much larger and more detailed map, and now you can see oceans, mountains, rivers, and state boundaries. (See "Map" in Chapter 4 for details.)

Holiday Lights

(Rob Mathews, $15 shareware.) Holiday Lights (based on the wildly popular Xmas Lights program) is an entertaining application that places flashing light bulbs around the edge of your screen, as though a well-insulated elf had crawled into your computer and stapled them there. The lights flash in the background while you continue to work; it's not just a screen-saver! The "bulbs" include standard Christmas tree lights, chili peppers, stockings, holly, snowmen, happy faces, and more.

Holiday Lights also includes cheery *background music*, using Apple's QuickTime Musical Instruments (see Chapter 23)... holiday lights (including Halloween)...and a built-in snowy screen saver to put you in the holiday spirit. It's a multimedia extravaganza!

HTML Vocabulary

(Carl Bäckström, free.) As described in Chapter 28, this handy little program identifies every single HTML code (used to create Web pages), what it means, and how you use it. An indispensable reference for anyone designing Web sites.

Icon, Sound, Clip Art Samplers

A folder full of commercially designed icons, sounds, and graphics ready for you to use on your desktop or in your documents. They include:

- 12 EPS files from the Art Explosion CD (Nova Development)
- 30 drag-and-droppable clip-art files from the Graphics Essentials CD (Olduvai Software)

- 50 drag-and-droppable clip-art files from the Art Today collection (`www.arttoday.com`), a division of Zedcor

- 75 fantastic icons from the Icon Gallery collection (Component Software), suitable for pasting onto any of your own icons (see Chapter 1)

- 32 double-clickable sound files from the Graphics Essentials CD (Olduvai Software)

- 25 graphics for building Web pages — quick to download, appropriately sized and colored — from Nova Development's Web Explosion CD

- 20 professionally drawn color icons from the Zonkers collection (Nova Development), suitable for pasting onto any of your own icons (see Chapter 1)

Internet Explorer

(Microsoft, free.) Just in case you're still using Microsoft Internet Explorer 3.01 or the dog-slow 4.0 version — here's Internet Explorer 4.0.1, the feature-rich Web browser described in Chapter 25.

Kaleidoscope

(Greg Landweber, Arlo Rose, $25 shareware.) Kaleidoscope gives your Macintosh a complete visual overhaul, letting you choose from thousands of different interface designs using plug-in files called *schemes*. Kaleidoscope patches nearly all of the Macintosh interface elements, including the basic windows, scroll bars, menus, and buttons, as well as pop-up windows, tabs, bevel buttons, and sliders under Mac OS 8. The 2.0 scheme format offers non-rectangular windows, enhanced menus, background patterns, double-headed scroll bars, tabs, sliders, cursors, and many other enhancements.
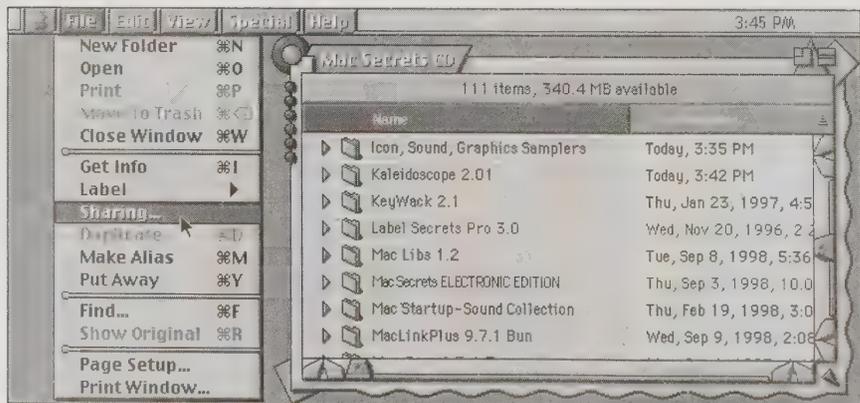
Kaleidoscope is much like the Themes that were cut from Mac OS 8.5 at the last minute (see Chapter 4) — but Kaleidoscope exists *now*, and you don't have to have Mac OS 8.5 to use it.

Label Secrets Pro

(Jeff Robbin and David Pogue — a *Mac Secrets* exclusive.) Your cheerful authors dreamed up the idea for Label Secrets when writing Chapter 2, which deals with the pointlessness of the Label menu. We thought: if *only* it could be made to do something useful!

Now it does. Each time you turn on your Mac, the Label menu at your Finder desktop — or the File ⇨ Label submenu in Mac OS 8 and later — displays a different message containing one of the Macintosh secrets from this book. It shows an actual Macintosh secret every day for a year, right on your Mac screen!
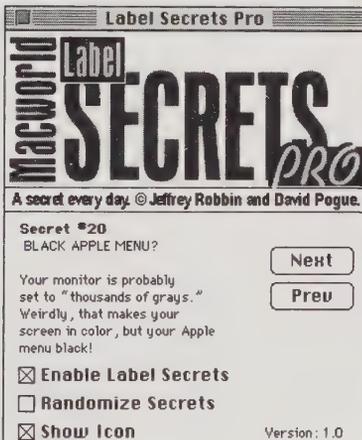
Label Secrets Pro 3.0 offers an updated set of secrets (for those fans who've exhausted the 2.0 set).

By the way, there's a Label Secrets Pro *secret.* If you're clever, you'll figure out how to add your *own* secrets (or edit ours), right in the control panel! (Hint: it involves pressing the Option key while opening the control panel.)

Mac Libs

(Michael Benson, $10 shareware.) Ever played Mad Libs? It's a hilarious party game where you ask each guest to supply a word (like nouns, verbs, names, etc.). You, the emcee, plug these words into a pre-written story template — which you read back only when all the missing words have been provided. If the rules are correct and the appropriate words are chosen, the generated story is grammatically correct, though frequently silly, and always amusing. Using Mac Libs, you can play the game without pencil or paper — even all by yourself!

Mac Secrets Ultimate Bookmark List

(Pogue & Schorr, free.) Here they are, all in one place: the best Web sites for the Macintosh fan to go for news, troubleshooting, gossip, Easter eggs, updates, and more. Provided in both Netscape Navigator and Microsoft Internet Explorer formats. Just double-click this document to open your page of links.

Mac Secrets, Electronic Edition

At last: an electronic, searchable edition of *Macworld Mac Secrets!* The full text is here, complete with layout, fonts, and graphics. It's great to have on the PowerBook for trips, or on the regular Mac for reference.

Note the following about this special bonus:

For your entertainment pleasure, both the edition in your hands *and* the previous one (the Fourth Edition) are included here. The old version is here in case you're interested in reading up on an older topic (OpenDoc, Word 5.1, or Cyberdog, say) that's no longer covered in the current edition.

Adobe Acrobat Reader is required to open the *Mac Secrets* Electronic Editions. Acrobat Reader is in the same folder; install it first.

Speed Tip

Crucial instructions: The best way to read the book on the screen is (1) press ⌘-M, which enlarges the type so that it just fits your screen, and then (2) press Return or Enter repeatedly to scroll neatly to the next electronic page-full.

This book is our livelihood. *Please* don't distribute, upload, e-mail, or otherwise duplicate the electronic editions. Doing so is not only a violation of federal copyright law, but it also kills our book's sales, which is kind of mean.

Mac Start-up Sound Collection

For your listening pleasure: the ultimate collection of startup and crash ("Chimes of Death") sounds (see Chapter 7), from every Mac model that ever lived. Were you about to spend $4,000 on a new laptop just so you could hear what its startup chime sounds like? Now you don't have to! Just double-click a sound file to hear it.

We live to serve.

Start-up Sound © 1984 Apple Computer, Inc. Used with permission. All rights reserved.

MacLinkPlus

(Commercial software from DataViz — a *Mac Secrets* exclusive.) MacLinkPlus is the leading file-conversion utility for Mac users who exchange documents with Windows users. (See Chapter 16 for more on converting file formats.)

For years, Apple licensed MacLinkPlus to include with its system software —
up until Mac OS 8.5, when Steve Jobs' cost-cutting measures ended that
arrangement. Fortunately, your cheerful authors and DataViz have picked up
the slack: MacLinkPlus 9.7.1, the final version to ship with the Mac OS, is
yours free with this book. (Note, however, that you can get the current, even
fuller-featured new version at a substantial discount — see the coupon at the
back of this book.)

MacsBug

(Apple, free.) MacsBug is a programmer's utility, not for the faint of heart (but
definitely for the curious), that lets you peer into the Mac's behind-the-
scenes memory contents. See Chapter 22 for a tutorial and description.

Maelstrom

(Ambrosia, $15 shareware.) Maelstrom is a fast action arcade-style game that
uses rendered 3-D graphics, high-speed animation, and four-channel digitized
sound effects. It's a modernized update to the old arcade game Asteroids.

MIDI files for Chapter 23

A *MIDI file* is the musical equivalent of a plain text file: it's the exchange
format between MIDI music programs.

As it turns out, QuickTime *is* a MIDI program. As described in Chapter 23,
you can import these files into Movie Player, assign each music track to a
QuickTime Musical Instrument, and orchestrate your own music!

Mouse Jolt

(Ian Schenkel, $5 shareware.) As you can read in Chapter 10, it's bad news to
plug or unplug your ADB mouse or keyboard while the computer is turned
on. Not only do you risk frying your Mac, but you also reset the mouse to its
slowest, most annoying speed.

Mouse Jolt solves the second problem. A click on its application (or its
included Control Strip module) resets your mouse to its previous speed
without having to restart the Mac.

Movie2Snd

(Scott Lindsey, free.) Movie2Snd is a very simple application that extracts
soundtracks from QuickTime movies. You can also use Movie2Snd to extract
sounds from audio CDs. (See Chapter 23.)

Drop-launch a movie onto the application (or choose a movie from the open dialog). You will be prompted for a location for the resulting sound file. That sound file is a plain ol' System 7 sound file that can be played by double-clicking it.

Navigator Button editor

(Skylar Stein, $5 shareware.) Microsoft Internet Explorer lets you add toolbar buttons for your favorite Web sites. Netscape Navigator for the Mac doesn't. At least, not until now.

Navigator Button Editor customizes those six less-than-lovable directory buttons in Netscape Navigator. It can even expand the "Guide" button pop-up menu in Communicator 4. (Navigator Button Editor works with Navigator version 1.1N through 3.x and Netscape Navigator/Communicator 4.03. Future versions will certainly be supported when necessary.)

Netscape Navigator

(Netscape, free.) As you can read in Chapter 25, the war between Microsoft and Netscape has resulted in one Web browser after another. At this stage in the war, Netscape Navigator is faster than Microsoft Internet Explorer, but has fewer features; take your pick. We're particularly fond of this version of Navigator, which is the stablest version we've ever used.

Olduvai Font Sampler

(Commercial software from Olduvai.) Ten interesting fonts from Olduvai Software's Graphics Essentials CD-ROM. To install, drag onto your System Folder. See Chapter 29 for more on fonts.

OneClick

(Commercial software from WestCode Software.) Ah, how did we *live* without OneClick? Clean design, high speed, easy to use — this is the macro program for the efficiency freak. It's won every award from every magazine, lets you record and play back almost anything you can do on the Mac, comes with a Web site filled with ready-to-use macros written by other people — and it's yours free with this book. You just saved $60.

But there's a tiny catch:

You must get a serial number from the WestCode Web site before you can use your free copy of OneClick!

Worth Learning

Here's the Web address: www.westcodesoft.com/macsecrets
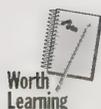
Once you have your serial number, write it down — and then install OneClick. The next time your Mac starts up, you'll be asked for this number. (Without your serial number, you can use OneClick only in a limited-time demo mode.)

After that, go wild. See Chapter 22 for a tutorial in using this powerful time-saver. OneClick palettes can look like anything you want, or you can make macros that have no visible buttons to click at all (only keystrokes).
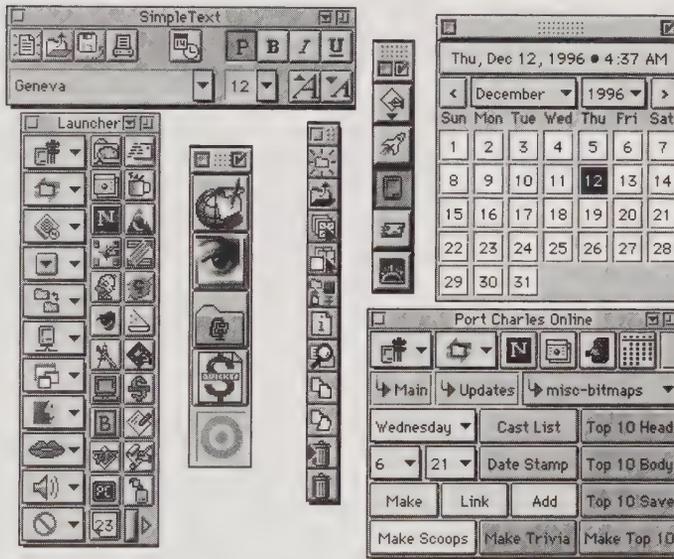
Please note two other items about this version (which is the full, shipping, commercial version):

- WestCode is giving you OneClick, but the gift doesn't come with tech support.
- Version 1.4 isn't fully Mac OS 8.5 compatible. A free updater will be available to all *Mac Secrets* readers, however. Visit www.westcodesoft. com to get your free updater.

OT/PPP Strip

(Dennis J. Wilkinson, free.) As we mentioned in Chapter 25, getting *onto* the Internet is easy — any Web browser or e-mail program will do the dialing for you. Trouble is, when you *quit* your Web browser or e-mail program, your Mac remains connected to the Internet, tying up the phone line.

The OT/PPP Strip is a plug-in for Apple's Control Strip (see Chapter 4) that displays information about your Open Transport/PPP "state of affairs" (your Internet dial-up connection). One glance tells you whether or not you're online, how long you've been connected, your connection speed, and more. And when you're finished surfing cyberspace, a Disconnect command makes it easy to hang up your Mac's phone connection.

This delightful module also allows you to switch between multiple PPP configurations (different local-access phone numbers, for example) as you've set them up in the PPP or Remote Access control panel.

Outlook Express

(Microsoft, free.) Here's Microsoft's e-mail program, as described in Chapter 27. We thought we'd save you the download. (Note that the same installer on this CD gives you both Internet Explorer and Outlook Express. If you want only one or the other, use the Custom Install option.)

Pogue's Song Spoofs

As performed at Mac user groups nationwide, at Macworld Expos, on various computer TV shows, and in his own living room — it's David Pogue at the piano, singing his satirical ditties, mockin' out Steve Jobs, Bill Gates, and the whole crazy, mixed-up Mac industry in double-clickable sound file format.

PopChar Pro

(Günther Blaschek, $40 shareware.) PopChar Pro, one of the most famous shareware programs of all time, makes "typing" of unusual characters easy without having to remember keyboard combinations. It installs a menu that shows all characters available in the current font. Any character can be inserted in the current document by simply selecting it from the menu, as shown here:

PowerPC Check

(Alessandro Montalcini, shareware $10.) PowerPCCheck is a drag-and-drop utility that looks for native PowerPC code inside applications, control panels, extensions, and so on. And — more to the point — it can *remove* the code your Mac model doesn't need (PowerPC or 68K code), resulting in a huge disk-space savings.

Program Switcher

(Michael Kamprath, $25 shareware.) Getting tired of mousing up to the Application menu to switch between programs? Program Switcher lets you switch between running programs via a simple keystroke (⌘-Tab, as in Mac OS 8.5, or whatever keystroke you choose). About a thousand variations and additional features make Program Switcher much more than meets the eye.

QuickPop

(John Holder, $10 shareware.) QuickPop does two things very well. The first is to let you assign "hotkeys" to up to 30 Apple Menu Items, control panels, applications, documents, or monitor depth (colors) or speaker volume settings. When the Hotkeys are pressed from within most any program, the selected item instantly launches.

The second is to make a menu pop up anywhere on the screen when you hold down a particular key and click. From this pop-up menu you can launch any of those same kinds of files (documents, applications, control panels, etc.). It's launching heaven!

QuickTime 3

(Apple, free.) In case your Mac is still trundling along with an obsolete version of Apple's amazing digital movie technology, here's the latest, brimming with such features as smoother playback and enhanced compression technologies. As explain in Chapter 23, you must pay $30 at www.apple.com (or buy Mac OS 8.5) to get QuickTime 3.0 *Pro,* which lets you *make* and *edit* moves. But this free software lets you *play* the latest movies — including those directly on World Wide Web pages. See Chapter 23 for much more detail about QuickTime.

QuickTime VR Movies

(Apple, free.) As explained in Chapter 23, QuickTime VR movies look like still photos — until you start dragging your cursor around inside the picture. Then the "camera" starts panning around, up, down, zooming in or out, letting you feel as though you're actually there on the spot where the photo was taken. This collection of VR movies shows off the power of VR; be sure to read Chapter 23 to learn about the secret Zoom In/Zoom Out keystrokes.

Quiet Start

(Tom Bridgewater, free.) Quiet Start is an extension that keeps some Macintosh models from making the usual chime at startup or restart. It was designed particularly for owners of older PowerBooks who may find themselves in an environment where the chime would be disturbing to others (such as a classroom).

RAMometer

(Newer Technology, free.) This program is a high-speed, no-cost RAM Tester. It runs an extensive series of tests and provides a solid test bed for your memory. If you suspect that your RAM is going bad, then fire up a copy of RAMometer and check it out.

ResEdit Templates

As described in Chapter 21, a *template* is a ResEdit module that lets you edit some aspect of a program (in ResEdit) graphically — instead of as hexadecimal gobbledygook. These templates provide graphic editors for *kcs#, w900, fmn2, mach, sysz,* and *thng* resources.

For more on ResEdit and using templates, see Chapter 21.

ScrapIt Pro

(John Holder, $15 shareware.) ScrapIt Pro is the Mother of All Scrapbooks. It stores and indexes anything you can copy to the clipboard, import, or drag & drop: sounds, PICTures, text, QuickTime movies, and lots more — all accessible at the click of a mouse. You can print thumbnail pictures or text lists of all items in any Scrapbook file. You can quickly and easily search through all the text items or item names of a scrap file to find what you're looking for. You can actually edit text, play movies, and copy pictures — right in the window.

SCSIProbe

(Robert Polic, free.) As you can read in Chapter 33, keeping tabs on the SCSI chain is often half legerdemain and half blind luck. SCSIProbe is an indispensable tool that helps you manage the complexities of your SCSI setup. With SCSIProbe you can determine the device type, vendor, product, and version for every device connected to your bus. It even helps you mount removable devices by a simple keyboard command.

ShareDraw

(Peirce Software, $25 shareware.) ShareDraw is a full-featured drawing application, along the lines of the ClarisWorks drawing window or the now-discontinued MacDraw. (See Chapter 20 for details on drawing programs, which are ideal for making posters, maps, technical diagrams, and so on.)

ShareDraw has hundreds of features, including multi-copy effects, powerful gradients, graphics library support, color blends, text binding to any curve, a very handy live help system, project management, 24-bit color, rulers, grids, and PICT or EPS file export. Use the live help feature to see how each menu and tool works.

ShrinkWrap

(Aladdin, $30 shareware.) Without a word of warning, Apple and many other software companies have begun providing software in a strange and confusing format — *disk images* (see Chapter 22). You can drag a disk image file onto ShrinkWrap to create a *virtual* floppy on your desktop. From there, the Mac treats them as though they were actual floppies. And since ShrinkWrap can "mount" many disks in this way, you can install software that would ordinarily require dozens of floppy disks — without ever inserting a single disk.

ShrinkWrap can also *create* disk images with equal ease — just drag-and-drop — perfect for sending out over the Internet. Actually, ShrinkWrap performs dozens of other useful functions — see Chapter 22 for ideas.

SimpleText Color Menu

(Alessandro Levi Montalcini, $10 shareware.) SimpleText Color Menu is a drag-and-drop utility that installs an extra cool Color menu and an extra useful Goodies menu inside your copy of SimpleText (versions 1.1 through 1.4). Using these menus, you can create Read Me documents with colored text; Search and Replace commands; extended editing keys; window switching; word counting; page margins; and Internet URL handling. Who knew little SimpleText could do so much?

Slot Info

(Newer Technology, free.) Slot Info lets you see what's in your computer — without your having to open its case. The program tells you which version of ROMs are on cards in your computer, what motherboard-based video controller is in your Mac, and so on.

SmartKeys

(Maurice Volaski, $10 shareware.) SmartKeys is a control panel designed to help you type. First, SmartKeys automatically corrects typing that violates conventional typesetting rules, such as typing more than one consecutive space. (Also in this category — converting straight quotes into curly ones, and creating a long dash — like this — when you type two hyphens.) Second, SmartKeys automatically corrects fast typing errors, words that are often misspelled, such as "teh" for "the" and "THe" for "The." Third, SmartKeys can quietly keep a log of everything you type so that, in the event of a system crash, you can recover anything you typed even if you didn't save.

Snapz Pro

(Ambrosia, $15 shareware.) Snapz lets you quickly and easily capture the image displayed on your monitor and save it to a PICT file for later editing.

Snapz offers several unique features over both the built-in ⌘-Shift-3 capture facility and other screen-capture utilities. Snapz captures images when other programs fail, such as (a) when a screen saver display is on the screen, (b) in the middle of the action in a game, (c) while a menu is pulled down, or even (d) while your Macintosh is starting up. If it's on your screen, Snapz can capture it.

SndSampler

(Alan Glenn, $20 shareware.) SndSampler a great tool for recording, editing, and working with Macintosh sounds. First, of course, it gets you around the Sound control panel's 10-second length limit when recording sounds — but SndSampler lets you do so much more: stereo, CD quality, special effects, mixing, file-format conversion, and more.

Square One Lite

(Commercial software from Binary Software.) Square One, a commercial program from Binary Software, is a great-looking, drag-and-drop-savvy *launcher* — a floating palette whose tiles represent your favorite files and programs. Click any tile to launch the associated item.

Install a new file or program just by dragging it onto your palette; use the pop-up menu to launch associated documents; quit any running program remotely; and more. (See the back of the book for a coupon that lets you upgrade to the full, non-Lite version for a mere pittance.)

Startup Doubler

(Marc Moini, $20 shareware.) Amazing as it may sound, Startup Doubler makes your Mac start up quicker. Its software acceleration compensates for slow disk speeds to make extensions and control panels load faster. The speed boost varies (it's a bigger jump on slow Macs), but the saved seconds spent waiting really add up.

Note: Startup Doubler works by "memorizing" your extensions and control panels. Therefore, the *first time* you start up after installing Startup Doubler, you won't notice any speed gain. But during the *second* startup — and thereafter — you'll enjoy the fruits of Startup Doubler's acceleration.

Stuffit Expander

(Aladdin, free.) Virtually every file or program you can download from an online service or the Internet arrives on your desktop in a specially encoded compact form. StuffIt Expander is an all-purpose file re-expander. It turns downloaded files ending with the suffixes *.sit, .cpt*, and *.hqx* back into human

form; and if you add the companion shareware program DropStuff with Expander Enhancer (also included with this book), it will open *.gz, .z, .uu, .ARC, .ZIP,* and *.uu* files, too.

Our advice: leave an alias of StuffIt Expander out on your desktop, ready for downloaded-file drag-and-drops. Oh, and one more thing: If you hold down the Control key when dropping a file on the icon, StuffIt Expander will delete the original archive after expanding it.

Swoop

(Ambrosia, $15 shareware.) Swoop is a fast, vertical shoot-'em-up arcade game in which you battle 3-D rendered aliens with a variety of powerful weapons. The gameplay is a combination of frantic rapid-fire activity and even more frantic dodging. Not a game for wusses.

TechTool

(MicroMat, free.) TechTool is an important Mac utility program. It does five things beautifully: (1) Checks your system files for damage. (2) Zaps your parameter RAM (PRAM) in a more thorough way than pressing the usual keystroke, ⌘-Option-P-R. (3) Rebuilds the desktop; once again, TechTool does better than the usual ⌘-Option keystroke, since it actually *deletes* the old desktop file instead of just rebuilding it. (4) Shows system and drive info about your particular Mac. (5) Shows manufacture date and hours of use! Find out when your Mac was made and how many total hours of usage it has had.

Tex-Edit Plus

(Tom Bender, $5 shareware.) Tex-Edit Plus is a drag-and-droppable, multi-window, styled text editor that fills the gap between the bare-bones SimpleText and a full-featured word processor. Tex-Edit is small, fast, easy to use, and requires little memory.

With Tex-Edit you can do everything SimpleText does, plus: reformat downloaded e-mail or text; correct word-wrap problems and remove extraneous, non-Mac characters; prepare text for upload to a BBS, so that people with MS-DOS systems can view the document as it was intended to be viewed; instantly quote a brief passage from received e-mail, allowing the senders to remember their original message; read any text document aloud, if you have Apple's Speech Manager extension; create simple hypertext documents; attach sound annotations to ordinary mail, and more. See Chapter 17 for a couple other Tex-Edit tricks.

TypeIt4Me

(Riccardo Ettore, $30 shareware.) TypeIt4Me is a typing saver. Your cheerful authors used it to write this book, and in the process only had to type about 70% of the pages in your hands. TypeIt4Me did the rest — by *expanding abbreviations* as we typed.

And where, you may ask, did these abbreviations come from? As you go about your daily life, you *teach* TypeIt4Me. You make up your own abbreviations for words you use a lot: you might use **Mc** for *Macintosh,* **bc** for *because,* **aol** for *America Online,* and so on. Over time, your word list grows, and the amount of typing you save grows! It's good for people with repetitive-stress disorders, it's good for people who want to speed up their typing (and increase accuracy), it's great for people in technical fields, and it's a blessing for anyone who uses the Mac for typing.

Ultra Recorder

(E.J. Campbell, $20.) Ultra Recorder is the ultimate sound recording, playback, conversion, and editing tool for sound! (Between this program and SndSampler, also included with this book, you'll be in sound heaven.) Ultra Recorder can play and convert sounds stored in a variety of sound formats. Just drag a folder, disk, or alias over Ultra Recorder's icon, and it will play all the sounds inside. Ultra Recorder also has a state-of-the-art recording interface, even letting you record sounds in the background.

UnmountIt

(Jim Luther, free.) UnmountIt lets you easily unmount and eject disks (such as CDs, Zips, and Jaz disks) when File Sharing is turned on. (Without UnmountIt, the Mac doesn't let you eject such disks without turning off File Sharing first.) You can use UnmountIt a couple of ways; for example, you can leave it on your desktop. Whenever you want to unmount a sharable disk, just drag its icon to UnmountIt. UnmountIt will launch, unmount and eject the volumes, and then UnmountIt will quit.

WormScanner

(James Walker, free.) The AutoStart virus (described in Chapter 22) is the first truly dangerous Mac virus in the Mac's entire history. As you can read in Chapter 22, preventing the AutoStart virus from attacking your Mac is pitifully easy: just open your QuickTime Settings control panel and turn off "Enable CD-ROM AutoPlay." That's it! You're protected.

If your Mac is *already* infected, however, you can detect and eradicate the virus (which is actually a *worm*) using WormScanner.

X-Words Deluxe

(Freeverse Software, $20 shareware.) X-Words is Scrabble. A fantastic electronic edition of Scrabble. It features a wide range of word lists that let you tailor the game to kids, adults, experts, or polyglots. X-Words can even be made to simulate the vocabulary of historical figures. It has a built-in dictionary of 20,000 words, allowing full definitions to be checked for most words. It allows complete control over board design, multiplier squares, letter frequency, and the ability to designate special bonus words. In other words, you can play exactly the way you like.

X-Words also keeps full statistics on your game and allows you to track your improvement over time. And, unlike most programs of this complexity, X-Words Deluxe is a model of elegant interface design and ease of use.

Note: X-Words can't keep statistics unless you copy the X-Words Deluxe folder to your hard drive before playing.

You Don't Know Jack Lite

(Berkeley Systems, a *Mac Secrets* exclusive.) You Don't Know Jack, as you probably know, is just about the most hilarious, fast-paced, sarcastic game ever written for the Mac. At its heart, it's a trivia game — but with more wordplay, Dennis Millerish humor, sound effects, and twists than Trivial Pursuit even dreams of.

This is a 50-question version of You Don't Know Jack (the full commercial version has 400 questions) — which is enough for a few rounds of late-night hilarity.

Important Note: This game's installer gives you QuickTime 2.1, which may be older than what you already have. Check your Extensions folder; if you have QuickTime 2.5 or later, *don't* use the Easy Install option. Instead, launch the "Double-Click-Me To Install Jack" program. Click Continue; on the next screen, *click Custom.* Choose the installation option called YOU DON'T KNOW JACK GAME, and then proceed with the installation. (You'll be asked to restart the Mac before you can actually play.)

Zipit

(Tom Brown, $15 shareware.) Zip format is the Windows, DOS, and Unix equivalent of StuffIt for the Macintosh. Millions of downloadable files on the Internet end in the letters *.zip.*

While StuffIt Expander (included with this book) can *open* Zip files, it can't *create* them. That's why there's Zipit. It's designed to let you easily create and decompress zip archives.

ZTerm

(Dave Alverson, $30 shareware.) ZTerm is an award-winning shareware telecommunications program that you can use to dial bulletin boards or other Macs. ZTerm gives you a Phone List file that can hold many Dialing setups. Each setup contains the phone number, port settings, and many other settings. Each dial setup appears in the Dial menu to allow easy connection to all of the services you connect to.

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Installing the Secrets Software

The Secrets Software comes on a CD-ROM, which, of course, requires a CD-ROM drive. The Secrets Software Appendix contains step-by-step instructions for installing each individual program, but here's a summary:

Step 1: Insert the CD

If the disc's icon doesn't appear on the desktop after a moment, you're probably missing your CD-ROM extensions. Do a "clean install," as directed in Chapter 36, or call 800-500-7078 for assistance.

Step 2: Find the program you want

On the CD-ROM, you'll find the same programs arranged in several different folders — organized by name, chapter, category, and so on. If you're in a hurry, remember that the Complete Software Collection folder contains everything.

Step 3: Install the software

Refer to the Secrets Software Appendix for individual software installation instructions, but the basics are simple: if the software you want is a control panel, extension, desk accessory, sound, or keyboard layout, drag its icon onto your System folder icon, click OK, and restart the computer. Almost everything else may be run directly from the CD, but will probably be faster and more satisfying if you copy it to your hard drive first.

For the *Mac Secrets Electronic Edition,* run the Acrobat Installer program provided in the Mac Secrets Electronic Edition folder. After you restart the Mac, double-click the Mac Secrets Electronic Edition icon to open the searchable electronic version of this very book.

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Macworld Mac Secrets® 5th Edition

David Pogue and Joseph Schorr

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About the Authors

David Pogue is the author of 15 books, including the million-selling *Macs® For Dummies®*, *MORE Macs® For Dummies®*, and *Magic For Dummies®*. He writes the back-page column for *Macworld* magazine — the Computer Press Association's Best Column award winner for 1997.

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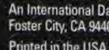
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ISBN 0-7645-4040-8
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