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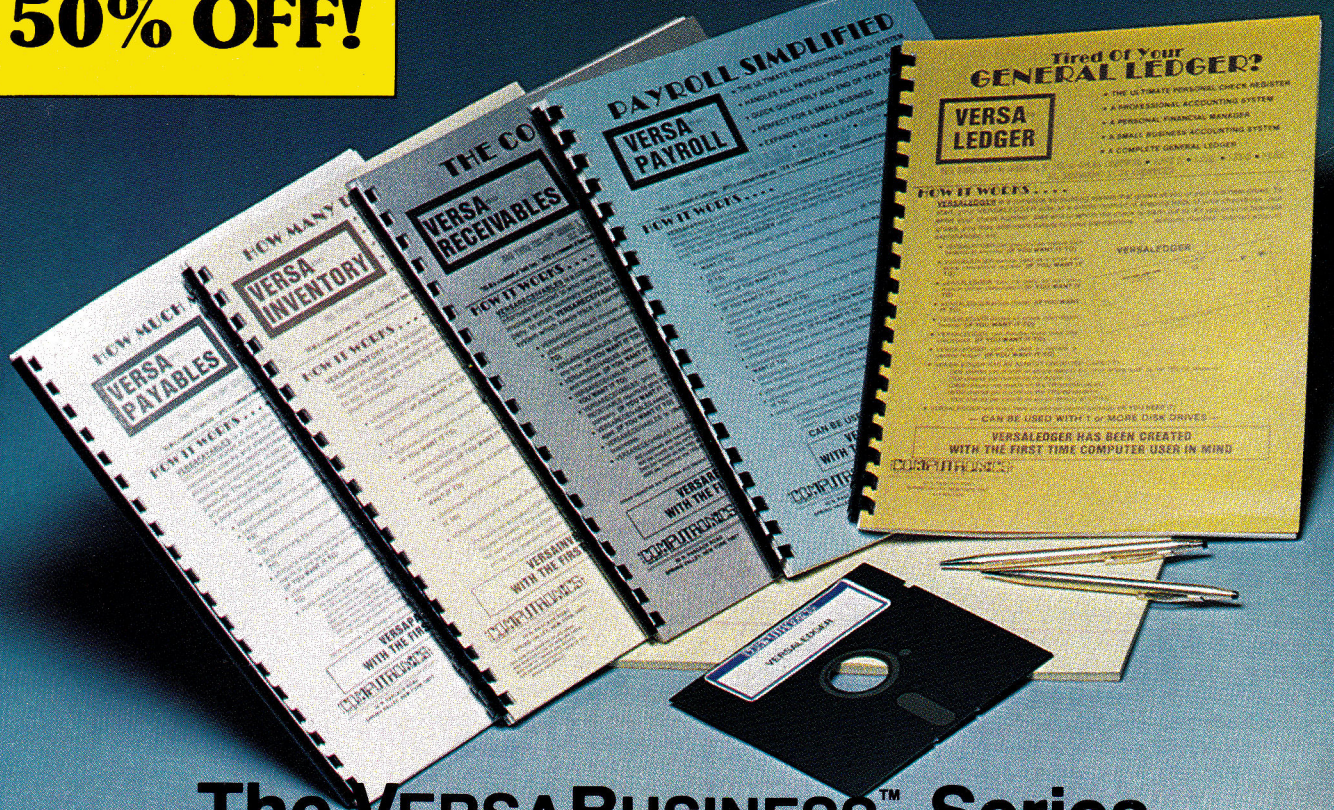

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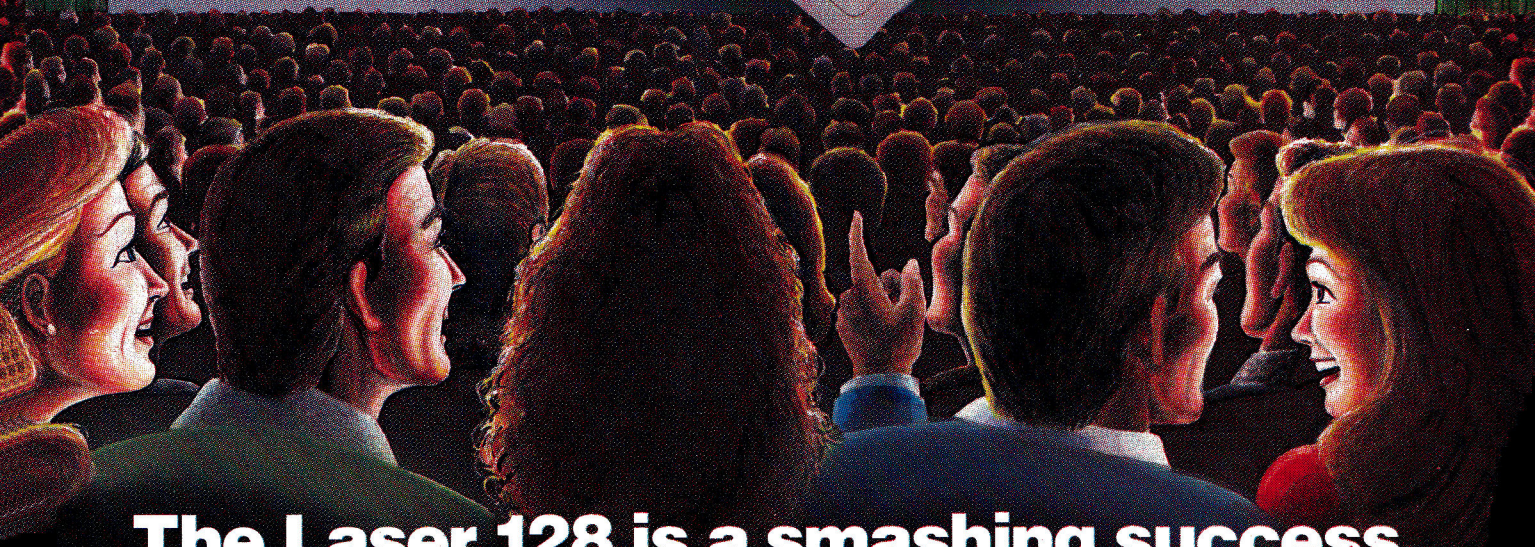

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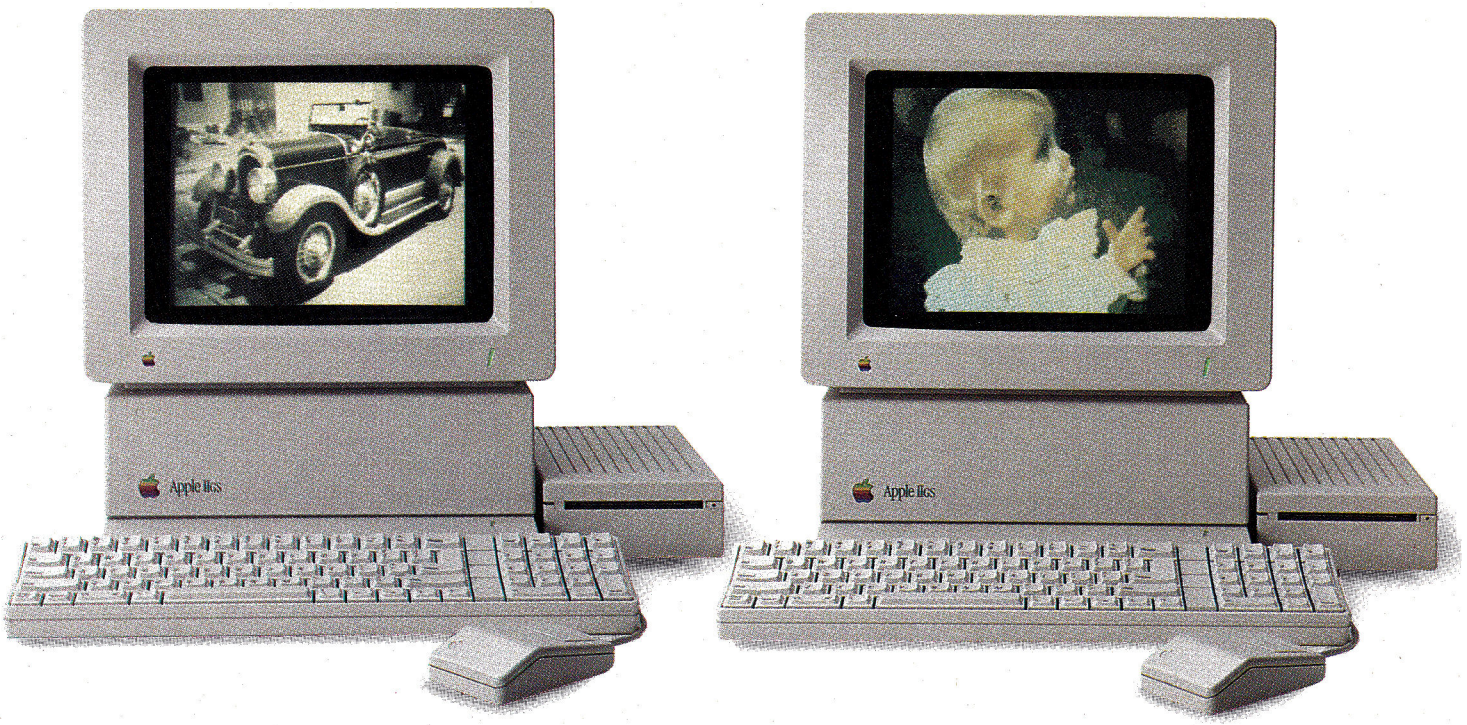

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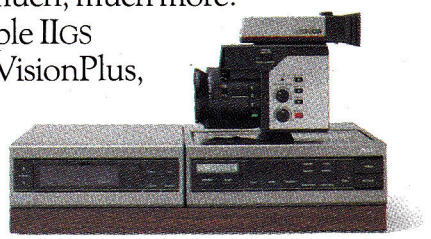

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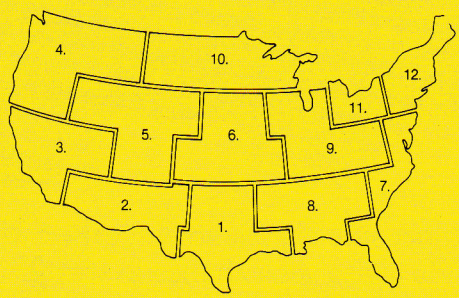

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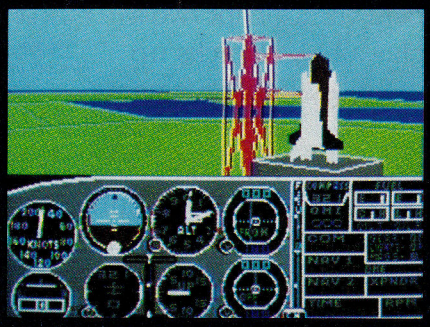

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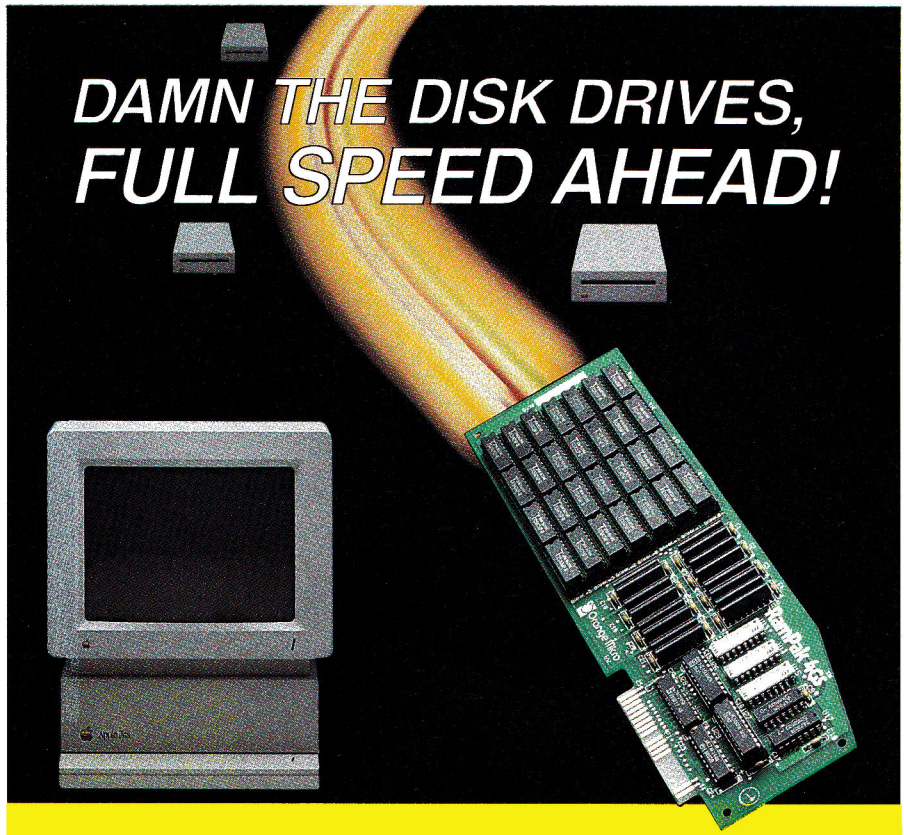

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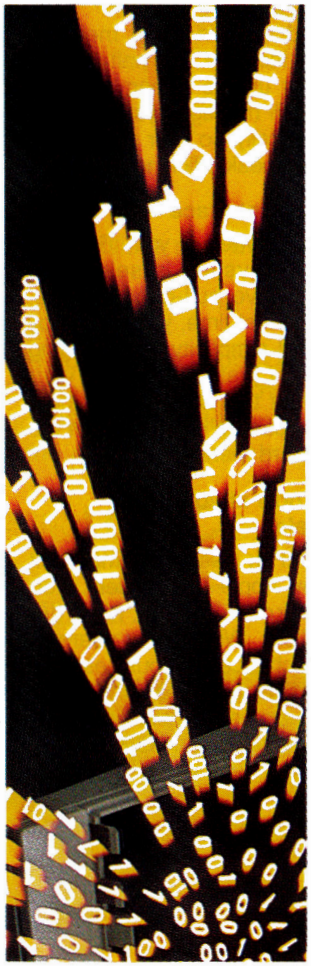

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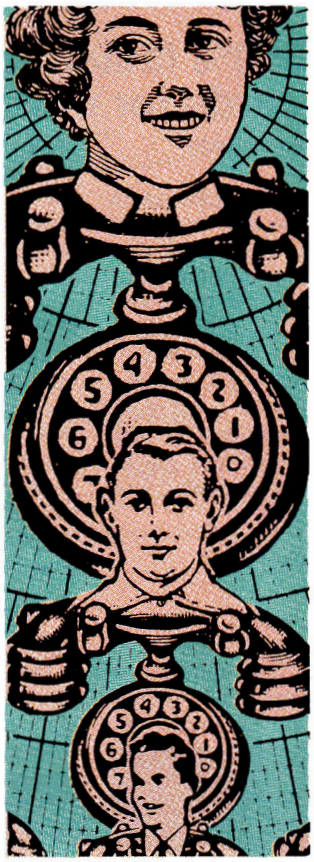

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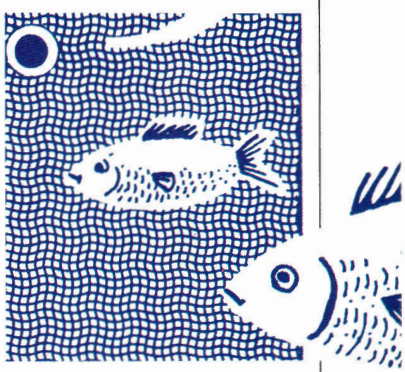

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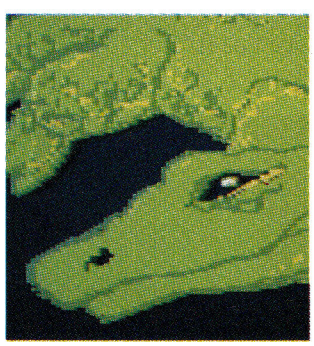

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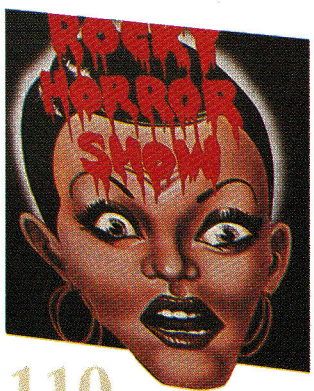
Which of the thousands of educational programs are worth your time and money? To find out, consult this monthly guide to educational software. This month's installment features language arts for grades 4 to 6.



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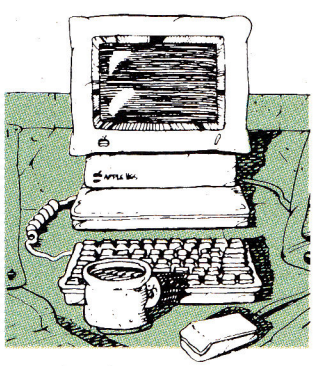

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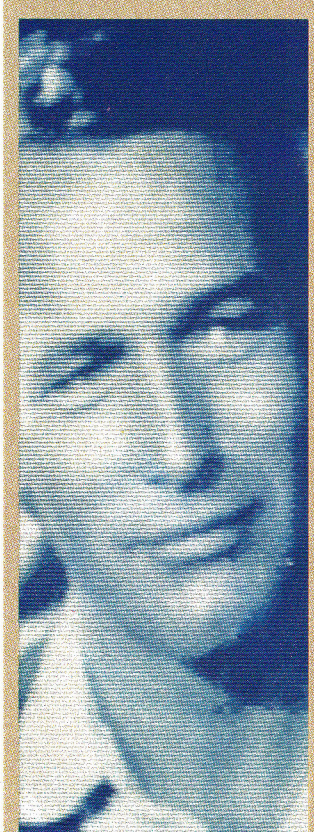

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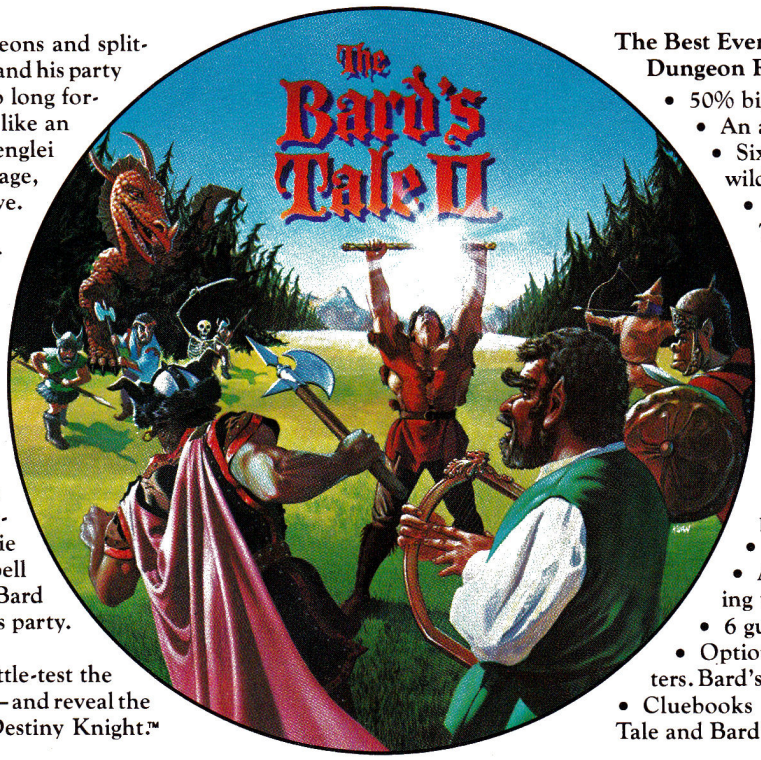

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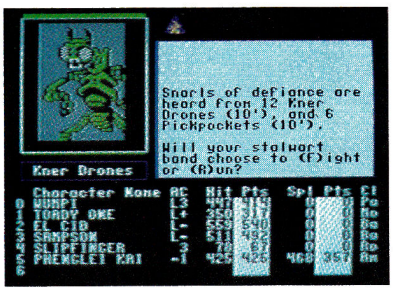

There are over 100 monsters, like this Kner Drone. Many animated. All dangerous.



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The Bard's Tale II

The Destiny Knight

from

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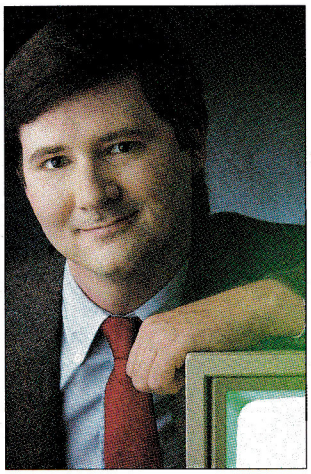
Optional use of characters from Ultima III™ or Bard's Tale™. Apple version uses Wizardry™ characters, too!

HOW TO GET IT: Visit your retailer, or call 800-245-4525 (in CA call 800-562-1112) for VISA or Mastercard orders. **To buy by mail,** send a check, money order, or VISA or Mastercard information to Electronic Arts, P.O. Box 7530, San Mateo, CA 94403. The price is $39.95 for the Commodore 64 version, and $49.95 for the Apple version. Add $5 for shipping and handling ($7 Canadian). Allow 1-4 weeks for delivery. The Bard's Tale II and Electronic Arts are registered trademarks of Electronic Arts. Ultima is a registered trademark of Richard Garriott. Commodore is a trademark of Commodore Electronics Ltd. Wizardry is a trademark of Sir-Tech Software, Inc. For a copy of our complete catalog, send 50¢ and a stamped, self-addressed envelope to Electronic Arts Catalog, 1820 Gateway Drive, San Mateo, CA 94404.

CIRCLE 168 ON READER SERVICE CARD



The similarities between the Macintosh II and the IIGS make me think that in many ways the IIGS is the economy Macintosh II.

MAC LEARNS LESSON FROM APPLE II

Curious about what Apple has been doing with the Macintosh series of computers? Just take a look at the Apple II series to get a hint. Apple recently introduced the Macintosh II, a member of the Macintosh family that is modeled after the "open" Apple II computers: the Apple II, II Plus, IIe, and IIGS. Just as the IIGS borrowed a large chunk of Macintosh technology, now the Macintosh family is taking advantage of Apple II technology by spawning the Macintosh II, a Mac with slots.

The Macintosh II is the long-awaited "open Mac, "an expandable system with six slots. The Mac II is to the Macintosh family what the IIGS is to the Apple II family. Just as the IIGS has a 65816 processor (a much more powerful version of the 6502) that can address gobs and gobs of memory, the Mac II has a 68020 processor (a more powerful version of the 68000) that can address more memory than anyone could previously afford to buy, let alone keep cool. Just as the Apple IIGS has much better graphics and sound capabilities than did its predecessors, the Mac II has much better graphics and sound capabilities than did its forebears.

Just as the IIGS is the premium computer in the Apple II line that everyone wanted but couldn't get right away, the Mac II is the premium computer in the Mac family that everyone will want but won't be able to get (or maybe afford) immediately. The similarities between the two machines make me think that in many ways the IIGS is the economy Mac II.

Even the Mac II's case and exterior design are quite similar to those of the IIGS. In fact, an Apple engineer told me that he thinks the Mac II looks like an Apple IIGS on steroids. It's now apparent that the Macintosh Plus and older Macs were the Apple IIc surrogates of the Mac family. And the new Macintosh SE (announced simultaneously with the Mac II) is a souped-up Mac Plus with a single internal expansion slot, sort of like the souped-up IIc with a single internal expansion slot (sound familiar?).

Ironically, IBM modeled the IBM PC series after the Apple II, yet it has taken Apple this long to create a Macintosh based on the Apple II's original design of an expandable system with numerous slots.

So, what does all this mean to the Apple II world? Well, I think that the ties between the Macintosh family and the Apple II family are much closer now (thank you, John Sculley and Del Yocam) and that Apple's research-and-development efforts now have more direct applicability to the Apple II line, especially the IIGS. Both the Apple IIGS and the Macintosh families now share similar design principles, system software, user interfaces, development tools, and many peripheral devices. In fact, the IIGS and Mac II external hard disks, tape backups, disk drives, printers, keyboards, and mice are pretty much interchangeable.

I'm a firm believer in the trickle-down theory of Apple software: Mac developers will start trickling Mac software down to the IIGS, and the trickle will grow into a great stream until we ultimately see about a third of the Mac's software show up on the IIGS. In order for this dream to come true, Mac developers need tools that facilitate codevelopment for the Mac and IIGS. Already programmers can use TML Pascal to create Mac and IIGS versions of the same Pascal program, and a cross-assembler from the Mac to the IIGS is available from Consulair. Ultimately, Apple says, it will include the IIGS in the Macintosh Programmers Workshop, the main software-development system for the Mac.

These developments will help ensure that Mac software does indeed start showing up on the IIGS—and when it does, we'll be sure to keep you informed. +

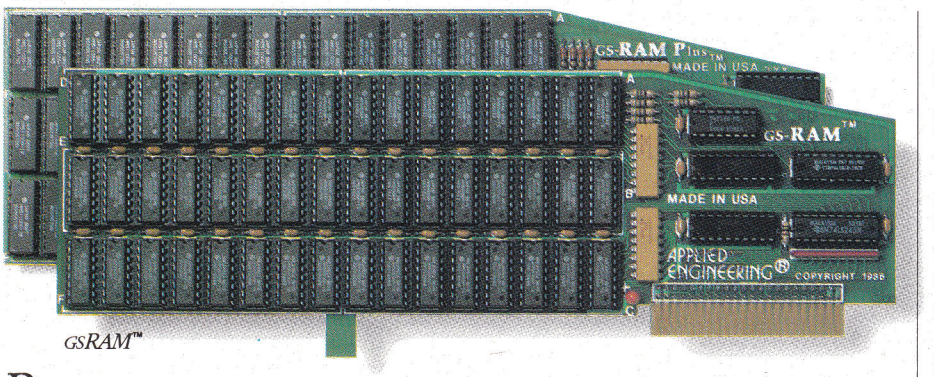


FREDERIC E. DAVIS/**EDITOR IN CHIEF**

Insist on GSRAM™ When You Buy Your IIGS™

Expand the IIGS RAM and ROM with the GSRAM or GSRAM Plus with ROM Pak. Available now with 256K to 8 MEG!

GSRAM Plus™



GSRAM™

Remember the 16K cards for the II+ and the 64K cards for the IIe? At the time, that much memory seemed like a lot. But when the owners of these memory cards came to us for more memory, many had to throw away their smaller Apple memory cards or try to sell them. Most of our customers told us that had they known about Applied Engineering's larger memory cards when they bought their Apple, they would have purchased them at the same time.

GSRAM and GSRAM Plus are available now, allowing up to 8 MEG of memory expansion. That's 8 times the memory capacity of Apple's card and just look at the benefits that only GSRAM and GSRAM Plus have over Apple's card:

- Lower cost
- Has 6 RAM banks (Apple's card has 4)
- Has memory expansion port
- Has ROM expansion port
- No configuration blocks to set
- No soldered in RAM chips
- Expandable to 8 MEG
- Expands AppleWorks internal limits
- Built-in Hi-Res self-diagnostic software
- 5 year hassle free warranty (Apple has a 90 day warranty)
- Made in USA

GSRAM for More AppleWorks Power

Only GSRAM and GSRAM Plus eliminate AppleWorks internal memory limits, increasing the maximum number of records available from 6,000 to over 25,000 and only GSRAM and GSRAM Plus increase the number of lines permitted in the word processing mode from 6,000 to over 15,000. And only GSRAM and GSRAM Plus offer a built-in printer buffer so you can continue using Appleworks while your printer is printing. GSRAM and GSRAM Plus even expand the number of lines in the clipboard from 255 to 2047 and will auto segment large files so they can be saved on two or more disks. You can even have Pinpoint or Macroworks and your favorite spelling checker in RAM for instant response. GSRAM and GSRAM Plus will even display the time and date right on the AppleWorks screen. Nothing comes close to enhancing AppleWorks so much.

Turn Your IIGS into a Giant

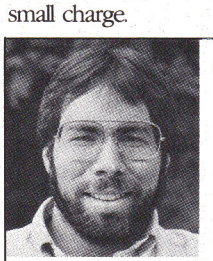
Simply plug GSRAM into the IIGS memory expansion slot and you've got up to *8 megabytes* of RAM at your fingertips—all of it instantly and automatically recognized by the IIGS. GSRAM is compatible with all IIGS software, including AppleWorks, as well as BASIC®, ProDos, DOS 3.3, PASCAL®, "C" and CP/M®.

Grow by Bytes or Megabytes

We offer GSRAM in two configurations so you can increase your memory 256K at a time (GSRAM) or a megabyte at a time (GS-RAM Plus). Both offer full compatibility, lower cost than other boards, and easy expandability. And both are extremely low in power consumption. A fully expanded GSRAM operates at only 375 ma, and GSRAM Plus at only 270 ma (even with 6 megabytes on board!)

GSRAM—for Normal Memory Requirements

GSRAM is available with 256K, 512K, 1 MEG or 1.5 MEG of memory already on board. If you don't need the full 1.5 MEG now, you can choose a GSRAM with less memory and expand it up to 1.5 MEG in the future—or upgrade to GSRAM Plus for a small charge.



"In quality, performance, compatibility, expandability and support, Applied Engineering's GSRAM and GSRAM Plus are number one."

Steve Wozniak, the creator of Apple Computer

With an optional piggyback card, you can expand GSRAM even higher than 1.5 MEG! (Other cards are only expandable to 1 MEG.)

GSRAM Plus—for Growing by Leaps and Bounds

GSRAM Plus is the first Apple memory card to use 1 MEG RAM chips on the main board. It's available with 1 to 6 MEG on board. If you don't need the whole 6 MEG now, you can buy a GSRAM Plus with less memory and easily expand it in the future.

GSRAM Plus can be expanded up to 8 MEG with an optional piggyback card.

Easy Expansion

Both GSRAM and GSRAM Plus use standard RAM chips that are readily available and just plug right in. So unlike other cards, you'll find expanding your GSRAM or GSRAM Plus easy, convenient and very economical. And with our optional ROM expansion module you can even increase the IIGS's ROM space and all in just one slot.

Quality and Support of the Industry Leader

Applied Engineering is the largest supplier of Apple peripherals in the world. We *invented* the first large RAM cards for the Apple. With a 5-year "no-hassle" warranty and outstanding technical support, you can be sure GSRAM and GSRAM Plus will deliver the performance you're looking for—or return them within 15 days for a full refund.

GSRAM with 256K	$169
GSRAM with 512K	$219
GSRAM with 1 MEG	$299
GSRAM with 1.5 MEG	$379
GSRAM with 2-8 MEG	CALL
GSRAM PLUS with 1 MEG	$459
GSRAM PLUS with 2 MEG	$759
GSRAM PLUS with 3-8 MEG	CALL

Order today!

See your dealer or call Applied Engineering today, 9 a.m. to 11 p.m. 7 days. Or send check or money order to Applied Engineering. MasterCard, VISA and C.O.D. welcome. Texas residents add 6¼% sales tax. Add $10.00 outside U.S.A.

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We invite your comments.

Letters

BOOTING POSSIBILITIES

Dear *A+*: I am writing to inform you of an error in your article "The Drive to Succeed" on pages 28–34 of your January issue. In this article you said that if you hooked up a 3.5-inch external UniDisk drive to the Apple IIc, you could boot a program from it with PR#5. You said this was not possible with an external 5¼-inch drive. I have a IIc and an external IIc 5¼-inch drive and have found out that it is possible to boot a program from this drive with PR#7. It was an excellent article.

Larry McCarty
Holbrook, AZ

SPINE, THANKS

Dear *A+*: In my opinion you are doing everything right: limiting yourself to a single computer family, following user trends and interests, and always remaining one jump ahead of the next question a user is getting ready to ask!

Just a small suggestion: Many of us save and treasure our tattered copies of *A+* in vertical cardboard files, sold in any stationery store. With the magazines in the box, the entire lower four inches of the spine, containing the *A+* date, cannot be seen. Couldn't you plant, for example, a "2/87" at the top of the spine, just under the "*A+*"? Plenty of us out here would appreciate it! Keep up your great work.

Joan Hoffman
Secretary
APPLESHARE User's Group
Westport, CT

Editor's Note: Excellent suggestion. See how responsive we are by checking out this month's spine.

BBS IMPERILED?

Dear *A+*: As a member of one of the oldest Apple clubs, I am absolutely appalled by the implications of your news article on the Software Publishers Association bounty program (*A+*, February 1987, page 25). This program will probably spell the end to all Apple club bulletin boards and E-mail services. Let me explain my reasoning.

My club, the Original Apple Corps of Los Angeles, was founded in 1979. It has always been written club policy to actively discourage copying of proprietary software. We do not even allow any discussion of such copying at our meeting. Any member trying to sell copied proprietary software at one of our flea markets would be expelled.

Unfortunately, we have a BBS. All uploads to the BBS are reviewed by the sysop before release to the general public. The stated club policies on copying apply. But there is no practical way our sysop or any sysop can completely guard against some clown (read that bounty hunter) who uploads a disguised illegal copy and then turns us in. If turned in, we would be at the mercy of one of SPA's sharp corporate lawyers, and the burden of proof would be on us. We have some good technical people, but SPA can out-expert any Apple club 50 to 1 in a court of law.

Given these facts and the nonavailability of group liability insurance in California, I am afraid that this means we may be forced to close our BBS. Maybe that's what SPA has been after all along, or am I getting a little paranoid?

Henry P. Dowst
Pacific Palisades, CA

INDUSTRY RESPONSE

Dear *A+*: The January edition of *A+* "Letters" included one from Bruce Schwenke that could have easily been written by me. I, too, have trouble getting response from the personal-computer industry. I've been in Japan for a year and a subscriber to *A+* since July '86. In September '86, I wrote to *A+* "Rescue Squad," Applied Engineering, Dresselhaus, and Future Music, the last three being *A+* advertisers.

Future Music gave a very quick, polite, and helpful reply. Dresselhaus didn't bother to answer my questions about its product, but just wrote a note across my letter to them and returned it. AE and "Rescue Squad"—well, I'm still waiting. I've asked questions about products from several firms when I placed an order by mail and did not get an answer, only the products and the bill.

I know that my letters are getting there, because it is only the computer field that has given me any trouble with response.

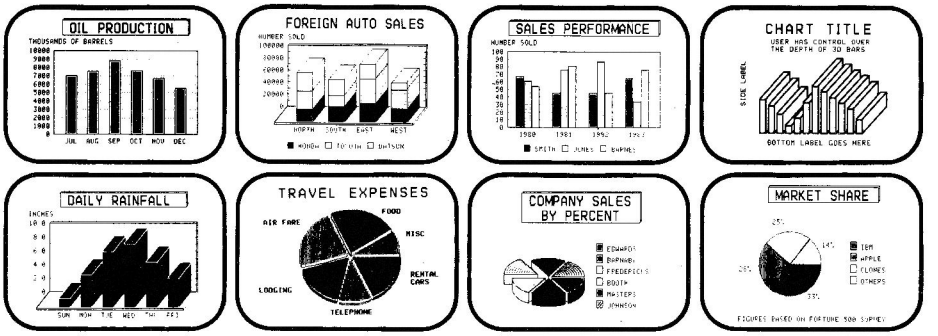
I would like to commend Preferred Computing for its immediate response about an order that was short an item when I received it.

Hank Lee
Tokyo, Japan

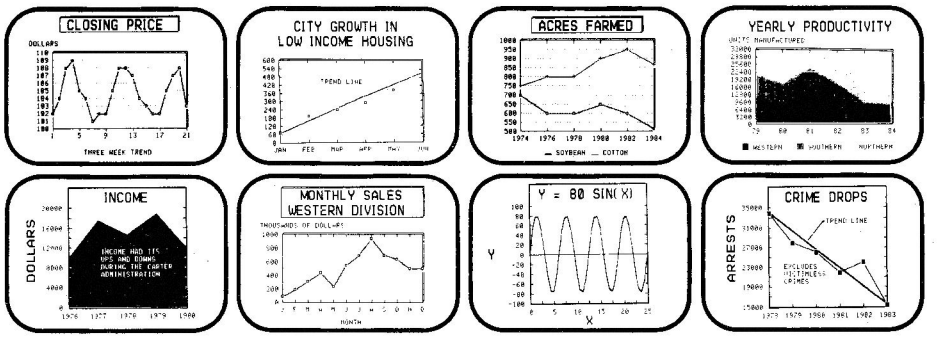
WHERE ARE THEY NOW?

Dear *A+*: I wish to answer the letter from Bruce Schwenke in your January issue. First of all, Micro Lab went out of business a year ago because of bankruptcy. The rights of externally written programs such as Miner 2049er and Tax Manager reverted to their original authors. Second, the educational software such as Constitution, Tutor, English SAT 1, Math SAT 1, and others, have been acquired by Word Associates, 3096 Summit Avenue, Highland Park, IL 60079; (312) 244-8587. Contact Myrna Helfand. Programs such as Data Factory and Language Plus have been acquired by Disk & Data Fac-

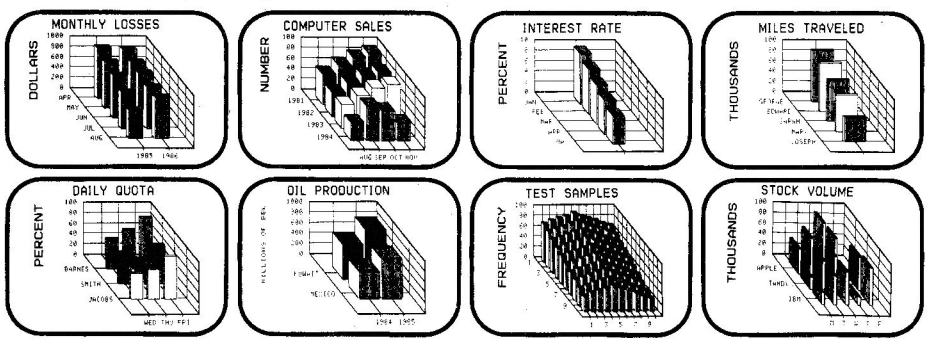
ChartPower! • For all Apple computers • Prints on almost any printer • Convert keyboard data to charts in seconds



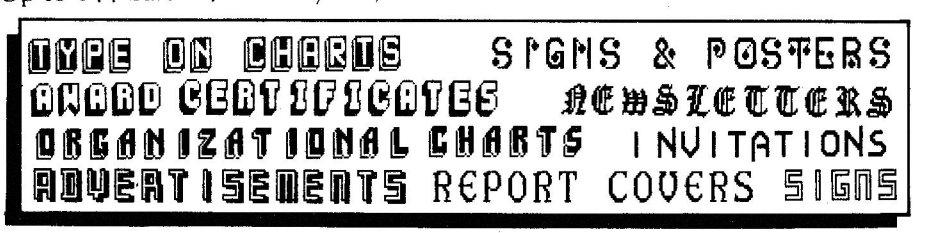
AlphaChart. 2D/3D bar and pie charts. Extras include powerful draw, type, and slide show programs. 26 chart styles. **$29.95.**



CurvePlotter. Line, area, trend, and math function charts. Up to three curves per chart, 100 points per curve. 12 chart styles. **$29.95.**



3DChart. Nothing else like it! 3D bars plotted versus two variables on a 3D grid. Up to 144 bars. 14 chart styles. **$29.95.**



TEXT-ART. Gives your charts an individualized, artistic flair. Type anywhere on any graphic in 24 type styles. Only **$29.95.** Fonts by Beagle Bros.

- Buy any two disks for $39.90.
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- Check/VISA/MasterCard/COD.
- 3 months money-back guarantee.
- Get all four disks for $59.75.
- Or send $3.00 for a really great demo disk.
- Requires Apple II and a dot-matrix printer.



800-826-2989 (Nationwide)
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(209) 473-2862 for tech. info.

SPECTRAL GRAPHICS SOFTWARE
6333 Pacific Avenue
Suite 2560
Stockton, CA 95207

tory Company, Box 648, Waukegan, IL 60079; (312) 244-8587.

I would like to know what happened to software companies such as Muse Software, Datamost, and Sega.

Donald Lee
San Francisco, CA

VIP DISAPPOINTMENT

Dear *A+*: I was very disappointed after trying the VIP Professional program. The spreadsheet is unacceptable, because of the way it handles decimal numbers; e.g. (19.7-19)*10 shows 7. If we use the cell in an IF or LOOKUP statement, we learn that the value is not 7. The same thing happens when we add some decimal numbers.

It might be well to mention that this phenomenon does not happen with VisiCalc, Multiplan, or SuperCalc 3a.

John L. Hoegerl

Editor's Note: Thanks for alerting us to one of the problems related to VIP Professional. For more information on this program, see our review on page 47 of this issue.

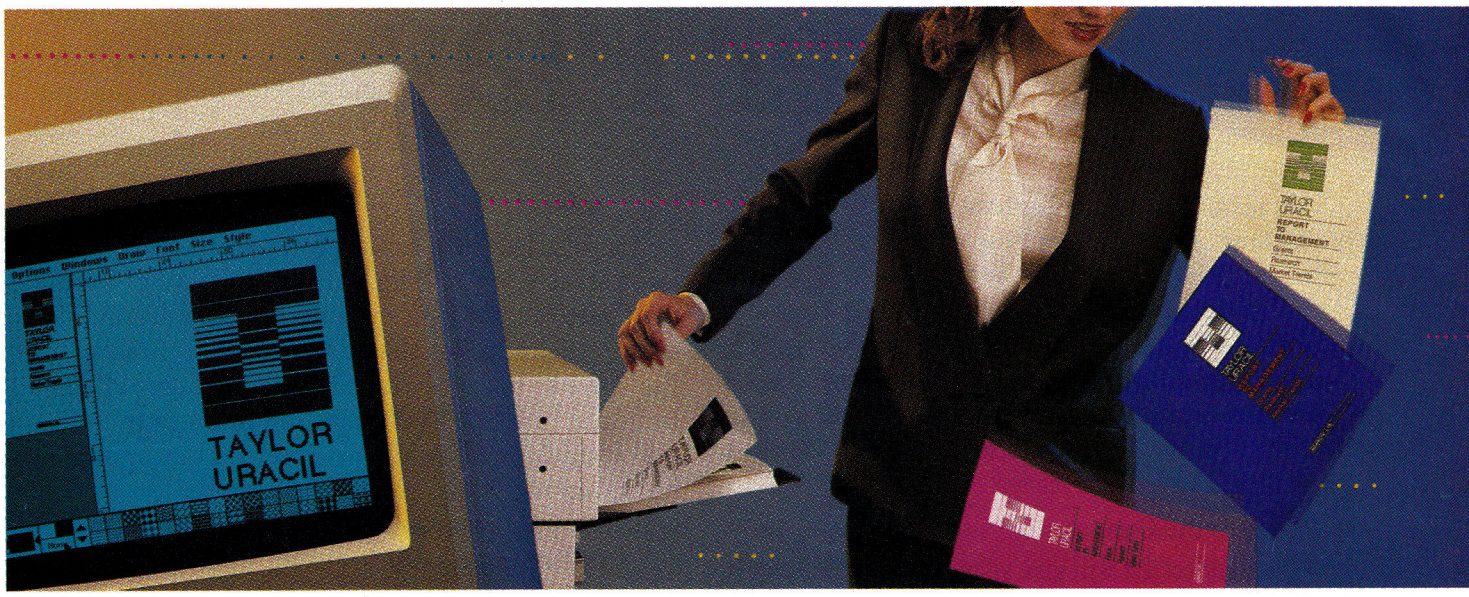
PIRACY IS NOT A STATUS SYMBOL

Dear *A+*: Come on, everyone, the computer industry is no longer where it used to be. It has gone from a cult of fanatical hackers to mature computer users in just a few short years. Unfortunately, some people insist on continuing practices from the dark ages such as software theft (i.e., piracy). Why can't we just rise above it? If you don't like a product, let that company know by not buying it. This way we can weed out all of the rejects and increase the overall quality of software dramatically. Increased profits would motivate manufacturers to become more innovative and to possibly lower prices. And maybe copy protection will become a thing of the past.

Every industry is plagued by people who don't understand it and end up hurting it and everyone involved. For the sake of the personal-computer industry, please only use legitimate software.

Piracy is not a status symbol; it just lets the rest of the world see how little you actually know about computers in general.

James Hague
Richardson, TX

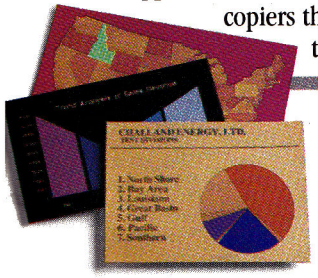


The Power of Color.

Until now desktop publishers could only dream of it.

Great minds create powerful ideas in color: Their thoughts may be blue sky, wave a red flag or make the competition green with envy. But, somehow the reports and graphics that spring from these color ideas rarely convey the life and energy of the original thoughts.

Kroy® brings the power of color to desktop publishing and business communications with a simple process compatible with virtually every laser printer, including the Apple™ LaserWriter, and most photocopiers that apply dry toner to the page.

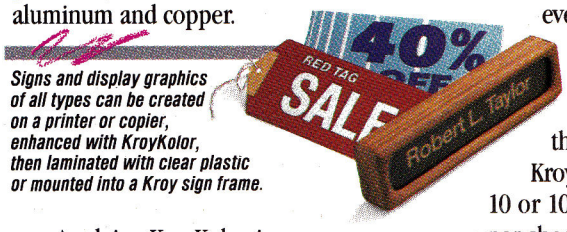


Presentation graphics like these are created on a laser printer, then enhanced for visual impact with KroyKolor.

To bring your idea to life, add KroyKolor™ to the message. There are 60 vivid colors and shimmering metallic foils to match the mood and add impact to your business communications.

The matte and gloss colors range from a cool blue, to a blazing, fire-engine red.

Especially exciting are the 14 metallic foils that perfectly simulate foil stamping on your logos, invitations, letterhead, presentation folders, newsletter, artwork and mockups. The dazzling metallics range from polished gold and silver to burnished aluminum and copper.



Signs and display graphics of all types can be created on a printer or copier, enhanced with KroyKolor, then laminated with clear plastic or mounted into a Kroy sign frame.

Applying KroyKolor is an easy (and amazing) process.

After your original has been printed on a laser printer or photocopier, you insert it into a sheet of KroyKolor transfer film, feed it through the processor, peel away the transfer film and you have vibrant color in seconds.

The real fun begins when you create multi-color business graphics (such as a pie chart with each slice a different color). To do this, cut pieces from various colors of transfer film and place the pieces onto the areas of the graphic you wish to highlight. That's how the multi-colored examples shown in this ad were produced. It's possible to produce multi-colored presentation graphics in a few minutes which would have taken several days (and several hundred dollars) to produce at a print shop.

Kroy, a leader in graphics technology for 27 years, also provides quality papers to make your color presentations look even better.

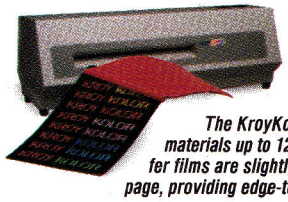
Fulfill your dream of desktop publishing in color today for just $995, the suggested retail price of the KroyKolor processor.

KroyKolor film is available in boxes of 10 or 100 sheets and is priced at about 50¢ per sheet.

For information or to place an order call toll free:

800-521-4997

In Arizona 602-951-1593
Weekdays 8am-5pm MST



The KroyKolor processor accepts materials up to 12'' wide. KroyKolor transfer films are slightly larger than an 8½-11'' page, providing edge-to-edge coverage.

KroyKolor™

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Apple LaserWriter is a trademark of Apple Computer Inc. Kroy and KroyKolor are trademarks of Kroy Inc. Arizona residents add applicable sales tax. Prices do not include UPS shipping. KroyKolor is available from computer retailers and Kroy Copy Centers. Dealer inquiries welcomed.

CIRCLE 117 ON READER SERVICE CARD

Power Play.

In personal computer performance, power makes the difference. When you increase your computer power, you improve your performance. It's that simple.

WordPerfect 1.1 for the Apple IIe/IIc and the new Apple IIGS* works on that perfectly simple premise. And works beautifully. WordPerfect 1.1 is the word processor designed to get the most out of your Apple IIe/IIc or IIGS. The most power. The most efficiency. The most functions. And the most for your money.

Power to the Core.

WordPerfect 1.1 will give your Apple the power to process your words, thoughts and ideas like never before. With scores of useful and unique functions, WordPerfect will do almost any word processing task you can imagine.

For instance, with WordPerfect 1.1 you can do footnotes, with automatic numbering and placement at the bottom of the page. And you can create macros, do a mail merge, set headers and footers, and check your spelling with WordPerfect's 50,000-word dictionary (115,000 words on Apple IIGS).

Plus text entry and display on WordPerfect 1.1 is twice as fast as on the previous version. And WordPerfect now supports true proportional printing for both HMI and microspacing printers.

WordPerfect 1.1 features include:

- 50,000-word spelling dictionary (115,000 on Apple IIGS)
- Align on any character
- Automatic formatting on screen
- Automatic page numbering
- Block features (bold, delete, move, save, underline, etc.)
- Bold and underline text
- Center text
- Chaining of macros
- Comprehensive file management
- Date set/format/insertion
- Extensive printer/font definition
- Flush right
- Footnotes
- Headers and footers
- Hyphenation, automatic prompting
- Indent left and left/right
- Macros
- Mail merge
- Overstrike
- Right justification
- Search and replace
- Super/subscripts
- Text file create/edit/invoke
- Widow/orphan protection
- Word look-up and count
- And more.

Easy as Pie.

For all its capabilities and functions, WordPerfect 1.1 is remarkably easy to learn and use. By utilizing designated function keys and a template, WordPerfect doesn't require you to memorize strings of keystrokes. Features like bold, underline and center are easy to locate and just a couple of simple keystrokes away.

In addition, WordPerfect's newly revised step-by-step manual contains thorough learning examples for *beginners and a complete reference section for experienced users.* And on-line help screens are provided for easy assistance with individual functions.

An install program is also included to let you take advantage of expanded memory and other ProDOS-compatible hardware.

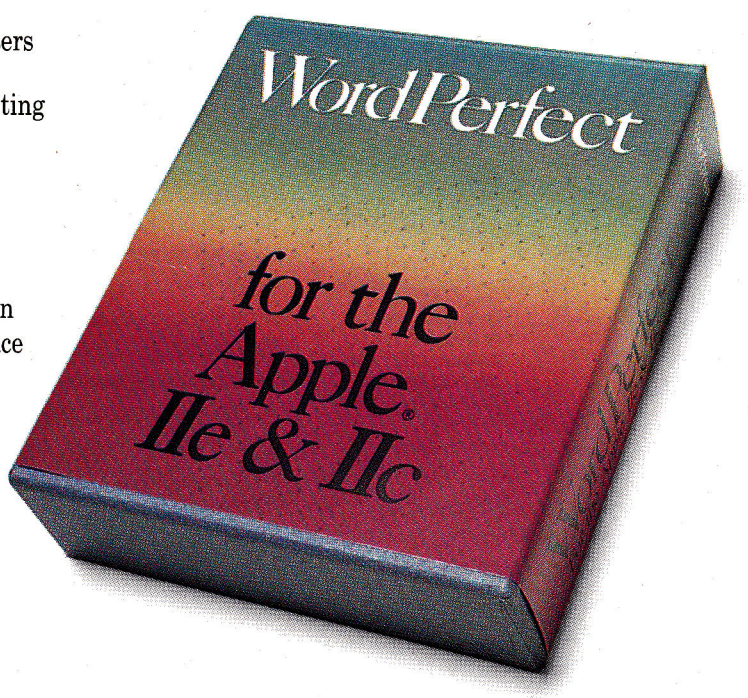
Harvest the Power.

Give your Apple a power boost today. Get WordPerfect 1.1 for the Apple IIe/IIc and IIGS. It's the perfect way to squeeze the most out of your Apple.

For more information, call or write WordPerfect Corporation, 288 West Center St., Orem, Utah 84057 (801) 227-4000.

*Runs under ProDOS-16.

WordPerfect CORPORATION



CIRCLE 118 ON READER SERVICE CARD

BY LISA RALEIGH

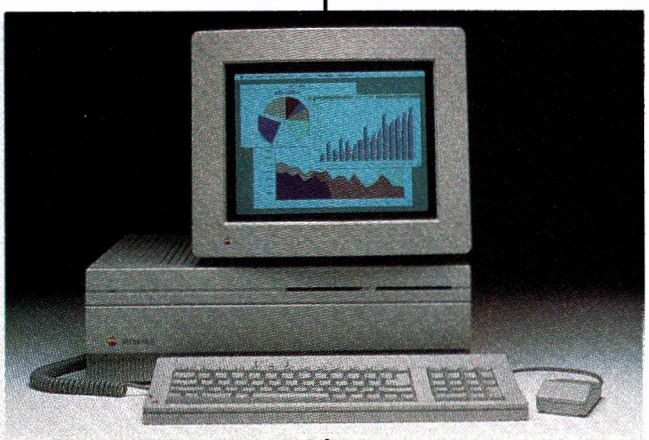
NewsPlus

Along with the new Macs, Apple has announced a pair of SCSI hard-disk drives that will work with an Apple II equipped with a SCSI interface.

MAC FALLOUT

The details have already grabbed headlines in most large newspapers and computer newsweeklies, but—just in case you haven't heard—here's the scoop on Apple's newest Macintosh products (and related Mac/Apple II peripherals).

On March 2, Apple introduced the Mac SE and Mac II, the much-anticipated slotted versions of the Macintosh. The Mac SE (base price $2898), powered by a 68000 running at almost 8 MHz, has one slot but otherwise looks pretty much like its immediate predecessor, the Mac Plus. The II (base price $3898), however, is truly the new Mac. Unlike the traditional all-in-one Macintosh configuration, it's a modular machine with a separate monitor. It runs on the 68020, the clock speed of which is 15.7 MHz, and has a floating-point coprocessor to boot. The motherboard can handle up to eight megabytes of memory; using the II's slots, you can go up to two gigabytes. Speaking of slots, it has six internal slots, along with two serial ports, two Apple Desktop Bus ports, and a SCSI connector. And, last but not least, the Mac II is a color machine.





THE MACINTOSH II (ABOVE) IS A MODULAR SYSTEM, WHILE THE MACINTOSH SE (RIGHT) RESEMBLES THE OLDER ALL-IN-ONE MACS.

PHOTOS COURTESY OF APPLE COMPUTER, INC.

To take advantage of the Mac II's color capabilities, Apple offers a new monitor, the AppleColor high-resolution RGB monitor. It can work with the IIGS as well, although it's more than you really need.

The news for Apple II owners in all this hubbub concerns mass storage. Apple has announced a pair of SCSI hard-disk drives—one 40 megabytes, the other 80—that will work with either Macs or Apple II computers equipped with a SCSI interface. Apple has also introduced a tape backup that connects to Apple-compatible SCSI hard-disk drives, but the tape-backup software works only with the Mac's hierarchical filing system.

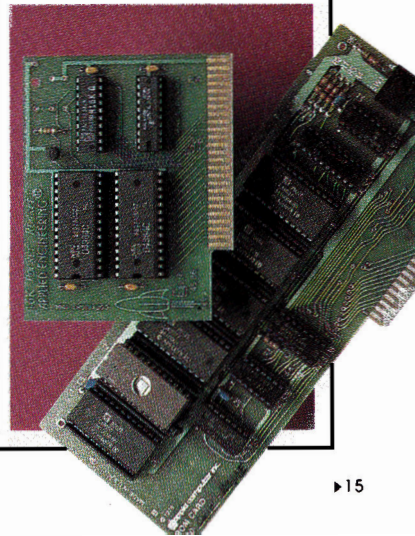
For the undercurrent of implications for Apple II owners, see Fred Davis' editorial in this issue.

APPLE II PLUS FOREVER

If you think the Apple II Plus is a thing of the past, don't tell Applied Engineering. The Dallas add-on-board maker has just come out with a pint-size version of the memory/language card for the II Plus called the Pocket Rocket.

And you know how great minds work. That's not the only II Plus language card to come off a workbench in recent months. Apple commissioned an ex-Apple engi-

APPLIED ENGINEERING'S POCKET ROCKET IS PINT-SIZED COMPARED WITH APPLE'S OLD LANGUAGE CARD.



NewsPlus



neer to design a new version of the card, since Apple no longer built the card itself but needed a bunch of them in a hurry.

In Apple's case, the motivation was to refurbish 1000 or so II Plus systems that had come to Apple via last year's educational trade-in program. A charitable foundation purchased the systems in order to donate them to the Department of Special Education in the state of Maryland. And who should Apple choose to redesign the card but the guy who designed it in the first place, Wendell Sander, the engineer who also designed the Apple III. Sander took the almost-20-chip design of the original card and scaled it down to contain only a couple of chips.

Similarly, Applied Engineering's Pocket Rocket has only four chips. Its name, says company president Dan Pote, came about because "it's so small and cute . . . the engineers carried it around in their pockets." Pote says he sells about 20 of the $79 boards each day, without having advertised it.

The major difference between the two products is that Pote's is commercially available, whereas the one Sander built for Apple is not. It was especially designed for this one project only.

CHEAPER BY THE DOZENS

The notion of low-priced home/entertainment software appears to be catching on. Electronic Arts, one of the first companies to create such a category from its oldies-but-goodies, has created a new logo and packaging for its Software Classics line and added a few titles to the family. Joining other, older EA titles that now go for $14.95 are Financial Cookbook; Archon II; Adept; Skyfox; Movie Maker; and, last but not least, Timothy Leary's Mind Mirror.

Electronic Arts has also introduced a new line of under-$20 products called Amazing Software, aimed at male teenagers. The first Apple II product in that line is the adventure Dark Lord. EA plans to release only Apple II and Commodore titles in this category.

Mindscape has also caught budget-software fever. Last winter, Mindscape created its Thunder Mountain division to market software at $9.95. Some of the programs are established Mindscape titles, such as the Tink Tonk series for young children. Mindscape will also be importing successful European titles and licensing well-known names, such as Rambo and Top Gun.

APPLEWORKS BENEFIT

If you happen to be in Sacramento, California, on May 16, drop by The AppleWorks Fair, a one-day fund-raiser for the National Association of Blind and Visually Impaired Computer Users. Proceeds from the fair will go to upgrading CompuHelp, an electronic bulletin board run by NABVICU that contains information about self-help groups, Braille manuals, voice-output devices, large-print programs, and other hardware and software products. CompuHelp is also available on disk for visually impaired Apple users who don't have access to modems. The AppleWorks Fair will take place at the Woodlake Inn and requests a $6 donation at the door. For further information, call (916) 783-0364 (voice) or (916) 783-3923 (CompuHelp modem line.)

BUY ONE TO WIN ONE

You could win a IIGS in this Apple Computer Clubs International (ACCI) competition sponsored by AST Research. The AST Computer Art Contest will accept entries through December 15, 1987. This contest, which will judge computer-generated art submitted by contestants in three age groups, has a major catch, though: it requires that you use an Apple IIGS (or an upgraded

Winners of the AST Computer Art Contest get a IIGS, RGB monitor, 3.5-inch disk drive, and ImageWriter.

IIe) with AST's VisionPlus digitizer board, a video camera, and one of several specified graphics programs in order to create your artwork. If that seems to restrict the field of contestants to a select group, the winners will be even more of an elite, because they'll have access not only to the IIGS with which they created their masterpieces but also to the IIGS systems they'll receive as prizes. First-prize winners will receive an Apple IIGS, RGB monitor, 3.5-inch disk drive, and ImageWriter printer. The work of one Grand Prize winner will be exhibited in The Computer Museum in Boston. Write to ACCI at 175 Middlesex Turnpike, Bedford, MA 01730, for an entry kit. You need not be an ACCI member to enter.

IIGS BULLETIN

As might be expected, some IIGS projects have fallen by the wayside. Chang Labs, which had announced it would port its Rags to Riches accounting software over to the IIGS, has dropped its GS plans. Also, Megahaus has changed its mind about bringing out PageWorks, a desktop-publishing program.

ILLUSTRATIONS BY ROBERT PIZZO

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LAWSUIT CITY

Here's a roundup of the industry's latest lawsuits.

Last month in "NewsPlus," we reported on a couple of significant lawsuits in the industry, and this month we've got even more of the same to share with you.

For starters, there's Franklin Computer Corporation's suit against Video Technology Ltd. and Language Arts, maker of the Laser 128 and developer of the ROM software for the Laser, respectively. Franklin charges copyright infringement, saying that the Laser's ROM illegally copies the system software Franklin acquired from Language Arts for one of Franklin's own Apple-compatible machines. Franklin, of course, is no stranger to this type of litigation. Apple Computer went after Franklin several years ago for copyright infringement. Franklin's suit also names Central Point Software as a defendant. Central Point, a distributor for the Laser 128, is owned by the same people who own Language Arts.

Suit #2 concerns Applied Engineering and its claims of copyright infringement against Legend Industries, a rival memory-board manufacturer. According to AE, Legend provides an AppleWorks patch, half of which is "a byte-for-byte copy of Applied Engineering's machine language software, "with one of its memory boards. Legend couldn't be reached for comment. In fact, at this writing, Legend's phone was disconnected, so the company's status wasn't clear. An AE spokesman says that at the very least, AE hopes to get on the creditors list if Legend has gone out of business.

And last but not least, USRobotics has added Hayes Microcomputer Products to an existing suit against Bizcomp, charging that Hayes and Bizcomp each obtained patents "describing previously existing technology of which the companies were or should have been aware." USRobotics further claims that Bizcomp and Hayes have conspired to monopolize the market by licensing this technology to other companies. The previously existing modem technology isn't USRobotics', though—instead, it's a device developed by Racal-Vadic Corporation. USRobotics is suing anyway because it claims that Bizcomp and Hayes' alleged patent-jumping has been injurious to its business.

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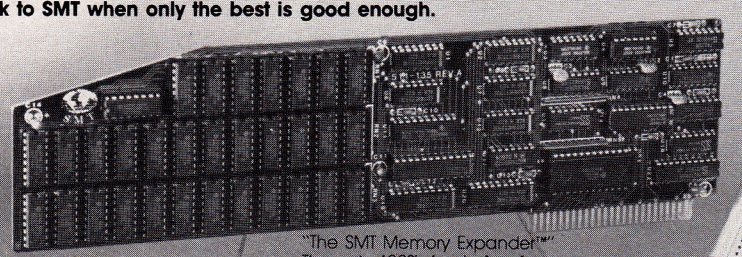

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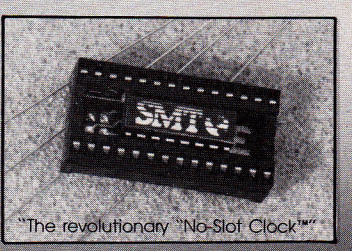

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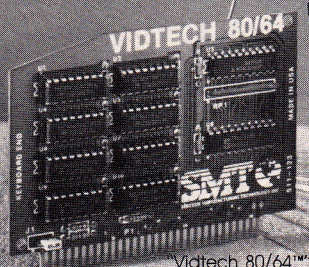

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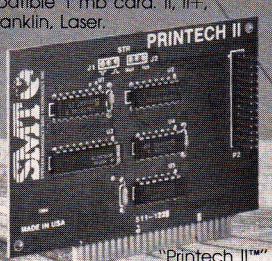
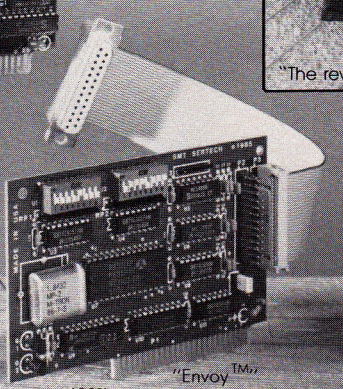
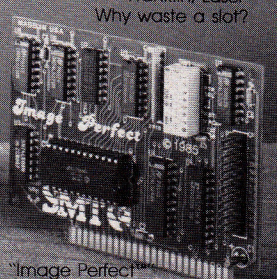


"Printech II™" Parallel Interface II, II+, IIe, Franklin,



"Envoy™" 100% super serial compatible II, II+, IIe, Franklin,



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IIc OR NOT IIc?

Franklin Computer is also carrying on in its Apple-clone tradition, bringing out an Apple IIc-compatible machine called the Ace 500. For a suggested retail price of $500, the standard Ace 500 comes with 256K; a single disk drive; RGB color capability; and built-in parallel, serial, mouse, and disk-drive ports.

This newest Franklin falls under the company's recently instituted "no nonsense "warranty, which states that if you have any problems with the machine, you can take it back to the dealer and get a new one.

ASKY AND YOU SHALL RECEIVE

A couple of months ago, we reported here on the Envoy board, an upcoming plug-in card that would let you read MS-DOS files into your Apple II. The Envoy board has since been released, and its developer, Asky, Inc., of Milpitas, Calif., has come up with a bundle of auxiliary products to make it easier for you to get it running. For $329, you can now get an Envoy board with a box containing a power supply and an MS-DOS-style disk drive, with room for another drive (5¼- or 3.5-inch, single-sided or double-sided) if you want to add one later. You can still obtain the Envoy board separately, though, for $180, and hook it up to drives you already have or can get a better deal on. Be sure to rustle up an additional power supply, though, if you plan to add more than one MS-DOS drive to your own system. Your Apple II will greatly appreciate it.

LITTLE BLUE GOES ABROAD

Speaking of MS-DOS capabilities—yes, the product is vaporware, but here's the latest on Little Blue, an add-on card that will let you run MS-DOS programs. Applied Engineering will soon begin marketing Little Blue, but AE will not be handling international distribution. Instead, that will be the responsibility of Austek, an Australian developer of custom integrated circuits. Austek plans to treat each market on a case-by-case basis, meaning that Little Blue may appear under one name in, say, Canada, but another in Australia and still another in France. Le Petit Bleu, perhaps? ✚

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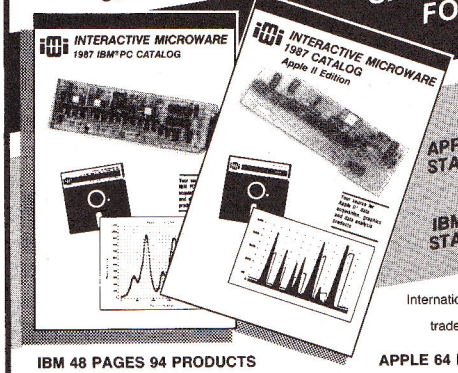

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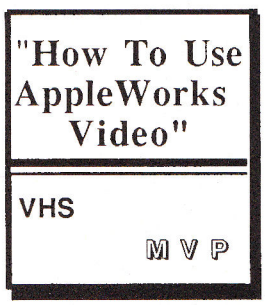

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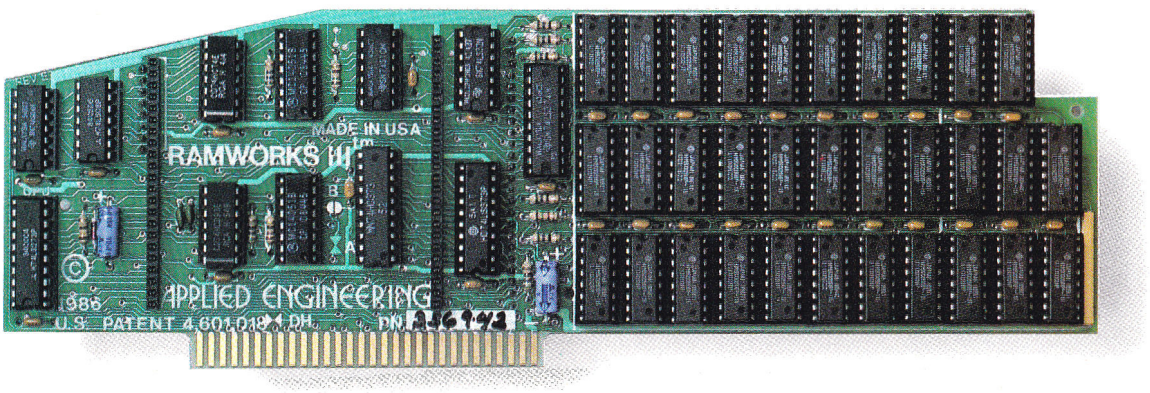

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RamWorks III is compatible with all Apple IIe's, enhanced, unenhanced, American or European versions.

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Applied Engineering has always offered the largest memory for the IIe and RamWorks III continues that tradition by expanding to 1 full MEG on the main card using standard RAMs, more than most will ever need (1 meg is about 500 pages of text)...but if you do ever need more than 1 MEG, RamWorks III has the widest selection of expander cards available. Additional 512K, 2 MEG, or 16 MEG cards just snap directly onto RamWorks III by plugging into the industry's only low profile (no slot 1 interference) fully decoded memory expansion connector. You can also choose non-volatile, power independent expanders allowing permanent storage for up to 20 years.

It Even Corrects Mistakes.

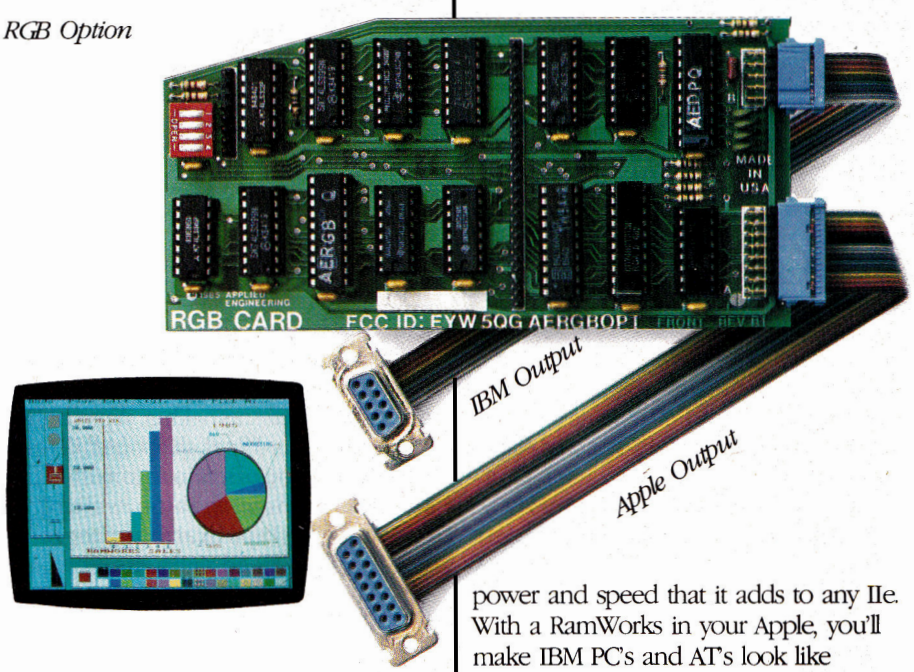
If you've got some other RAM card that's not being recognized by your programs, and you want RamWorks III, you're in luck. Because all you have to do is plug the memory chips from your current card into the expansion sockets on RamWorks to recapture most of your investment!

The Ultimate in RGB Color.

RGB color is an option on RamWorks and with good reason. Some others combine RGB color output with their memory cards, but that's unfair for those who don't need RGB *and* for those that do. Because if you don't need RGB

Applied Engineering doesn't make you buy it, but if you want RGB output you're in for a nice surprise because the RamWorks RGB option offers better color graphics plus a more readable 80 column text (that blows away any composite color monitor). For only $129 it can be added to RamWorks giving you a razor sharp, vivid brilliance that most claim is the best they have ever seen. You'll also appreciate the multiple text colors (others only have green) that come standard. But the RamWorks RGB option is more than just the ultimate in color output because unlike others, it's fully compatible with all the Apple standards for RGB output control, making it more compatible with off-the-shelf software. With its FCC certified design, you can use almost any RGB monitor because only the new RamWorks RGB option provides both Apple standard and IBM standard RGB outputs (cables included). The RGB option plugs into the back of RamWorks with no slot 1 interference and remember you can order the RGB option with your RamWorks or add it on at a later date.

RGB Option



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"I wanted a memory card for my Apple that was fast, easy to use, and very compatible; so I bought RamWorks."

Steve Wozniak, the creator of Apple Computer

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- Memory is easily partitioned allowing many programs in memory at once
- Compatible, RGB option featuring ultra high resolution color graphics and multiple text colors, with cables for both Apple and IBM type monitors
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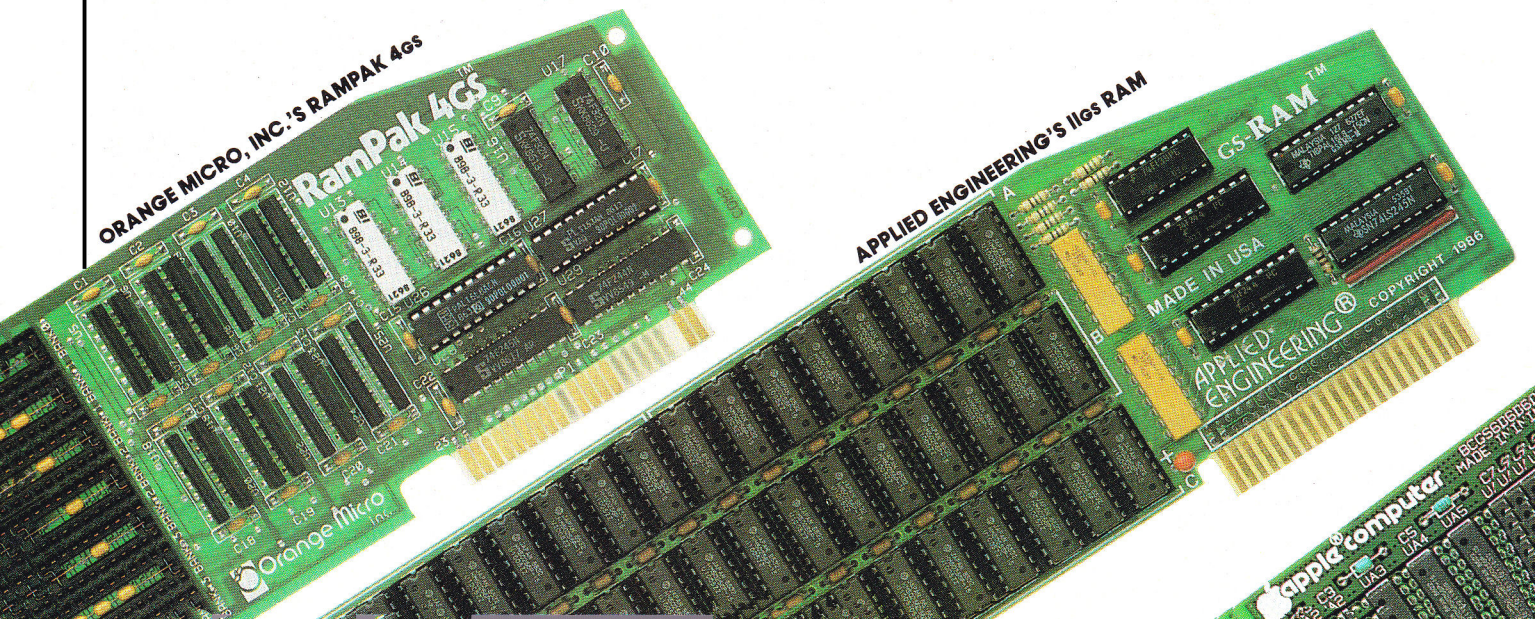
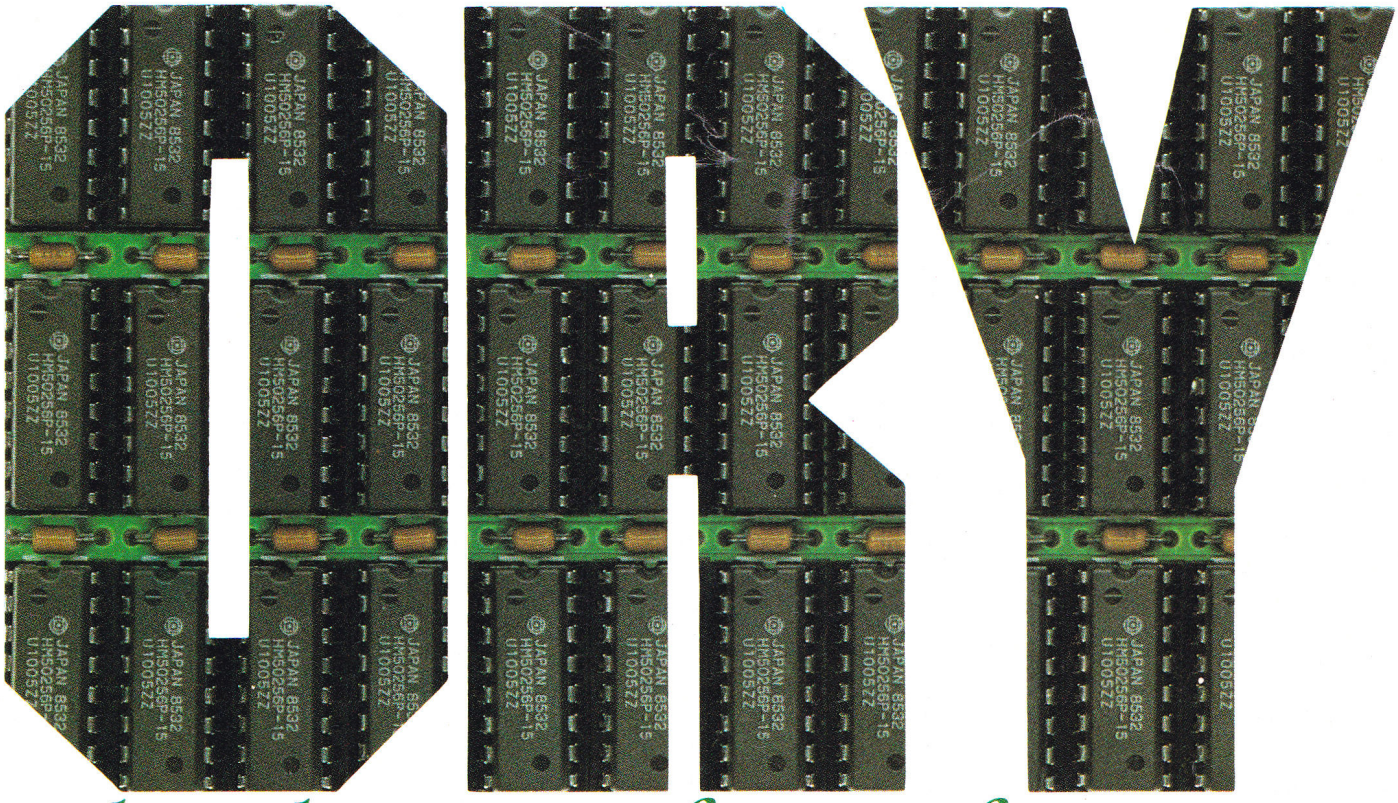
COVER STORY
BY GARY B. LITTLE

A standard Apple IIGS comes with 256K of RAM, twice the standard memory capacity of either the IIe or IIc. This configuration is perfectly fine for running IIe/IIc-style programs. As new IIGS owners will tell you, however, it just isn't enough to run the new IIGS applications that use the Macintosh-like desktop environment that the IIGS's software tool sets provide—these types of programs typically need plenty of memory to hold RAM-based tool sets, custom fonts, desk accessories, and so on.

A case in point is PaintWorks Plus, the first major IIGS-specific application to be released (see "Speaking of Graphics" in this issue). It requires a minimum of 512K, much to the chagrin of purchasers of minimal IIGS systems. The Apple IIGS Programmers Workshop (APW), for developing applications on the IIGS, requires a one-megabyte system!

For some application programs, you may not need extra memory, but



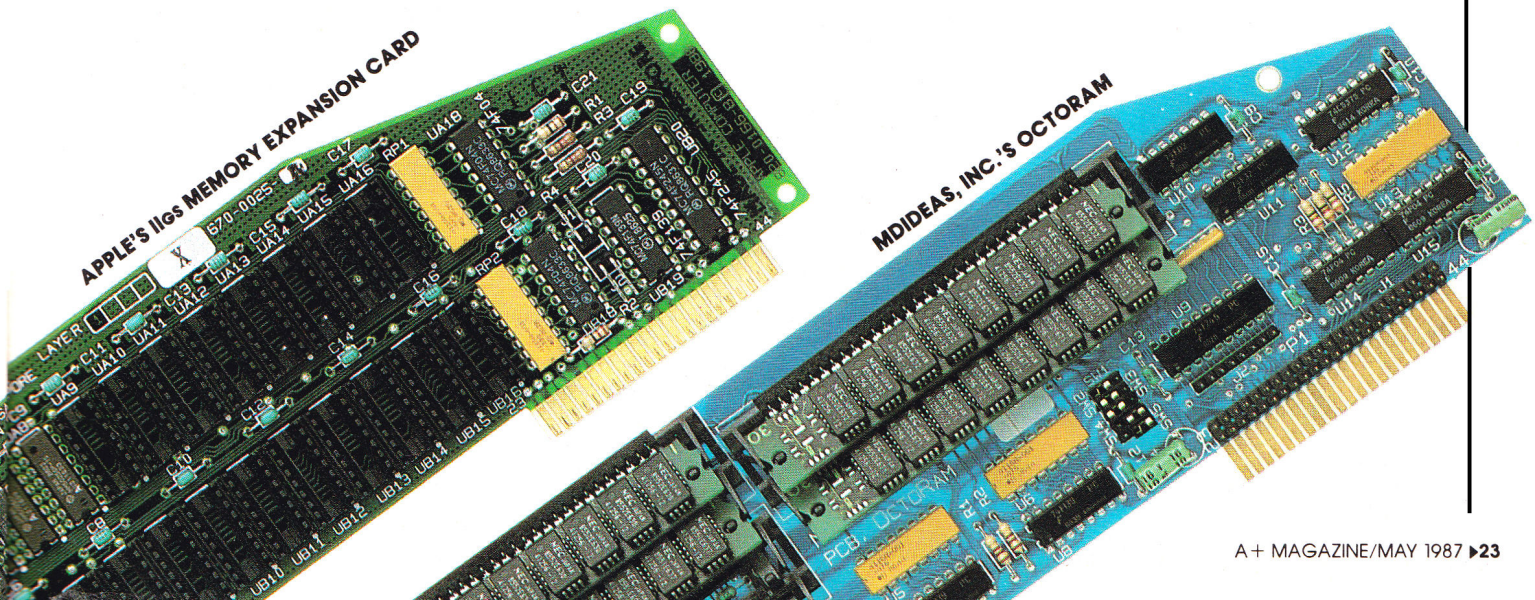


take advantage of IIGS software

the program will perform much better if you do have it. The best example is version 2.0 of AppleWorks. It uses extra memory to increase its desktop space to let you have several large files open at the same time.

You may also want to add extra memory to take advantage of utility programs that make the IIGS faster and more pleasurable to use. Here are some of the things extra memory is good for:

- a RAMdisk (emulation of a disk drive in the computer's memory)
- a disk-caching area (memory that holds disk contents and anticipates the reuse of that data, providing faster processing speed)
- a print-spooling area (memory that holds formatted data that is being fed to a printer, usually while the computer performs other functions)
- a buffer area for copying disks (memory for storing large portions of a disk's contents, allowing copying in fewer passes)
- a buffer area for digitized sound



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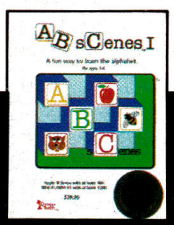

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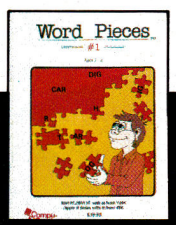

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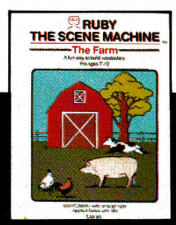

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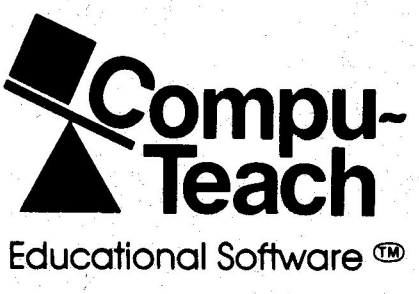

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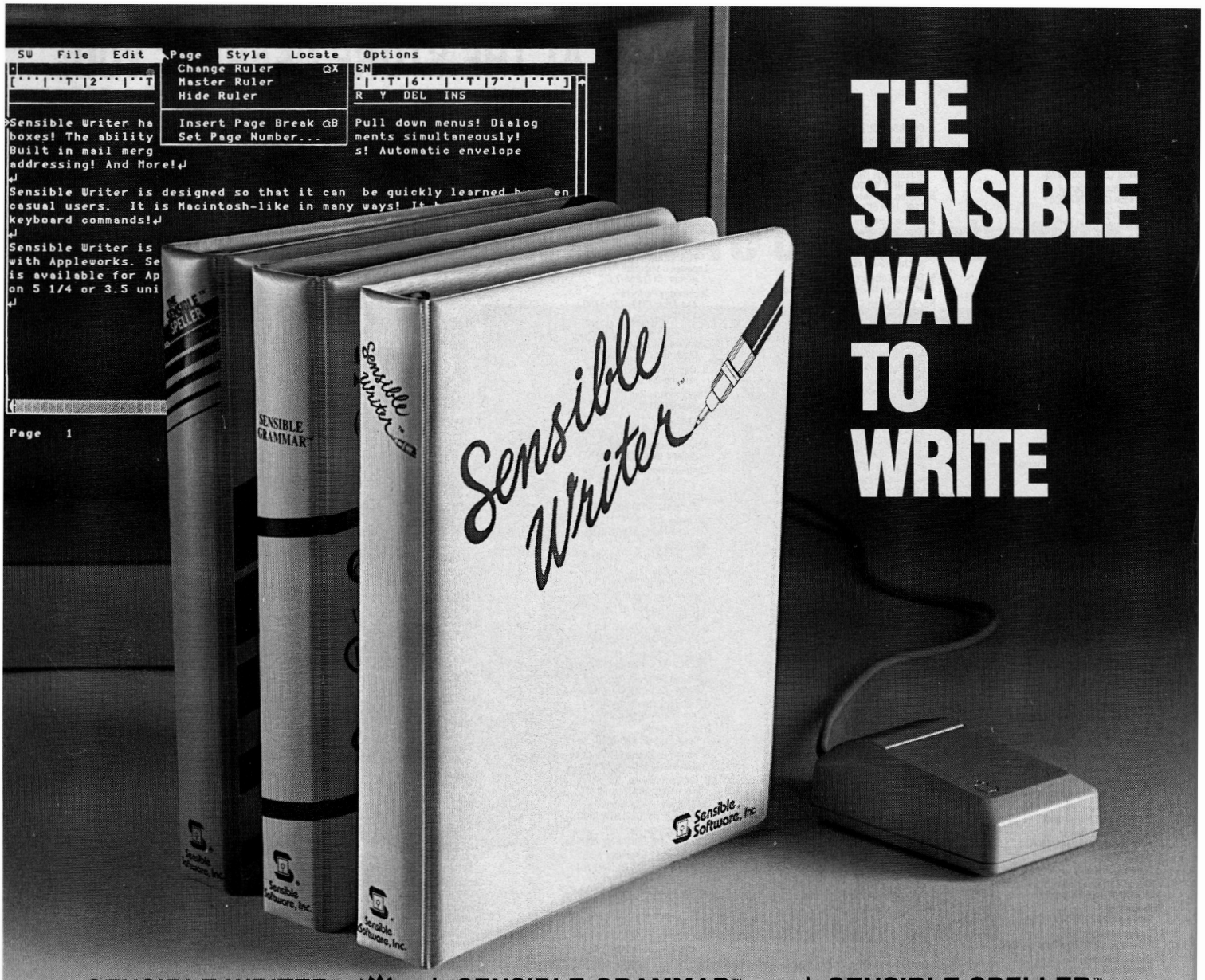

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Sensible Grammar
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Sensible Grammar
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ProDOS **Sensible Speller** supports the Apple II Memory Expansion Card and has a huge vocabulary of 81,000 words derived from the official Random House Dictionary®. Used in conjunction with an expansion card, it runs up to three times faster than before. You can also load everything–program and dictionaries–onto a hard disk drive.

Sensible Speller
is easy to use. It shows you misspellings in context, suggests the correct spelling, and allows immediate replacement of misspelled words with correct ones.

Sensible Speller
is compatible with Appleworks and most ProDOS word processors. Supplied on UniDisk 3.5 as well as 5¼" disk, it is available for Apple II computers including IIGS. A non-ProDOS version is also available. Each is $125.

Stedman's Medical Dictionary, Sensible Technical Dictionary™ and **Black's Law Dictionary™** are available separately on diskette for use with the **Sensible Speller.** Each is $39.95. Sensible Speller ProDOS now allows you to merge the dictionaries together.

*Sensible Writer, Sensible Grammar and Sensible Speller ProDOS work with the following programs, AppleWorks (Apple Computer, Inc.); Catalyst (Quark Inc.); Mouse Desk (International Solutions). Sensible Grammar and Sensible Speller ProDOS also work with the following word processors, AppleWriter-ProDOS version (Apple Computer, Inc.); Format II Enhanced-ProDOS (Kensington Microware); MouseWord (International Solutions); Mouse Write-text files (Roger Wagner Publishing); PFS:Write-ProDOS (Software Publishing, Inc.); Sensible Writer (Sensible Software Inc.); Word Juggler (Quark Inc.); Word Perfect (SSI Software); Zardax-ProDOS (Computer Solutions) and others. **Sensible Speller ProDOS** also works with HomeWord-ProDOS (Sierra On-Line); MultiScribe (StyleWare, Inc.); Word-Talk (Computer Aids) and WritingWizard (Scarborough Systems). Owners of trademarks indicated in parentheses. Black's Law Dictionary (West Publishing, Inc.).

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CIRCLE 165 ON READER SERVICE CARD

(memory for receiving real-time sound data)

The ability to use extra memory as a RAMdisk is actually a built-in feature on the IIGS. Using the Control Panel's RAM Disk command, you can allocate as much of available memory as you like for use as a RAMdisk.

In this article I look at all the memory cards available for the IIGS that plug into its unique memory-expansion slot. This slot is the one whose connector is located at the front right-hand corner of the motherboard, next to the Ensoniq sound chip. RAM on a card in this slot forms part of the 65816 address space, so programs can use it just as they would use the 256K memory core. The memory limit for such cards is eight megabytes.

Memory cards such as AST's SprintDisk, Applied Engineering's RamFactor, and the Apple II Memory Expansion Card, all of which plug into a standard I/O slot, also work on the IIGS. I am not covering them here because I described them in my article on memory expansion in the August 1986 issue of *A+* ("Turbocharge," pages 20-26). Also, keep in mind that since the memory on these cards is not part of the 65816's address space, they won't really help you run large IIGS applications—you can use this type of memory only as a RAMdisk.

Here is the bottom line: You absolutely, positively must buy a memory card for the IIGS that plugs into the memory-expansion slot. If you don't, you won't be able to take advantage of the exciting new software that's coming out for the IIGS. So let's take a look at what's currently available to help you out and consider the various chip configurations.

Thanks for the MEMORY

IIGS Memory Expansion Card

The first memory card to become available for the IIGS was Apple's own Apple IIGS Memory Expansion Card. It comes with 256K of RAM, but you can expand it to 512K or 1 megabyte (1M) by adding one or three rows of eight 256K × 1-bit memory chips to empty sockets on the card. (Apple doesn't recommend a 768K configuration because some programs can't handle it.) These chips are inexpensive, about $50 for a set of eight. (Eight chips gives you 256K of memory.)

The Apple card is definitely a plain-vanilla product. It comes with no software, not even a RAM diagnostic program for testing for bad memory chips. In addition, you cannot expand it past 1M or add any ROM to it. Nevertheless, it is an attractive card because of its low price and excellent owners' guide. The guide clearly illustrates how to install the card and add memory to it, and it contains a useful chapter describing how to allocate memory on the card for use as a RAMdisk.

Applied Engineering IIGS RAM

Applied Engineering is a well-known manufacturer of RAM cards for Apple II computers. Its two main products, RamFactor and (for the IIe only) RamWorks, have sold in the tens of thousands. It is no surprise, then, to see the company come out with a IIGS-specific memory card.

Applied Engineering actually has two such cards: IIGS RAM and IIGS RAM Plus. The IIGS RAM uses 256K × 1-bit RAM chips and can hold up to 1.5M of memory. It is essentially the same as Apple's card but with two extra rows of eight RAM sockets.

The IIGS RAM Plus looks similar to the IIGS RAM, but it uses 1024K × 1-bit (one-megabit) RAM chips, meaning that each row on the card holds one megabyte of memory, so the capacity of the card is six megabytes. A set of eight of these chips is still expensive, about $400, but the cost is dropping fast.

Applied Engineering has a good upgrade policy that allows you to trade in your IIGS RAM for about 75% of its value when you buy a IIGS RAM Plus—something to keep in mind as the price of the megabit RAM chips drops.

Both cards contain an expansion port that you'll be able to use to add 2M more RAM, or ROM, via a piggyback card that Applied Engineering is planning to offer.

The IIGS RAM and IIGS RAM Plus come with diagnostic software and the AppleWorks 2 Expander program. The Expander enhances AppleWorks 2.0 so that it works even better than it already does with IIGS memory cards. The special enhancements it offers include

- More lines in the word-processing module (22,600 vs. 7250)
- More records in the database module (22,600 vs. 6350)
- More lines in the word-processing and database clipboard (2042 vs. 250)
- Display of the current time on-screen
- The ability to save large files to multiple disks
- A print buffer of up to 64K (vs. 2K)
- Single-key time entry in the database

The *IIGS RAM Installation Guide* is terse but understandable. It refers to

IIGS MEMORY CARDS: *A Comparison Chart*

	MEMORY RANGE	MINIMUM INCREMENT	RAM-CHIP SIZE	ROM CAPABILITY	UTILITY SOFTWARE
IIGS Memory Expansion Card	256K–1M	256K	256K × 1	none	none
GS RAM	256K–1.5M	256K	256K × 1	optional	diagnostics
GS RAM Plus	1M–6M	1M	1024K × 1	optional	AppleWorks enhancements
RamStak Plus	256K–1M	256K	256K × 1	on card	diagnostics, ROM programmer
plusRAM GS2	256K–2M	256K	256K × 1	optional	diagnostics
plusRAM GS8	1M–8M	1M	1024K × 1	optional	DOS 3.3 RAMdisk
OctoRAM	256K–2M	256K	256K SIMM	optional	diagnostics
OctoRAM	1M–8M	1M	1M SIMM	optional	diagnostics
RamPak 4GS	512K–4M	256K	256K × 4	none	diagnostics, caching, statistics

Programs, Peripherals,

Computers

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The Laser 128 includes an Expansion Slot, RGB Video Output, Parallel Printer Port, and a 10 Key Numeric Keypad! Most Apple Compatible Computer Available at Any Price!	
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Laser 128 Cables *(Parallel, Serial, or RGB)*	24.00

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E.D.D. IV	21.00
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the *Apple IIGS Owner's Guide* for information on how to use IIGS RAM as a RAMdisk.

MDIdeas OctoRAM

The MDIdeas OctoRAM is an interesting memory card that contains eight standard SIMM (single in-line memory module) sockets that can hold 256K memory modules or 1M memory modules. Thus, the card's capacity is either 2M (eight 256K SIMMs) or 8M (eight 1M SIMMs). MDIdeas indicates that it is developing a piggyback card for ROM expansion, but it is not available yet.

A SIMM is a small printed circuit card with eight memory chips soldered to it. To add it to the memory card, you simply clip it into a socket on the card. SIMMs are new to the Apple II world, but Apple has already used them on the Macintosh Plus, which has four SIMM sockets to which you can add 256K SIMMs (1M total) or 1M SIMMs (4M total).

The 1M SIMMs are currently a bit more expensive than conventional memory chips and are more difficult to find since fewer manufacturers produce them. They are expected to drop in price, but at a slower rate than the 1024K × 1-bit RAM chips.

The only software OctoRAM comes with is a diagnostic program. The card's manual is brief and explains only how to install the card and the SIMMs. It does not explain how to use the card as a RAMdisk.

Orange Micro RamPak 4GS

Orange Micro's memory card is called the RamPak 4GS. As its name suggests, its maximum capacity is 4M. It is the only memory card that uses 256K × 4-bit memory chips, which means you can increase memory by 256K by adding only two chips. This arrangement makes the board less crowded than cards that use 256K × 1-bit RAM chips (where eight chips are necessary for 256K). Two 256K × 4-bit chips are still more expensive than eight 256K × 1-bit chips, however, because of their scarcity and nonstandard size.

The RamPak comes with a Memory Management Utilities disk, which contains a useful and easy-to-use program that verifies memory, reports disk-access statistics, and does disk caching.

This program installs itself as a desk accessory (like the Control Panel), so you can call it up at any time simply by pressing Control/open-apple/Esc.

Thanks for the MEMORY

The most interesting aspect of the RamPak software is its ability to enable disk caching for any disk device you use with ProDOS. Caching is the storing of disk blocks in memory so that when a read operation occurs, the computer can retrieve the block quickly from memory rather than from the relatively slow mechanical drive. If most of the disk is cached, file operations speed up dramatically.

The main advantage of caching over using a RAMdisk is that there's no danger of losing data, because only read operations are cached. Data always transfers to the disk when a write occurs. Another advantage is that you don't have to explicitly transfer files to the cache; the caching software takes care of it automatically the first time you load a program into memory.

The RamPak software is able to use up to 3.5M as a cache buffer. You can either tell the software how much memory to use as a cache or instruct it to allocate memory according to need.

The RamPak operators' manual is comprehensive and does a good job of explaining how to employ the memory-management utilities.

AST Research RamStakPlus

The AST RamStakPlus is interesting because it is the only memory card that contains sockets for ROM. Its maximum RAM capacity is 1M (four rows of eight 256K × 1-bit chips), the same as that of Apple's card. It's too bad it wasn't designed to hold more RAM, but squeezing more onto it would be difficult because the ROM sockets take up a lot of board space.

The RamStakPlus was not ready to ship when I wrote this article in February (it should be available now), but I was able to review a preliminary version of the *User's Manual* to discover the card's features.

The RamStakPlus has four ROM sockets, each of which can hold an 8K–64K EPROM (Erasable Programmable ROM) or a 2K–32K EEPROM (Electrically Erasable Programmable ROM). You will probably want to use an EEPROM, because you can erase them and program them simply by running a program. You need a special programming device to program an EPROM.

The RamStakPlus comes with a utility program that performs diagnostics and programs EEPROMs. Programming an EEPROM is sim-

ADDING MEMORY TO EXPANSION CARDS

If your memory-expansion card is not fully populated when you buy it, you will eventually want to add more RAM chips to it. (You can buy RAM chips at electronics-parts stores and mail-order warehouses.) At this stage, you will have to determine what types of RAM chips to buy and where to install them on the card.

Various manufacturers produce RAM chips to meet many different specifications, so you must be careful to choose the right ones for your card. For IIGS cards, you need RAM with a speed specification of 150 nanoseconds or faster that uses the "CAS before RAS" refreshing technique. The capacity and configuration of the RAM chips is also important; the possible choices are the following:

- 256K × 1 bit (8 chips = 256K)
- 1024K × 1 bit (8 chips = 1M)
- 256K × 4 bit (2 chips = 256K)
- 256K SIMM
- 1M SIMM

Consult your card's manual to determine what kind of RAM chip the card requires and how many chips you need (eight for 256K × 1 or 1024 × 1; two for 256K × 4; or one SIMM). If you want to play it safe, order the RAM chips directly from the card's manufacturer. You will probably pay a little more, but you won't have any headaches.

The order in which you fill rows of empty RAM sockets on a card is also important. If you don't fill the sockets in the proper order, the card will not work properly. Again, consult your card's manual for instructions.

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ple; all you have to do is put all the files you want to place in the EEPROM into a subdirectory and then run the EEPROM programming program that AST supplies.

In keeping with Apple's standard guidelines, the files in ROM are organized in the same way they are on a disk, so you will have created a ROMdisk. If the ROM contains the necessary operating-system programs, you can even boot from ROM by setting the Startup Slot in the Control Panel to ROM Disk. The big difference between a ROMdisk and a RAMdisk is, of course, that the ROMdisk doesn't disappear when you turn the IIGS off.

Thanks for the MEMORY

The RamStakPlus users' manual is comprehensive and clear. It describes in meticulous detail how to install the card and use the disk utilities. It also explains how to set up a RAMdisk.

Cirtech plusRAM IIGS

Cirtech was also nearing completion of two IIGS memory cards at my copy deadline; both should be available in late April. The cards are called plusRAM GS2 and plusRAM GS8, and each has eight rows of eight RAM chips each. On the plusRAM GS2, you can fill these rows with 256K × 1-bit RAMs (2M total); on the plusRAM GS8, you can fill them with 1024K × 1-bit RAMs (8M total). Unlike the OctoRAM, Cirtech's 8M card uses conventional memory chips, not SIMMs.

Both of the Cirtech cards will have an expansion port for a piggyback card containing EPROM and either EEPROM or nonvolatile RAMs. (When I checked with company personnel, they had not yet made a decision about which one the company would use.) The cards will come with diagnostic software and a DOS 3.3 RAMdisk program.

Cirtech, a Scottish company, is currently looking for a North American distributor for its memory cards. In the meantime, these cards will be available by mail order directly from Scotland.

Software Products

Diversified Software Research doesn't sell IIGS memory cards, but it does have two great programs that work nicely with them.

The first is Diversi-COPY, a nifty copying utility for 800K 3.5-inch disks or 140K 5¼-inch disks. If you purchase only one 3.5-inch drive for your IIGS, you must have Diversi-COPY. If Diversi-COPY finds at least 800K of memory in the IIGS, it will copy an entire 3.5-inch disk in only one pass! Contrast this ability with the performance of the Apple IIGS System Utilities program, which requires an incredible 48 passes to complete a single-drive copy. (As they say on TV, "Don't try this at home." You'll either wear out your arm or your disk-eject button.) Instead of buying a second 3.5-inch drive, get a memory card and Diversi-COPY.

Diversi-CACHE is just as valuable as Diversi-COPY. It is a disk-caching utility similar in nature to Orange's RamPak program, but it works with the Apple 3.5 Drive only (not the UniDisk 3.5). An important difference is that it also speeds up the transfer rate from the 3.5-inch disk to RAM. It does so by installing a new, faster driver for the 3.5 Drive. With Diversi-CACHE installed, disk I/O is so fast that you might just stop using a RAMdisk.

Decisions, Decisions

With this analysis of IIGS memory cards by your side, you should be

FILL UP THAT EXTRA MEMORY

Now that you have all that extra memory, what can you do with it (besides run GS-specific programs that require it)? Well, thanks to a couple of utility programs, you can load a bunch of application programs into memory and have speedy access to them.

Applied Engineering plans to provide a two-megabyte piggyback card for its Apple IIGS memory expansion boards that will come with parition-ing software to let you load multiple programs.

Another program called RAMUP lets you load several applications into extra memory and places the names of those programs on a menu. As soon as you quit one program, the menu comes up, and you can jump right into another application. If your RAM card has a battery backup, you can save all those programs so that they're sitting in RAM when you fire up the computer first thing in the morning. The RAMUP product originally came out for the Apple IIe and IIc but, at this writing, was about to debut in a GS version.

Then there's SoftSwitch, scheduled for release at about the time this issue of *A+* hits the stands. Unlike RAMUP, SoftSwitch works only with the GS. Also, SoftSwitch doesn't require you to quit an application but instead suspends it and lets you switch among as many as three programs. Then, when you go back to the original application, you pick up right where you left off.

Neither RAMUP nor SoftSwitch works with ProDOS 16 (Apple IIGS-specific) applications. According to the publisher of SoftSwitch, that's because the company wanted customers to be able to use the utility with as little as 512K of memory, and most GS-specific applications require that much memory all by themselves, leaving no room to load something else simultaneously. A ProDOS 16 version might be a possibility in the future, however. —*Lisa Raleigh*

PRODUCT INFORMATION

RAMUP
Quality Computers & Applications
1365 Berkshire
Grosse Pointe, MI 48230
(313) 885-4270
List Price: $34.95
Requires: Apple IIe, IIc, or IIGS; 512K RAM; Apple or Applied Engineering memory card (with IIe or IIc) or any Apple-compatible memory board (with IIGS)
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Thanks for the MEMORY

able to choose a card that will suit your present and future memory needs. Keep in mind these key factors when deciding which card to buy:

- the base price of the card
- the cost of adding more memory
- the ease of adding more memory
- the upper RAM limit
- the ability to deal with ROM
- the availability of software utilities

If you have a limited budget, keep in mind that you can start with just a little RAM and add more when prices drop (or when you need it more). "Adding Memory to Expansion Cards," one of the sidebars that accompanies this article, explains how you can easily add extra memory yourself. Have fun with all those new IIGS programs you can now use! ✚

Gary Little's next book, Exploring the Apple IIGS, *will be published this summer by Addison-Wesley. Contrary to what previous biographical notes may have indicated, Little has no spare time.*

PRODUCT INFORMATION

Apple IIGS Memory Expansion Card
Apple Computer, Inc.
20525 Mariani Avenue
Cupertino, CA 95014
(408) 996-1010
List Price: $129

IIGS RAM and IIGS RAM Plus
Applied Engineering
P.O. Box 798
Carrollton, TX 75006
(214) 241-6060
List Price: IIGS RAM, $169; IIGS RAM Plus, $459

RamStakPlus
AST Research Inc.
2121 Alton Avenue
Irvine, CA 92714-4992
(714) 553-0340
List Price: $129
CIRCLE 361 ON READER SERVICE CARD

plusRAM GS2 and plusRAM GS8
Cirtech (U.K) Ltd.
Currie Road Industrial Estate
Galashiels, Selkirkshire
TD1 2BP Scotland
011-44-896-57790
CIRCLE 362 ON READER SERVICE CARD

Diversi-COPY and **Diversi-CACHE**
Diversified Software Research
34880 Bunker Hill
Farmington, MI 48018-2728
(313) 553-9460
List Price: Diversi-COPY, $30; Diversi-CACHE, $35
CIRCLE 363 ON READER SERVICE CARD

OctoRAM
MDIdeas, Inc.
1163 Triton Drive
Foster City, CA 94404
(415) 573-0580
List Price: 256K (256K SIMM), $149.95; 1M (1M SIMM), $349.95
CIRCLE 364 ON READER SERVICE CARD

RamPak 4GS
Orange Micro, Inc.
1400 North Lakeview Avenue
Anaheim, CA 92807
(714) 779-2772
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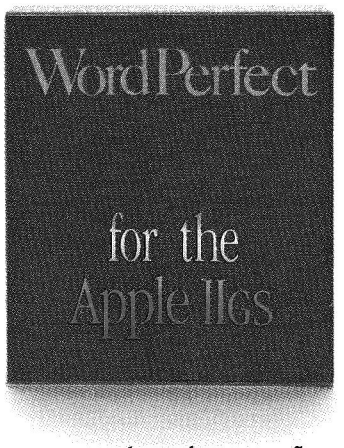
CIRCLE 109 ON READER SERVICE CARD

If you want power from your IIGS, WordPerfect gives it to you in writing.



WordPerfect announces the first power word processor for the Apple IIGS. WordPerfect takes the innate power of the IIGS and plugs it into a feature-rich word processing program designed for power users.

WordPerfect Power.

The result is a word processor that generates detailed footnotes and has a dictionary of 115,000 words. An easy-to-use word processor with features like mail merge, macros, on-screen formatting, automatic page numbering, bold and underline displayed on screen, super/subscript, headers and footers, and even support for hundreds of printers. And the feature list goes on. With WordPerfect, what you really get is a powerful writing tool that lets you flex your word processing muscle.

WordPerfect Flexibility.

In addition to running on the IIGS, WordPerfect is available for the IIe/IIc.* And files from both versions can be interchanged with WordPerfect files generated on other machines, including IBM® PC compatibles and some minicomputers.

No other word processor gives you word power for your IIGS like WordPerfect does. Isn't it time you got plugged in? For more information, including special discount pricing for educators, call or write WordPerfect Corp., 288 West Center St., Orem, Utah 84057 (801) 225-5000.

WordPerfect CORPORATION

*50,000-word dictionary on IIe/IIc.

CIRCLE 120 ON READER SERVICE CARD

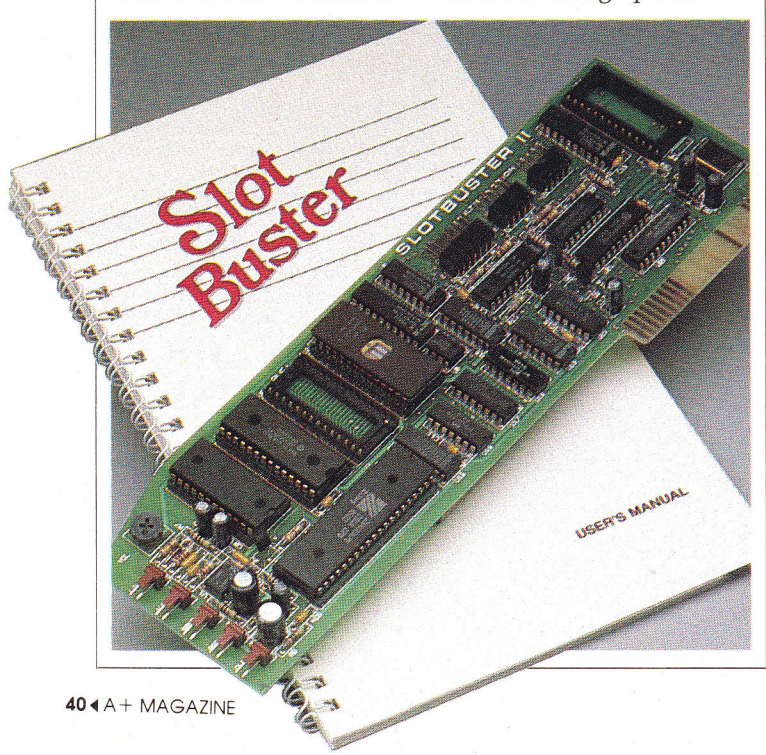
PICK OF THE CROP *BY DENISE CARUSO*

Who ya gonna call? Slotbuster? SoundBuster? Or any of a number of interesting products for you and your Apple II.

PRODUCT SPOTLIGHT

FOR THE USER WITH EVERYTHING

. . . including too many cards in too few slots. Slotbuster II from RC Systems is a true standalone multifunction card that gives you the option to put your serial- or parallel-printer, BSR, and modem port into one slot without using "phantoms" like some multifunction cards do. In addition, the card can hold a speech synthesizer, time-and-date clock, additional buffer memory up to 64K, and built-in graphics dumps.

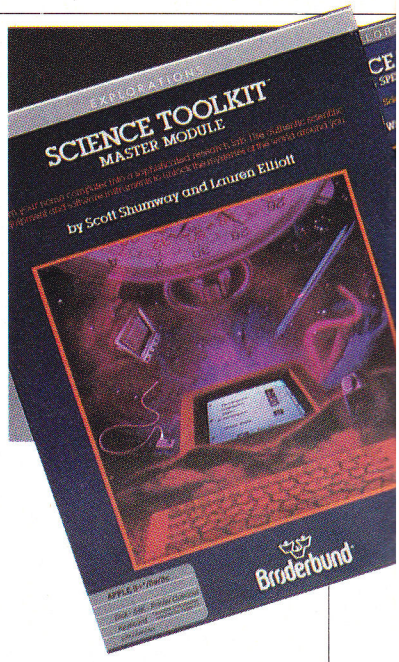


The Slotbuster's serial and parallel ports emulate Apple's, so no worries about software incompatibility. And the speech synthesizer does not require an extra program to run—equipped with Slotbuster II, your Apple can talk the minute you turn it on. Word-processing programs see it as a printer, so you send files to it just as you would to your printer, and Slotbuster can read them back to you. With the addition of auxiliary pronunciation rules, Slotbuster II can talk in foreign languages or can be set to read special vocabularies such as medical terminology or proper names.

The speech-synthesizer option also comes with a special patch to AppleWorks called SpeechWorks, which activates the keyboard to talk to you as you type—either letter by letter or word by word. *(List Price: no options, $149.95. At least one of the following options must be ordered: serial-printer port [buffered], $14.95; parallel-printer port [buffered], $19.95; modem port, $29.95; BSR port with 256-command fixed buffer, $29.95; speech synthesizer [buffered], $39.95; time-and-date clock, $39.95; 32K additional buffer memory, $29.95; 64K additional buffer memory, $57.95)*

Requires: Apple II Plus, IIe, or IIGS

Slotbuster II
RC Systems, Inc.
121 West Winesap Road
Bothell, WA 98012
(206) 672-6909
CIRCLE READER SERVICE NO. **405**

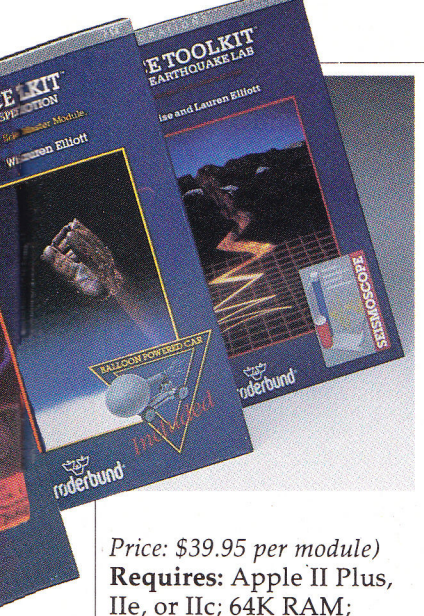


SCIENTIFICALLY SPEAKING

Computer users, especially young ones, are often scientifically minded, as the astute developers at Brøderbund Software have observed. That's why Brøderbund has brought out Science Toolkit, a set of programs and tools designed to demonstrate scientific principles. To get started, you need the Science Toolkit Master Module. This program comes with external measurement devices that read data (such as light levels or temperatures) into your computer, where you can read and interpret measurements on the screen. Two additional modules that work with this first one let young scientists conduct even more experiments.

Module 1: Speed and Motion uses a balloon-powered car and a photocell to demonstrate thrust, acceleration, wind resistance, and centrifugal force.

Module 2: Earthquake Lab uses a seismoscope to measure seismic activity and see what's shaking in your neighborhood. *(List*



Price: $39.95 per module)
Requires: Apple II Plus, IIe, or IIc; 64K RAM; joystick-port adapter required for II Plus
Science Toolkit
Brøderbund Software
17 Paul Drive
San Rafael, CA 94903
(415)479-1700

ON THE PRECAMPAIGN TRAIL

"If I were elected president, I'd . . ."

Yeah, you'd what? Do it and see what happens in And If Re-Elected . . . a Decision-Making Simulation, a program that puts you into the Oval Office as an incumbent U.S. president. An election is on the way, and you're confronted with crises ranging from domestic violence to policy conflicts, with your decisions affecting special-interest groups such as minorities and big business.

The end of the game is the election, and you get to watch yourself win or lose state by state. Published by Focus Media,



the game is suggested for grades 7 through 12, but it sounds like fun for anyone interested in politics and the vagaries of public opinion. *(List Price: $65)*
Requires: Apple II Plus, IIe, or IIc; 48K RAM; one disk drive; color monitor recommended
And If Re-Elected . . .
Focus Media, Inc.
839 Stewart Avenue
P.O. Box 865
Garden City, NY 11530
(516) 794-8900.
CIRCLE READER SERVICE NO. **407**

THREE'S A CHARM

Scholastic Software has recently released The Bank Street Writer III. Like The Bank Street Writer and The Bank Street Writer II before it, the newest version of this venerable word-processing program is designed especially for students. It comes with a tutorial as well as student and teacher guides. The latest release also features a 60,000-word spelling checker and a 50,000-word thesaurus. Its Big Print feature allows young children to work in a 20-column mode. The new release also permits greater flexibility in printing. Owners of previous versions can upgrade to The Bank Street Writer III for $49.95. *(List Price: $99.95; lab pack with five sets of disks and handbooks, $129.95)*
Requires: Apple IIe, IIc, or IIGS
The Bank Street Writer III
Scholastic Software
2931 East McCarty Street
P.O. Box 7501
Jefferson City, MO 65102
(800) 325-6149
CIRCLE READER SERVICE NO. **408**



FOR (ALMOST) THE PRICE OF A PRINTER

If you're tired of your Macintosh-using friends bragging about their Thunderscans, belly up to the bar for a look at Scannit, a complete graphic digitizing system for the Apple IIe or IIc.

Like Thunderscan, Scannit uses a cartridge that snaps in in place of the ribbon cartridge on an ImageWriter printer, and you feed the picture you want scanned into the printer. After it appears on your screen—a line of pixels at a time, so it takes a while—you can goof around with it by using your graphics software, print it out again, save it, and do just about anything you want with it. Just think of everybody you can draw mustaches on!

Scannit can generate hi-res and double-hi-res graphic files, is ProDOS compatible, and can do single-pass gray scaling. *(List Price: $219)*
Requires: Apple IIe or IIc, 128K RAM, 80 columns, Super Serial Card, ImageWriter
Scannit
JED Design Inc.
3300 Central Avenue SE
Canton, OH 44707
(216) 484-1834
CIRCLE READER SERVICE NO. **406**



PRODUCT SPOTLIGHT



AT LAST, AN EXCUSE

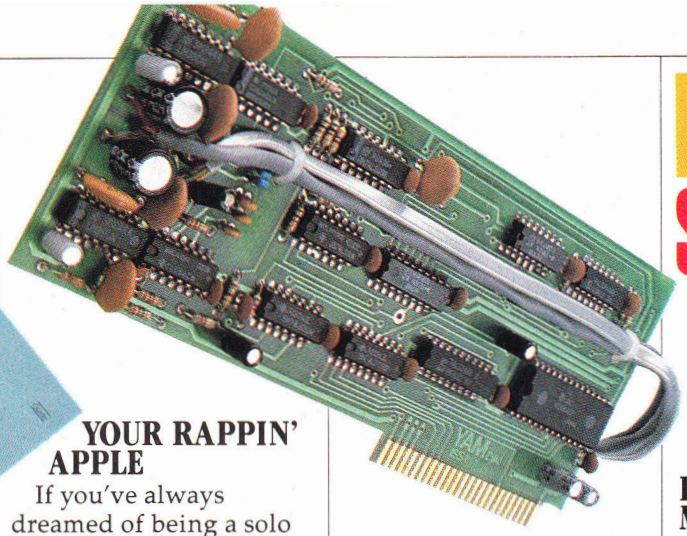
If you love making and flying paper airplanes, here's a way to play and learn something at the same time.

Glidepath by HRM is a flight simulator that lets you design gliders and test them against the simulator. Then it shows you how to build a paper airplane from the design, let fly, and see if the simulator was right.

Using Glidepath you'll learn the basic flight principles of lift, stall velocity, and flight-path angle on your way to designing the optimum glider, given certain physics of flight and environmental influences such as updraft and ground effects. *(List Price: $69; lab package with ten disks and a teachers' guide, $207)*

Requires: Apple II Plus, IIe, or IIc; 64K RAM; one disk drive

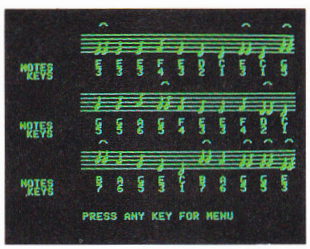
Glidepath
HRM Software
175 Tomkins Avenue
Pleasantville, NY 10570
(914) 769-6900
CIRCLE READER SERVICE NO. **409**



YOUR RAPPIN' APPLE

If you've always dreamed of being a solo act, check out SoundBuster from YAM Educational Software. SoundBuster connects to standard speakers or your stereo system and turns your Apple II Plus or IIe into your very own rappin' Apple digital synthesizer.

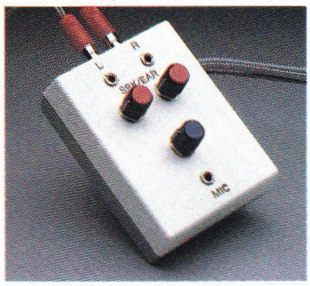
What's especially neat about SoundBuster, aside from its synthesizers and 20 instrumental sounds and rhythm tracks, is that it's a great learning tool for musical neophytes. Musical notation appears as you press keys, so you can see what you create,



and you can even edit sound waves on the screen. You can also record and modify sound effects.

The SoundBuster system includes a card for slot 2; a junction box with volume controls, speaker, and microphone ports; a SoundBuster system disk with synthesizers, sampler, sequencer, and wave editor; and a sound disk with instrumental sounds, background rhythm tracks, and sample tunes.

For a SoundBuster demo or information, call the number below. It talks and plays sound effects and music. *(List Price: $99.95)*



Requires: Apple II Plus or IIe, 48K RAM, one disk drive

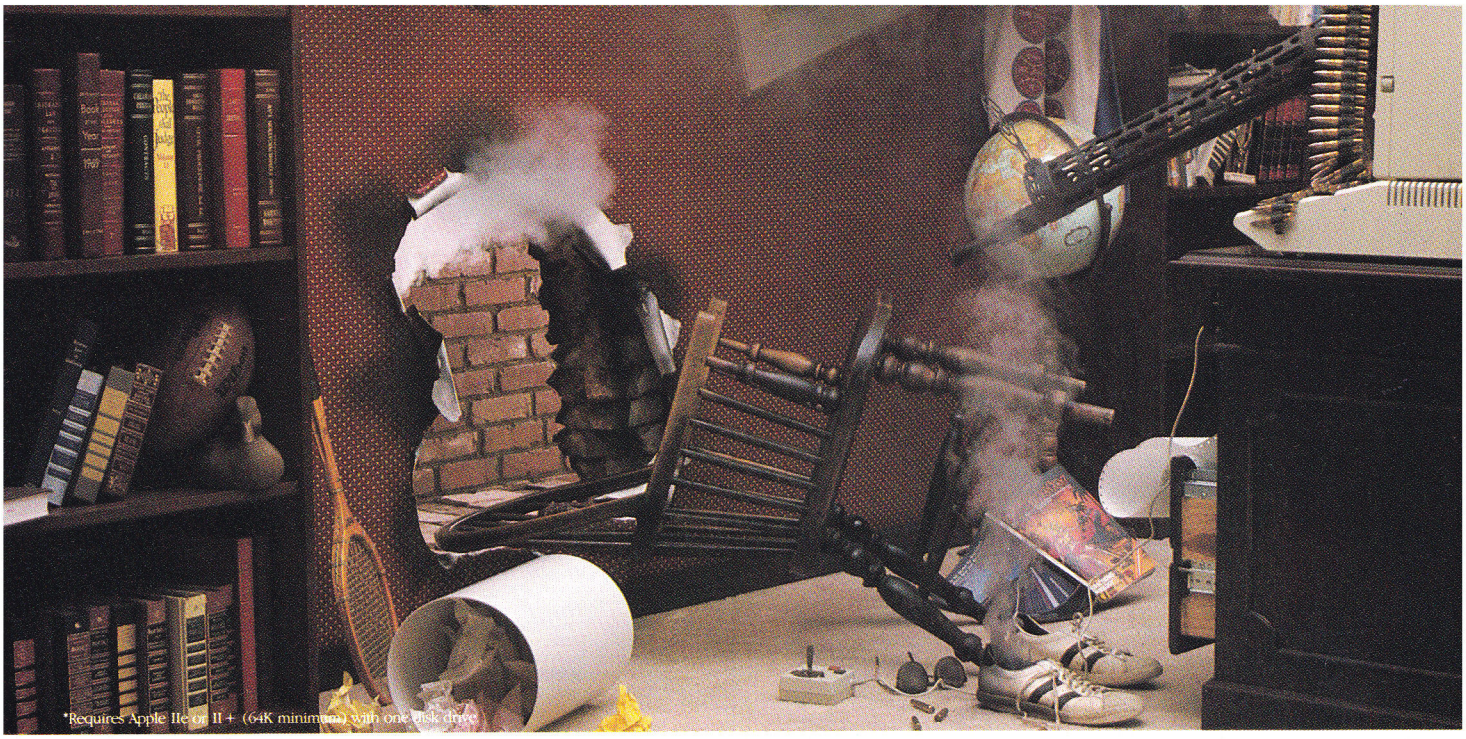
SoundBuster
Yam Educational Software
2028 El Camino Real
San Mateo, CA 94403
(415) 349-8988
CIRCLE READER SERVICE NO. **410**

IT RAINS IN MAY, TOO

Mother Nature doesn't pay much attention to clichés, so here's a nice big bumbershoot to protect you from what's left of April's showers and whatever's coming in May as well. The resplendent logo leaves no doubt as to your loyalties. Made of cotton poplin, it's available from the 1986–87 *Apple Collection* catalog. To order, get your Master Card, Visa, or American Express ready and call (800) 345-2888. Ask for a free catalog too. *(List Price: $28)*

Requires: Rain or a delicate complexion
The Apple Collection
P.O. Box T
Gilroy, CA 95021-2249
(800) 345-2888



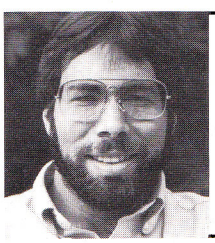


Prepare to be blown away by your Apple.™

Phasor produces sound effects, music, and speech so striking, Applied Engineering feels you should be warned.

Have a weak heart? Don't read any further. And by all means, *don't go near* an Apple IIe or II+ equipped with the new Phasor sound synthesizer from Applied Engineering.

But those of you with the right stuff ... prepare yourself. Because the Phasor is like nothing you've heard before. It's a sound effects synthesizer that makes games explode into life. A music synthesizer that will stun you with 4 watts of stereophonic sound. And a speech synthesizer so realistic, it will send shivers up your spine.



"I recommend Applied Engineering products wholeheartedly!"

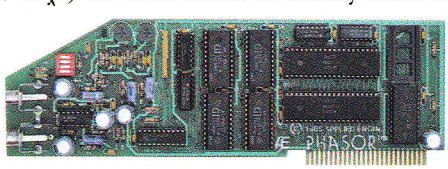
Steve Wozniak, the creator of Apple Computer

What's best, the Phasor works with more off-the-shelf software than any other sound card you can buy. So now all your favorite games — like Skyfox™, Under Fire™, Willy Byte™, Tactical Armor Command™, Maze Craze™, Zaxxon™ and Ultima IV™ — can have shattering sound effects. Educational packages like Music Construction Set™, Guitar Master™ and Music Star™ are also dramatically enhanced.

The Phasor has *four times* the output power and *twice* the accuracy of any other sound card — but of course, you can easily turn down the volume if you need a rest. The Phasor is equipped with 12 simultaneous sound channels, 4 white noise generators, and a voice channel expandable to 2 voices. Programs written for other sound cards, including Mockingboard™, ALF music card™, Syphonix™ and the Super Music Synthesizer™, sound even better with the Phasor. And you can control speech, pitch, volume and more with simple commands.

The Phasor comes with its own easy-to-use software (ProDOS based), including 30 ready-to-run, non-copy protected songs and sound effects along with a Music Editor, Sound Effects Editor and Text to Speech program. And of course, it carries our no-hassle, five-year warranty.

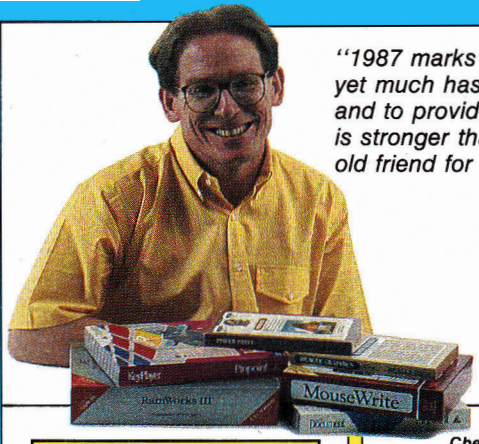
Order a Phasor for your Apple today — and prepare to be blown away! Call (214) 241-6060 to order (9 a.m. to 11 p.m. 7 days). Or send check or money order for $179 to:



Applied Engineering

The Apple enhancement experts.

P.O. Box 798, Carrollton, TX 75006 (214) 241-6060



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Shyster

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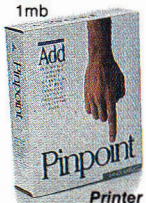

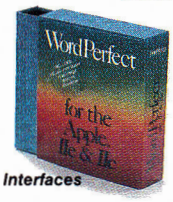

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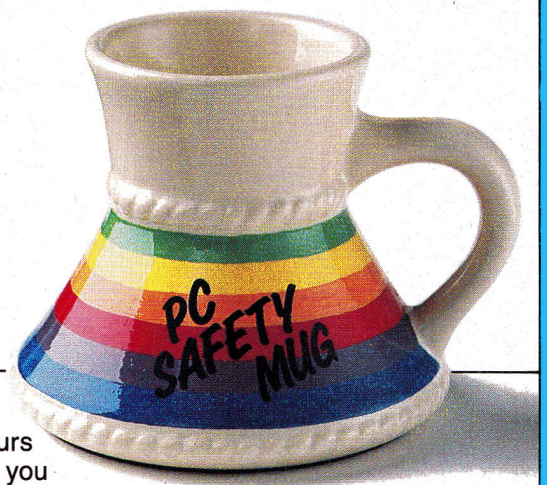

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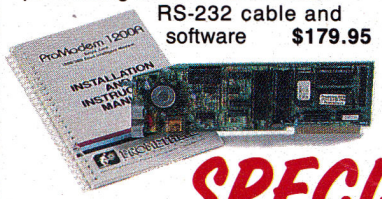

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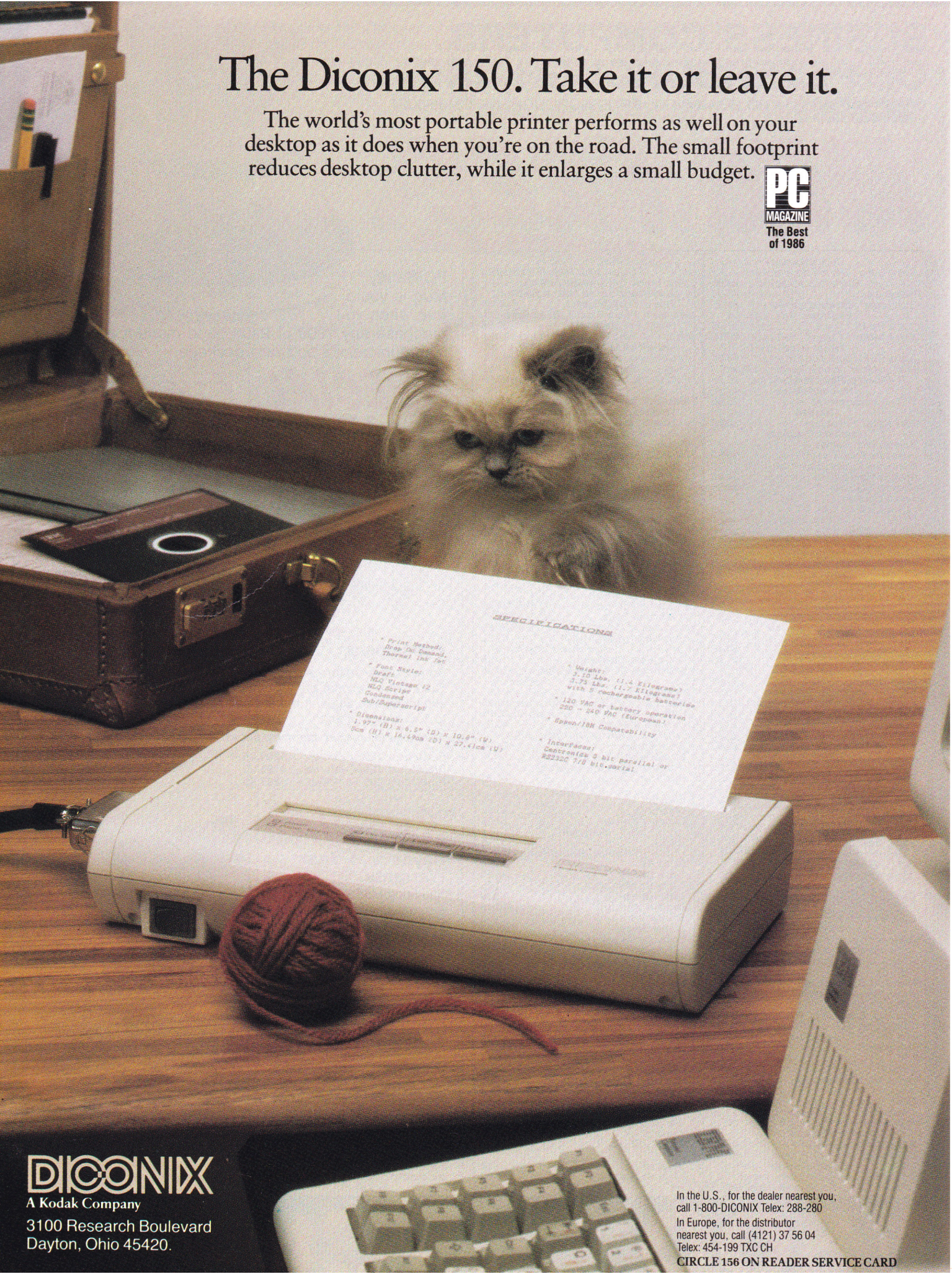

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A work-alike program designed to emulate the abilities and command structure of Lotus 1-2-3

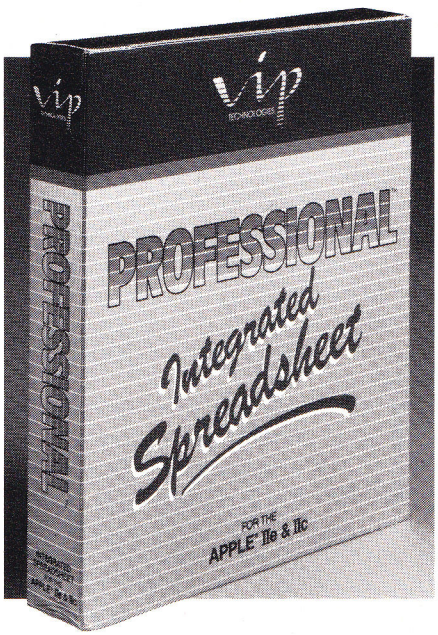
VIP Professional

Every year we see dozens of software products for our Apples that claim to be better mousetraps. The point to building a better mousetrap, of course, is to make sure that it outperforms its competitors. In the case of a spreadsheet program, that means offering more speed; greater worksheet size; improved features; and, if possible, a better price. Above all else, your mousetrap must be equal in every way to the product, or products, against which it competes. Otherwise, the world won't beat a path to your door.

The latest in a long line of purportedly better mousetraps is VIP Professional, a Lotus 1-2-3 work-alike designed to run on Apple IIe and IIGS computers. (This review covers the IIe version.)

VIP Pro is touted in an advertisement by its publisher, ISD Marketing of Ontario, Canada, as a product that "goes beyond Lotus, making it oh so easy to use—and even more powerful."

Unfortunately, when you use it with an enhanced Apple IIe, a fully loaded Applied Engineering RamWorks III memory board (I used a one-megabyte board), an Apple mouse, an Apple composite color monitor, and a ProAPP 20-megabyte hard-disk drive, VIP Professional is not a stellar performer. On this system, it is in no way more powerful than Lotus 1-2-3 on a 640K IBM PC XT. I also have doubts about the program's ability to outperform AppleWorks in a similar configuration for many tasks. In fact, few, if any, AppleWorks or Lotus 1-2-3 fanatics would give up their current spreadsheet program for VIP Pro.



VIP Pro is a work-alike program designed to emulate the abilities and command structure of Lotus 1-2-3 (limited primarily to version 1A) on a IIe, and it does let you perform common Lotus 1-2-3 tasks with familiar slash (/) and function commands. Additionally, VIP Pro lets you do 1-2-3 graphing, create extensive worksheet macros, perform database operations, and do minimal text processing. Unlike 1-2-3, however, VIP Pro lets you execute 1-2-3 commands by using pull-down menus and dialog boxes in much the same way you use Excel on the Mac (see figure 1). In fact, VIP Pro's opening screen is probably more familiar to Mac users than IBM PC users. On it you find scroll bars, close boxes, icons, and other familiar Mac paraphernalia. To Lotus users, only the menu names (which, unlike in 1-2-3, are always visible in VIP Professional) and the basic row/column arrangement of the worksheet are instantly recognizable.

Before you can use VIP Pro, you must install a 256K RAM board in your enhanced IIe. Although dozens of such memory boards are available for the IIe, choosing the right one is difficult, because only add-in cards with 256K of directly addressable RAM are able to load VIP Pro. Two such boards are the Applied Engineering RamWorks III and the AST MegaRam boards. Don't throw away your nonaddressable 256K RAM expansion cards just yet, though. You can use them with VIP Pro as RAMdisks, provided the machine also contains an addressable 256K board. Sound confusing? There's more. As an add-

ed quirk, VIP Pro lets you use board-based RAMdisks but not RAMdisks created with software programs such as RamDrive.

In addition to needing an addressable memory board to use this program, you can also opt to add various accelerator boards for use with VIP Professional. These boards increase the computer's processing and calculation speeds. Despite VIP's claims that "Professional was written in machine language and optimized for raw speed and power," a 16-bit coprocessor board from either Checkmate Technology or Applied Engineering or an Applied Engineering Transwarp accelerator board is a must with this program. Without one, using VIP Pro is similar to running a footrace in knee-deep mud. More on that later.

Once you get the board situation nailed down, you can install VIP Pro on your system. If you aren't intimately familiar with ProDOS, spend time with it before using VIP Pro, to avoid frustration and confusion. This preparation is especially important if you are a new ProDOS user, because the instructions in the manual detailing VIP Pro's ProDOS installation procedures are poorly written.

Familiarity with ProDOS is essential to simplify porting existing 1-2-3 files over to VIP Pro. One of VIP Pro's better features is its ability to work with existing 1-2-3 worksheets, even those containing extensive macros. Since most macro-laden 1-2-3 worksheets are written to accommodate MS-DOS and its hierarchical directories and file handling, however, you'll need to make minor adjustments to macro commands that involve input and output to make them work in ProDOS.

Who's It For?

One of VIP Pro's biggest problems is that it can't quite figure out whom it wants to attract, which becomes apparent when you first load the program. If VIP is trying to entice Lotus 1-2-3 users, the user interface isn't going to act as much of a temptation.

VIP Pro's start-up screen doesn't make a whole lot of sense if you are used to working with 1-2-3. It is primarily designed for mouse interaction. As another minus, the Apple IIe keyboard doesn't have function keys and other common IBM PC pointing features, so Lotus 1-2-3 users have to learn VIP Pro's clumsy key combinations and substitute function keys in order to navigate the worksheet and perform common 1-2-3 tasks.

Without a 16-bit or Transwarp card, VIP Professional is painfully slow in many cases.

Pressing the Tab key and then the down-arrow cursor key may be as functional as pressing the End key and the down-arrow cursor key to move to the end of a worksheet block, but to a 1-2-3 user trying to work with 1-2-3 on an Apple IIe at home, it's just another clumsy new command to learn. Granted, you can do anything from the IIe keyboard in VIP Pro that you can do from the IBM PC keyboard in Lotus 1-2-3, but I doubt that many Lotus 1-2-3 users are going to care.

Since the publisher also seems to be aiming to compete with Excel, let's take a quick look at how VIP Pro compares to that spreadsheet program. The fact is that Excel on the Macintosh Plus runs circles around VIP Pro on a IIe. Even the mouse interaction on the IIe is clumsy compared to that of Excel on a Macintosh.

Take, for instance, the simple act of using the mouse to select a large range (see figure 2). With Excel, the screen scrolls to the right, left, up, or down when the cursor passes a worksheet boundary and continues to scroll until you stop dragging the mouse (provided you aren't attempting to scroll off the worksheet). With VIP Pro, the cursor scrolls a few rows or columns past the boundary and then stops. To continue selecting, you must drag the cursor back into view and then back in the direction of the area you're selecting. You have to repeat this action until the entire desired area is selected (so, although page 43 of the manual claims that dragging in VIP Pro does work as described for Excel, that is not true). It is easier to perform the action with the keyboard and cursor keys, so there's no reason to bother with the mouse.

In addition to Lotus 1-2-3 and Excel users, two more groups are potential candidates for VIP's mousetrap: new Apple IIe owners not currently using a spreadsheet program and longtime Apple IIe users currently using some other spreadsheet program or AppleWorks. For new users who haven't spent a lot of time with either the Apple IIe or a spreadsheet program, VIP Pro might be just dandy, but only if you are committed to purchasing all the necessary hardware to make the program work at reasonable speeds. Without a 16-bit or Transwarp card, VIP Pro is painfully slow in many cases.

As for AppleWorks users, VIP Pro will only be as compelling to them as it is to Lotus 1-2-3 users. If you have a fully loaded system with a 16-bit or Transwarp card, you might want to use VIP Pro to work on large worksheets, do some graphing (see figure 3), or maybe do some data manipulation that's not possible in AppleWorks. You probably won't want to get rid of AppleWorks entirely, though. It's a sure bet that you'll prefer its word-processing capabilities over the limited text-manipulation abilities of VIP Pro.

The strange thing about VIP Pro is that it does some nifty things that make it difficult not to like. Its ability to work with Lotus 1-2-3 files downloaded from CompuServe or some other information service is almost uncanny when the files work. That you can type sample models from off-the-shelf 1-2-3 books directly into the program is a tribute to the program's overall compatibility. If you are a regular mouse user as well as a regular Lotus 1-2-3 user, the program's ability to work with the mouse is a pleasant surprise in many situations.

Putting It to the Test

In order to test VIP Pro, I used several data sources. I downloaded several 1-2-3 files from the Lotus SIG on CompuServe; typed in some sample programs, using several of the available Lotus 1-2-3 books for reference; worked through the tutorial in the manual; and ran the demo programs that came with VIP Pro.

In most cases, the downloaded files worked when I loaded them directly into VIP Pro, but I had to modify several worksheets that contained macros in order to get them to run. That was because they used MS-DOS conventions (such as a directo-

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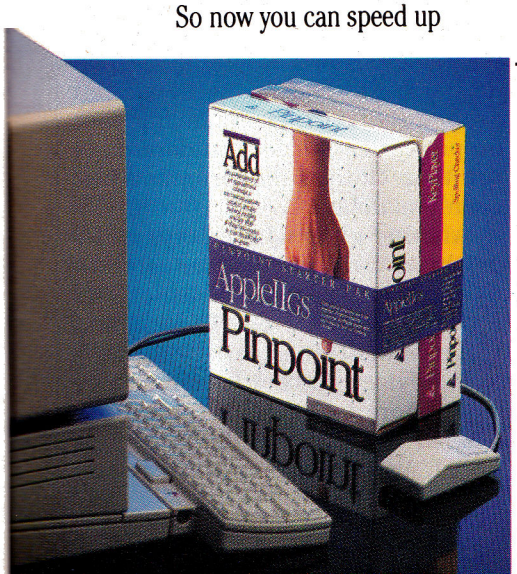

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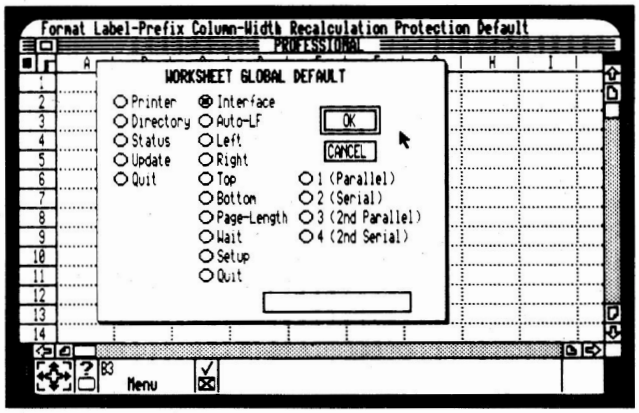

Figure 1: VIP Professional resembles Lotus 1-2-3 in many of its features but also uses the familiar Macintosh-like features such as dialog boxes.

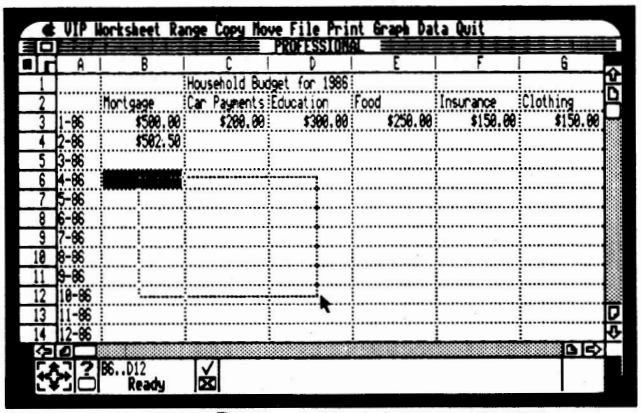

Figure 2: You can select a range with the mouse with VIP Professional as you can with Excel, however, mouse action with VIP doesn't always work as it does with Excel.

ry rather than volume names) that caused error messages when VIP Pro encountered them. One such macro-driven worksheet was a loan calculator and accompanying help file. When I tried to open the help file, the macro produced an error and stopped because the directory commands weren't geared for ProDOS. I fixed those commands, and the worksheet worked properly.

Not everything went as planned with downloaded files, though. In several instances, while loading files from CompuServe, VIP Pro went into a juvenile "Da Da, Da Da" death theme and produced a fatal error message as the system crashed. I expect a little more protection than that from a sophisticated spreadsheet program. If it can't read or load a file, or if the worksheet itself has a problem, such as an unfamiliar macro command or function, the program should point the problem out and then return to the worksheet, not produce a death screen.

Another difficulty I had with VIP Pro was that after modification and resaving of downloaded files, the program couldn't read them when I tried to reload them. Once again it produced the death theme and demanded a system reboot. Possibly I did something wrong when I modified the files and saved them, but I couldn't tell once the files had crashed the system, because I couldn't reload them a second time to check for errors.

Interminable

The real telling difference between VIP Pro on a IIe with and without a 16-bit or Transwarp card was the time it took to perform calculations and routine spreadsheet operations (see the accompanying chart). It took VIP Pro almost four times as long to add a row to a small worksheet as it took to add a row to an identical worksheet in Lotus 1-2-3 with a standard IBM PC XT configuration. To load a large 100K Lotus 1-2-3 worksheet took less than 25 seconds from an XT-type hard disk; the same operation with VIP Pro and a IIe hard disk took twice as long—almost 50 seconds. But those benchmarks pale in comparison to what happens when you try to recalculate large spreadsheets.

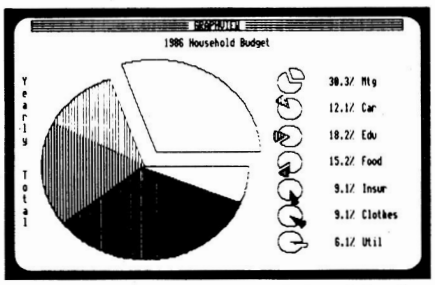

Figure 3: VIP lets you convert spreadsheet data into a graph just as you can with 1-2-3.

To test VIP Pro against Lotus 1-2-3 in this area, I used an amortization schedule that calculated the payment on a loan. Along with the payment, the worksheet also calculated the remaining principal for each payment, the per-period cumulative principal and interest, current principal and interest, and payment number. The total number of payments was 360, the number required to track a 30-year loan. When I changed the principal loan amount in Lotus 1-2-3 and then pressed the F9 key to recalculate, the program took two minutes and nine seconds to recalculate the entire worksheet. With VIP Pro I gave up after waiting *six hours* for the program to recalculate. By reducing the number of calculations from 360 payments to 120, I was able to bring VIP Pro's recalculation time under 20 minutes, but even then the program wasn't in any way comparable to Lotus 1-2-3 at 13.69 seconds.

Aside from the amount of time it takes to perform many operations, using VIP Pro on an enhanced IIe with an Apple composite color monitor is less than thrilling because the resolution isn't all that great (I tested Lotus 1-2-3 on a color monitor in the Color Graphics Adapter mode). In the Color mode, the VIP Pro worksheet is almost impossible to read (the manual does call for a composite monitor, not RGB, which may have caused part of the problem), and the text that accompanies graphs is unreadable. The latter proves true even with the monitor in the Monochrome mode. For standard data entry and continuous work with the program, the color monitor running in the Monochrome mode also leaves a lot to be desired. Characters tend to blur and are fatiguing to read, especially when the entire screen area is occupied by both text and numbers.

As for printing, the IBM PC and Apple IIe are comparable when it comes to getting your work to the printer. Lotus does work with more printers in the Graph mode than does VIP Pro and has more add-on programs that make enhancing your output easier. But for standard daily printing chores, the programs are evenly matched.

Another place where Lotus really outshines VIP is in its manuals. Although many people consider 1-2-3's manuals to be overly long and better suited for experienced users than novices, the Lotus manuals are much more usable than the shorter manual that comes with VIP Professional. VIP Pro's manual is poorly

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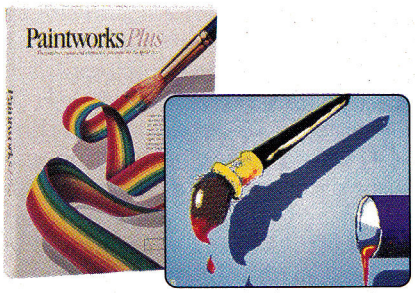

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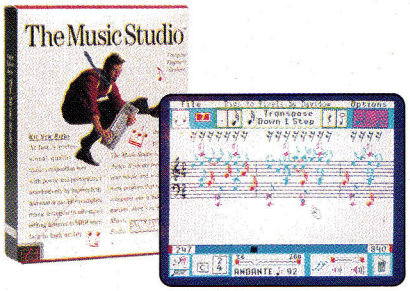

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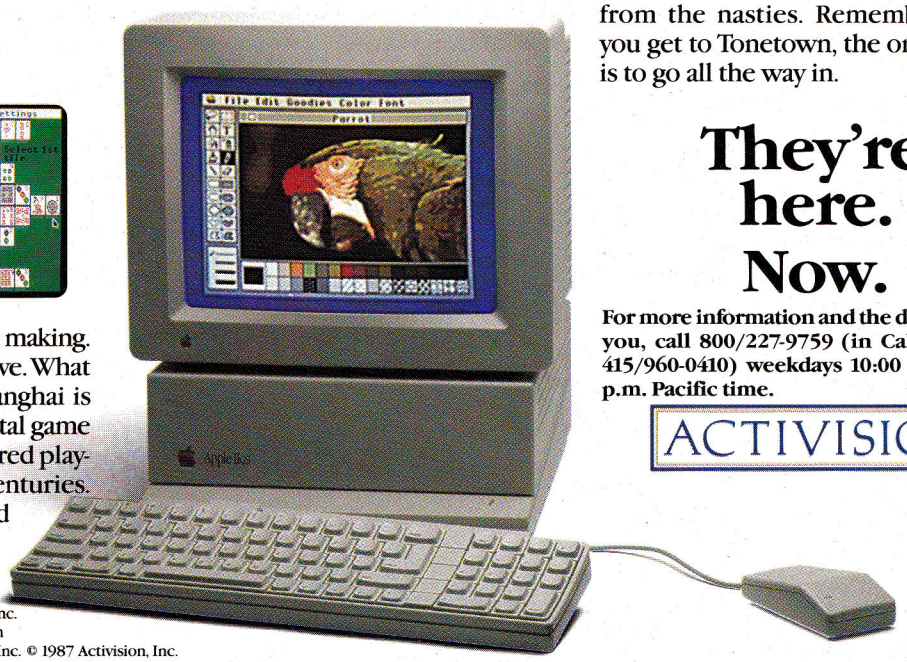

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written, poorly organized, and boring enough to replace Sominex.

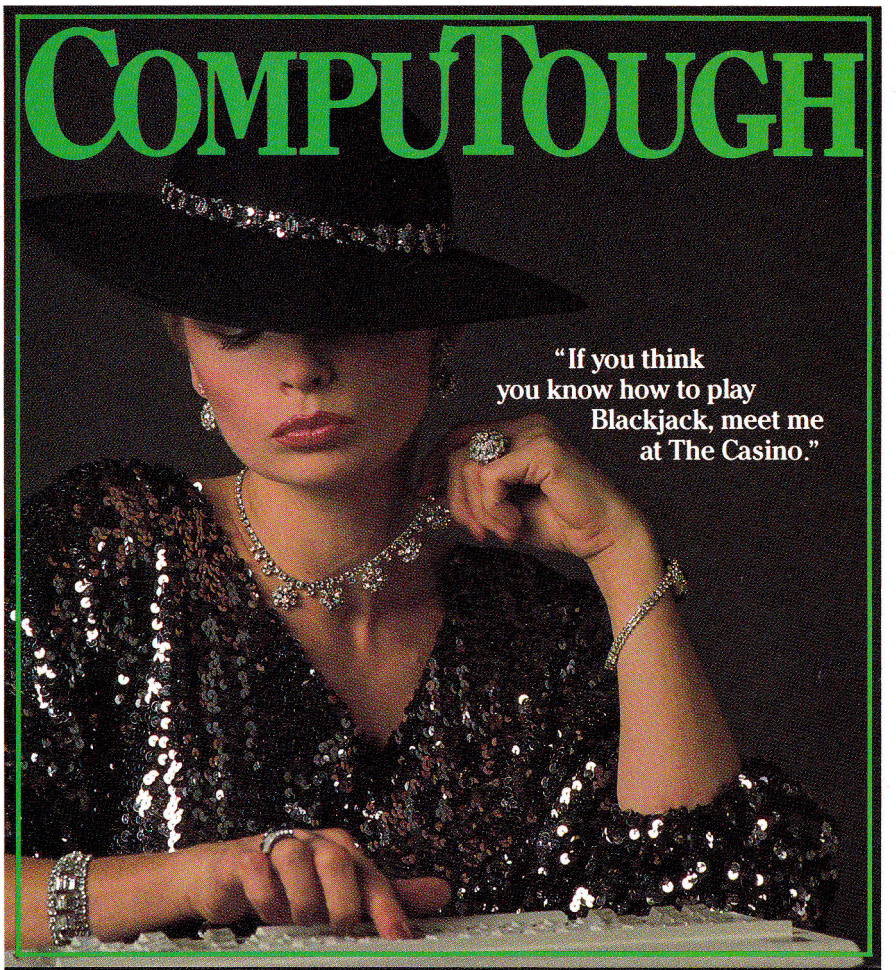
The first 75 pages of the VIP Pro manual consist of a hands-on tutorial comprising eight lessons. Of those pages, roughly five might qualify as an actual hands-on tutorial. The remaining pages consist of a great deal of rambling explanation, confusion, and inconsistency. For instance, at one point the tutorial directs you to use 6% as the multiplier for an inflation rate. Later that number magically becomes 5%. Then, a little further along, the multiplier turns back into 6%. Another example of inconsistency is on page 47 of the manual, where the text refers to a formula in cell B3; the actual formula is in B4. The manual has many more such problems, and the bottom line is that it is just not very good. The good thing is that, given the number of 1-2-3 books out there, you might not need the VIP Pro manual for much, once you've actually learned how to use the program.

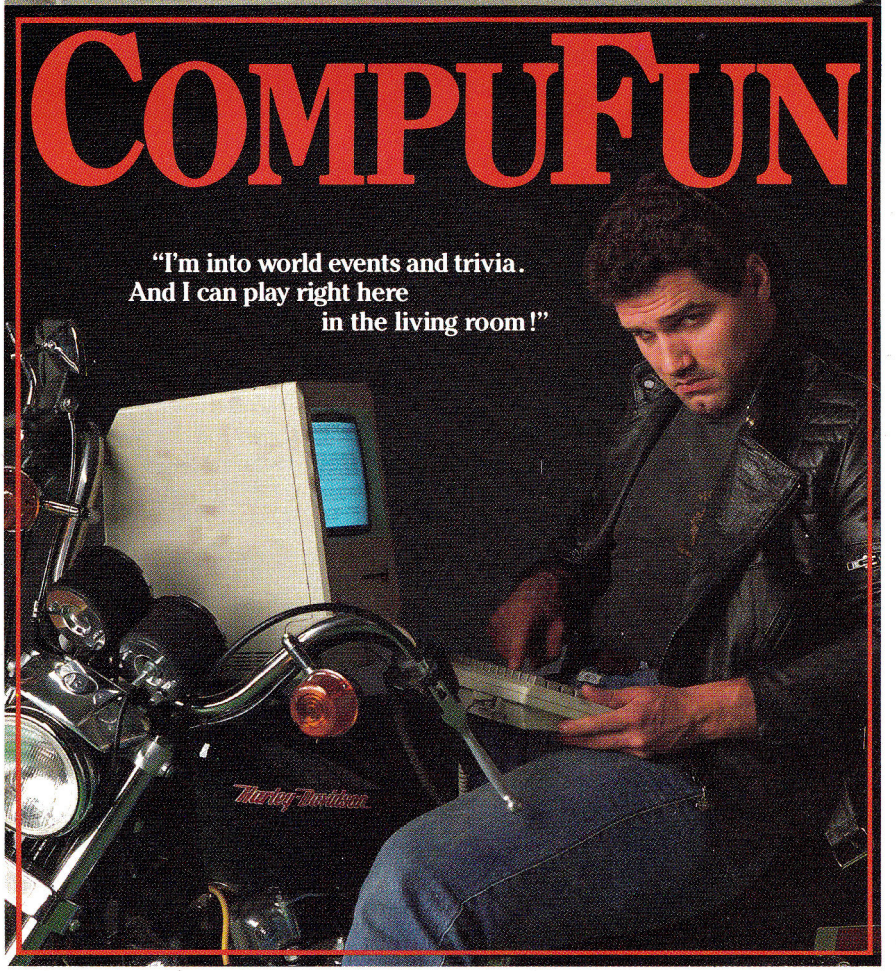
The Real Cost

The final thing to take into account before rushing out to buy VIP Pro is its real cost. Certainly the program itself doesn't cost a great deal at a suggested list price of $249.95 (for the IIe or IIc), but when you toss in a 256K RamWorks III board for an additional $215, then pitch in a 16-bit card at $159 or throw in a Transwarp board for $219, include a mouse for another $115, and slam an additional 512K of memory onto your RamWorks board for another couple hundred dollars, things start to add up.

When you consider everything it takes to turn your IIe into a machine that can run this Lotus 1-2-3 workalike, a $700 IBM PC clone and the real 1-2-3 start to look pretty good. An added wrinkle is that Applied Engineering is scheduled soon to begin shipping Little Blue, an 8086-based coprocessor board, along with a 5¼-inch IBM-like floppy-disk drive for the IIe. When that happens, you'll be able to turn your IIe into a decent PC clone for less than $500. The real benefit of the Applied board is that you'll be able to run Lotus 1-2-3 without filling every empty slot in your machine with the extra boards you need to run VIP Pro at comparable speeds.

What VIP Professional boils down to is a different variety of spreadsheet mousetrap, rather than





THE VIP COMPARISON TEST

All times are measured in seconds.

PROGRAM	VIP PROFESSIONAL				APPLEWORKS 2.0	LOTUS 1-2-3	EXCEL 1.03
COMPUTER	Apple IIe	Apple IIe	Apple IIe	Apple IIGS*	Apple IIGS*	IBM PC-XT	Mac Plus
Memory	1 MB	1 MB	1 MB	1 MB	1 MB	640K	1 MB
Peripherals		accelerator card	16-bit card				
Loading program (from hard disk)	26.00	24.80	26.00	29.09	16.00	11.16	19.00
VIP TUTORIAL FILE (FILE SIZE 5K)							
Loading the file	16.53	11.00	15.44	5.58	2.00	3.84	3.34
Summing a column (12 values)	7.50	3.30	7.53	2.30	1.76	1.78	.30
Copying a formula (to 5 columns)	13.13	5.70	12.52	4.15	2.50	2.97	1.42
Inserting a row	8.85	4.90	8.19	1.25	2.79	2.07	1.00
Deleting a row	9.06	4.90	6.43	1.42	2.57	2.03	1.34
Erasing worksheet	5.25	3.12	4.65	2.15	.50	.39	1.45
120-PAYMENT AMORTIZATION SCHEDULE (FILE SIZE 39K)							
Loading the file	31.44	27.85	25.13	13.24	5.11	13.94	26.30
Copying formulas (6 cols. x 100 rows)	975.00	51.75	81.66	29.41	71.67	16.97	30.16
Recalculating the loan	969.10	973.33	793.33	236.66	320.00[1]	13.69	9.08
Saving the file	25.63	22.70	20.84	12.00	8.12	8.09	17.90
360-PAYMENT AMORTIZATION SCHEDULE (FILE SIZE 91K)							
Loading the file	49.54	47.65	40.52	22.04	13.39	23.97	31.70
Recalculating loan	gave up after 6 hrs.	gave up after 4 hrs.	gave up after 4 hrs.	gave up after 4 hrs.	3360.00[2]	135.00	20.23

*in native 16-bit mode 1 10 recalculations 2 16 recalculations

VIP Professional can be pretty slow when you use it on an Apple IIe without an accelerator or 16-bit card, so we decided to test it out with just that equipment installed (a Transwarp accelerator board and an 816 Card with a 65C816 chip, both from Applied Engineering). We also tested the Apple IIGS version of VIP Pro. The result: VIP Pro is slow no matter what setup you use, when you compare it to Lotus 1-2-3 on a PC XT and Excel on the Macintosh—two programs to which the publisher of VIP Pro favorably compares its product. And VIP Pro on the GS is slower than AppleWorks on the same machine.

Here's how we proceeded: We first clocked how long it took for VIP Pro, AppleWorks, Lotus 1-2-3, and Excel to load from a hard disk—not a measure of the programs' capabilities per se, but an indication of how much time you spend waiting between procedures. Then we measured how long it took each program to perform certain functions and calculations using identical formulas. The amortization formulas came from the book *Power-Up Using 1-2-3*. We measured the times in VIP Pro from the moment the OK prompt was selected until the READY message appeared.

If you study this chart, you'll notice a few interesting phemonena. In all setups, we gave up trying to recalculate a 360-payment amortization schedule with VIP Professional after it spent *hours* at that task. Performing other functions, though, the IIGS was the hands-down winner among VIP Pro versions. Generally, we found that the accelerator card provided the speediest processing on the Apple IIe on smaller tasks; a IIe equipped with a 16-bit card didn't fare much better than a IIe without one. The 16-bit card showed its stuff with larger files, however, and outperformed even the accelerator card in those recalculations. That was because the accelerator card sped up only the 64K of motherboard memory and the first 64K of auxiliary memory and thus suffered a speed drop-off with large files.

What else will you notice when reviewing this chart? Well, you'll note that AppleWorks on the GS gives Lotus on the PC XT a run for its money, but when it comes to recalculating large worksheets, Excel on the Macintosh leaves everything else in the dust.

We've noted all measurements in seconds so that you can easily compare times across the chart.

—Chip Carman and Amanda Hixson

a better one. It borrows a little here and a little there, but in no way is it superior to other programs. As our tests evidenced, Lotus 1-2-3 is the superior product in most respects.

As for any arguments about VIP Pro with a 16-bit or Transwarp card being a more powerful spreadsheet program than 1-2-3, all you have to do is run 1-2-3 on an 80286 or 80386 machine to fully understand the benefits of that program. As for considering VIP Pro vs. AppleWorks, that comparison isn't really valid, for the simple reason that people buy AppleWorks because they want a basic workhorse program. I doubt that many of the AppleWorks faithful are going to rush to embrace VIP Pro, mouse or no mouse. Most AppleWorks users who desire added performance and extra features have probably already jammed everything imaginable into their machines to optimize that program. I don't think they are now going to toss everything aside and start over.

Certainly a point can be made that VIP Pro is the only Lotus 1-2-3 clone available for the IIe and that if you want a 1-2-3-like spreadsheet program, you have nowhere else to turn. VIP Pro is an incomplete program, however. On a minimally configured Apple IIe, it offers many of the features and functions of its competition but falls short in critical areas such as speed and performance. On an accelerated IIe, it may reach greater parity, but the price is too high. ✚

Amanda Hixson is a San Jose-area freelance writer whose specialty is business software. She has written Lotus 1-2-3 training software and a book about Microsoft's Excel.

PRODUCT INFORMATION

VIP Professional
ISD Marketing, Inc.
20 Steelbase Road, Unit 12
Markham, Ontario
Canada L3R IB2

List Price: $249.95; IIGS version, $299.95

Requires: Apple IIc, IIGS, or enhanced IIe; 256K RAM; ProDOS; MultiRam, RamWorks III, or Z-RAM memory board; mouse, second disk drive, and accelerator board recommended

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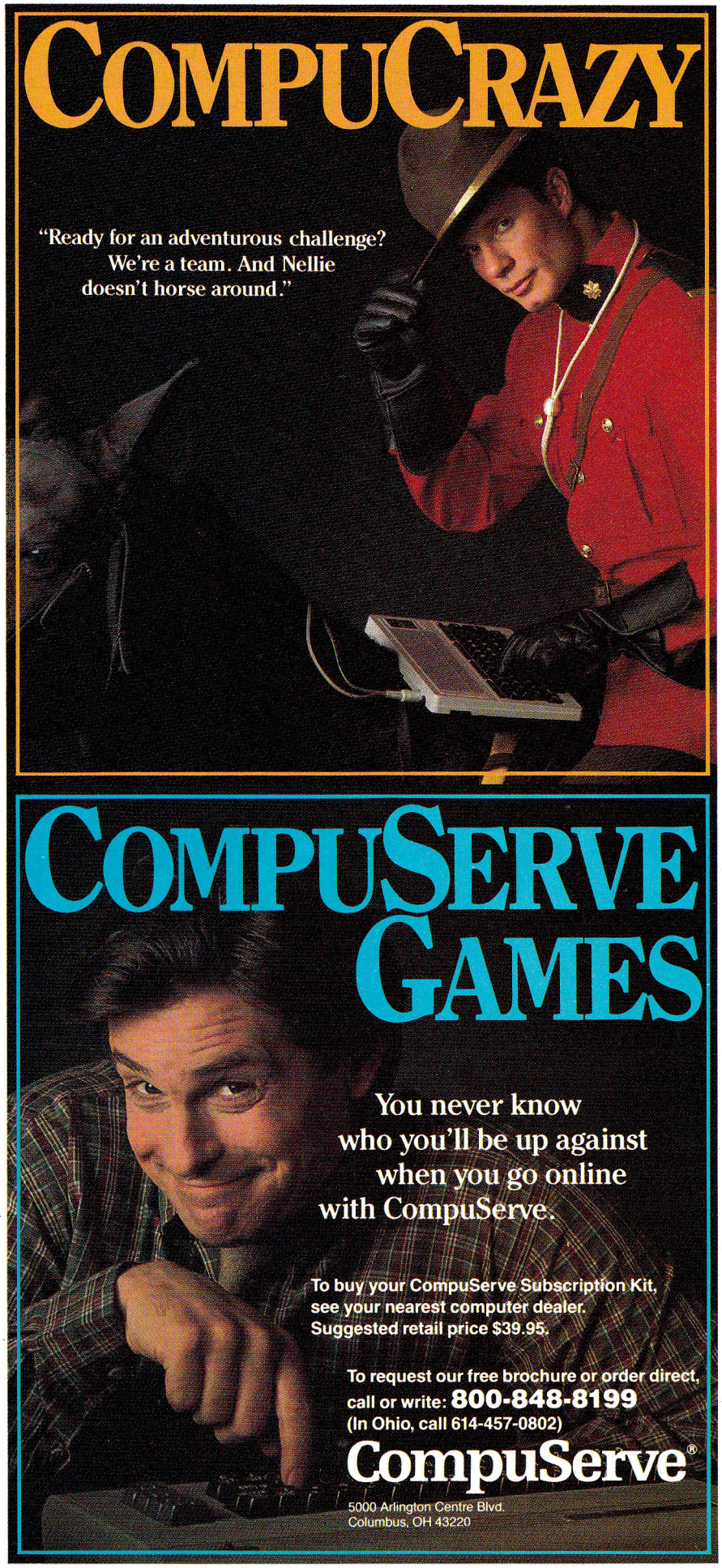


CIRCLE 271 ON READER SERVICE CARD

BY ROBERTA SCHWARTZ AND MICHAEL CALLERY

AST's video digitizer for the IIGS adds another S to the name—for sight.

VisionPLUS

Recently, we hosted a brunch, and after all the guests were fed, we turned a camera on them—a video camera that was attached to a computer via a digitizing board. After everyone was photographed, we brought the images into a paint program for some quick touch-ups. "Cover the bald spot." "Shorten my nose." "Could I see how I'd look with a mustache?" Our friends went home with printed copies of their portraits, before and after pixel surgery.

A video digitizer is a marvelous tool, for fun as well as for practical applications, and the first one for the Apple IIGS is here.

AST-VisionPlus

The AST-VisionPlus is a video-digitizer card that captures black-and-white or color images from a video camera, camcorder, or VCR (Beta or VHS) and transfers them to the Apple IIGS. (What it's doing, simply stated, is converting NTSC composite video signals into a format that's usable in the computer. See "On Digitizing," which accompanies this article, for a more detailed explanation.) The AST-VisionPlus package includes the card; a cable adapter; software; and a well-written, illustrated manual. Installation is a snap. The 10-inch-long by 2.75-inch-wide card plugs into any slot in your Apple IIGS. The cable adapter fits into the back panel of the GS and connects to an RCA jack on the card, and your video source plugs into an RCA jack on the back of this adapter.

When you boot the Vision Effects software that comes with the AST-VisionPlus board and select Digitize, the AST-VisionPlus instantly displays the images "live" from the source to the computer screen—in 320 × 200-resolution black-and-white images at 15 scans per second, 640 × 200-black-and-white images at 7.5 scans per second, and 320 × 200 color images at 5 scans per second—from which you can then capture still images.

The software lets you select from several digitizing options, and it lets you alter the captured images and save them to disk. You make all of your selections from pull-down menus and dialog boxes (small windows that open on the screen to give or request information).

More Than Black and White

Black-and-white digitizing is, more accurately, monochrome digitizing; you can choose black, red, blue, or green. Each captures the image in shades of that one color. You can choose 320 × 200 resolution with 2, 4, 8, or 16 gray levels (shades of the colors) or 640 × 200 with 2 or 4 gray levels. (The latter is best for line art or text.)

Digitizing is easy. You start by moving slide-bar controls to set brightness and contrast. It doesn't matter if you make the wrong choice here because, as the system is capturing and displaying an image on the screen, you can use the GS mouse to change the settings. Move the mouse up to increase contrast, move it right to increase brightness, and so on. Once you like the display, you freeze it by pressing the space bar. If you didn't capture just what you wanted (did your model blink?), you just press the space bar once more, and you're digitizing again. When you get just what you want, you click the mouse.

Once your image is captured, you can save it and then play with it. Change the gray level from 16 to 8 and see how it looks. Add a color tint. Replace each shade of gray with a color. It's so easy to do that we found it hard to stop. You simply click on a pixel (or area) that has the gray level you want to replace and "mix" the color with which you want to replace it. With a palette of 4096 colors, you can achieve an astounding variety of effects.

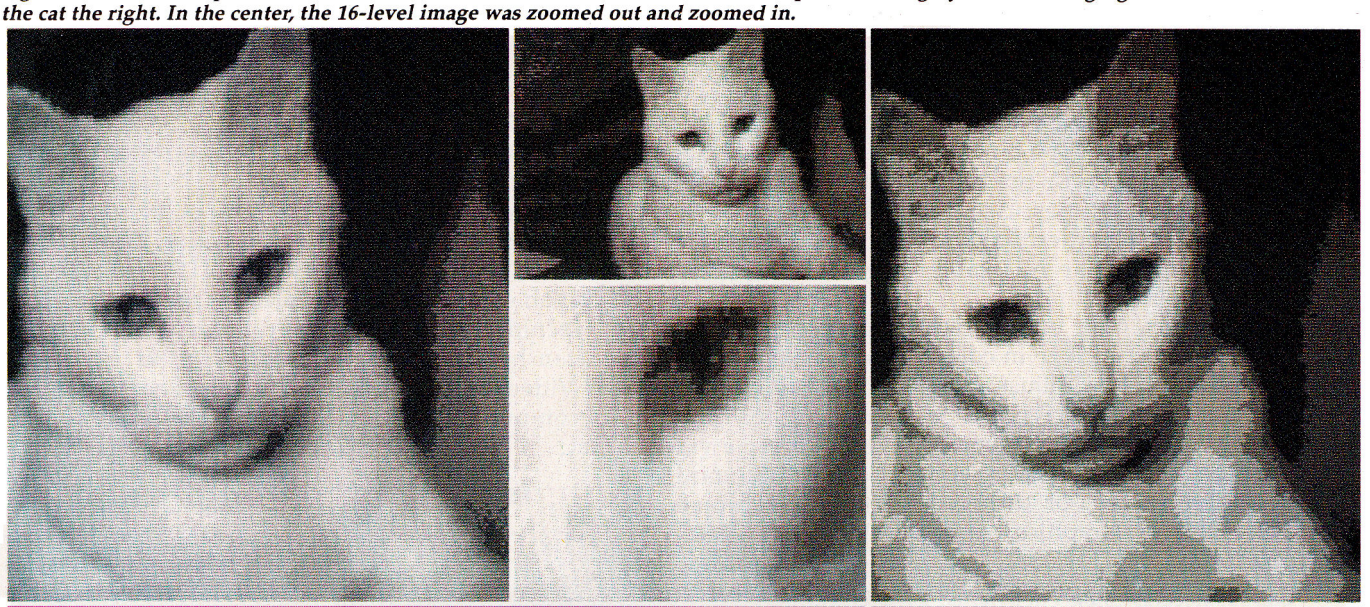
VisionPlus has more options for you to try (see figures 1 and 4). Invert the colors. Zoom in and edit the image pixel by pixel. Zoom out to reduce the image. We reduced some images to quarter-inch squares, and they were remarkably sharp. Use Aspect Ratio and stretch your image vertically or horizontally.

If you like the effects, you can save your image in any or all of the new configurations.

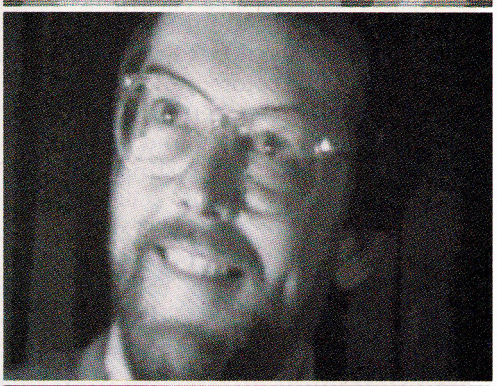
Use a Color Camera or VCR

When you digitize in color, the screen resolution is restricted to 320 × 200. Color digitizing works best with inanimate objects or posed models, because the subject is being scanned at only five scans per second. Moving models tend to blur. Also, for that reason, capturing screens from the VCR is a trial-and-error process, since the movement

Figure 1: With an inexpensive black-and-white video camera, Roberta's cat was captured in 16 gray levels. Changing the levels to 8 created the cat the right. In the center, the 16-level image was zoomed out and zoomed in.









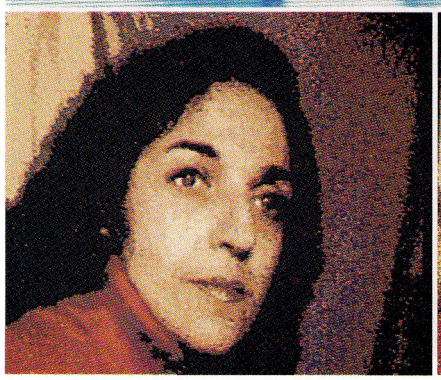


Figure 2: You can use a digitizer to perform experimental pixel surgery (above and right). Roberta will stick to brunette.

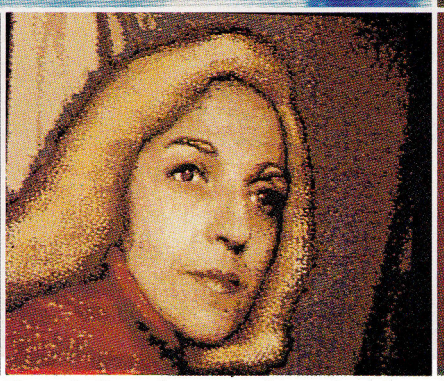


Figure 3: Capturing scenes from television via a VCR is a challenge (see Paul Newman, above, center), but it can be done.

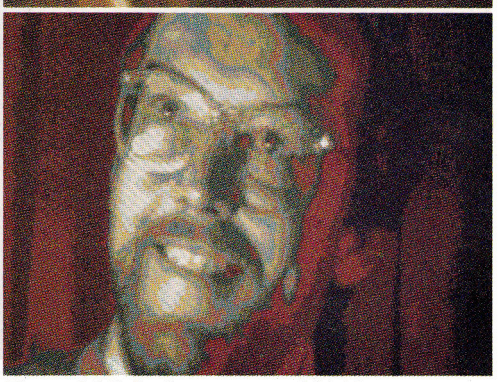


Figure 4: Michael was captured in 16 gray levels; Change Color transformed the image into two full-color portraits.

usually creates images with lots of glitching. We managed to get pictures of Paul Newman and a group of other cowboys, and, although they aren't of publication quality, they're certainly adequate for many applications (see figure 3). For top-quality color images, you'll want to use a good color-video camera. We got our best images, with the most intense colors and sharpest details, when we used a camcorder that was connected directly to the AST cable connector.

You can select either one of two methods when you digitize in color: Color Dither or Palette Adjust.

Color Dither

Color dither means your image will comprise red, blue, and green pixels that are mixed, or dithered (see "Speaking of Graphics," *A+*, February 1987).

The three colors appear next to each other in different patterns. Your eyes mix the colors to create an illusion of many colors; red next to green appears to be yellow, green and blue appear as cyan, and so on. Dithering creates an interesting, textured effect (see figure 5).

Palette Adjust

Palette Adjust uses 16 colors to display your image. As the camera is focused on your subject, the software performs a statistical analysis of what it sees (the information to be digitized), and it creates a palette of the 16 colors most common to the subject.

This palette then serves for your captured image. After you've captured the screen, you can change individual colors in the palette or alter all of it (see figure 6).

Don't Stop Now

Images that are saved with Vision Effects, complying with Apple's standard for uncompressed graphics files, are saved in the accepted format for IIGS graphics. Thus, you can load them into an Apple IIGS paint program, such as PaintWorks Plus, and further enhance and/or print them.

Just a Few Criticisms

Although we did get used to it, we weren't comfortable with the color-selection technique for changing colors. Thin red, blue, and green horizontal bars appear at the top of the screen. The bars have tick marks representing adjustable increments from 0 to 15 that you control with

On Digitizing

The essential concept in digitizing is the translation of an analog, or continuous, signal, which most computers cannot work with, into a digital, or discrete, signal that the computer can "understand." Devices are available to digitize many things including sound, temperature, and even hand movement (with a mouse). Video digitizing is the creation of a computer graphic from a video signal.

The standard NTSC (National Television Standards Committee) broadcast television signal is a continuous signal. Thus, "red," for example, need not be one of a palette of 2, 4, 16, or even 256 colors; it can include any imaginable shade of red. The high quality of a television image comes from this capability for infinite shading. When this red video pixel is digitized, the digitizing hardware and software divide the continuous signal (with its infinite number of shades, or levels, of red) into a set number of levels of red. In the case of the Apple IIGS, with 16 colors on a scan line, a monochrome video digitizer can divide the signal into 16 distinct shades of red—or gray (see figure 8).

The essential concept in digitizing is the translation of an analog signal, which most computers cannot work with, into a digital signal.

Real-time digitizing means that your computer is capturing and displaying the image as fast as the video source is producing it, which allows you to digitize moving images successfully. NTSC video has 30 frames per second, and, so far, there aren't many digitizers for personal computers that work in real time. Although the digitizer interface card takes care of the analog-to-digital conversion, the CPU of the computer must manipulate this data to actually assign gray levels and move it to the frame buffer to make the image visible. Even with the high speed of the Apple IIGS, manipulating 32K of picture data takes time, especially in color.

Color digitizing requires that the composite NTSC signal be broken down into individual red, green, and blue signals before being digitized. The AST-VisionPlus, capturing in the Monochrome mode at 15 scans per second, is almost real-time (the company calls it "live"). When you are capturing in color, the VisionPlus slows to a 5-frame-per-second crawl that requires your subject or your videotape to hold still so you can get a clear picture.

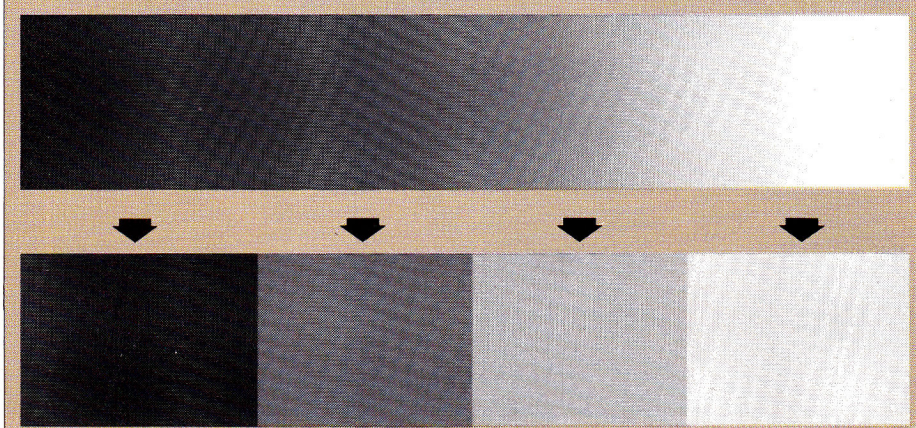


Figure 8: In digitizing, the analog, continuous, video signal (top) must be divided into a digital, discrete, signal (bottom). In this case, the signal is being divided into four gray levels.

Figure 5 (below): With a color camcorder, this portrait of Katherine was captured from a 3 × 5 color photograph in the Color Dither mode. Dithering creates an interesting textured effect.



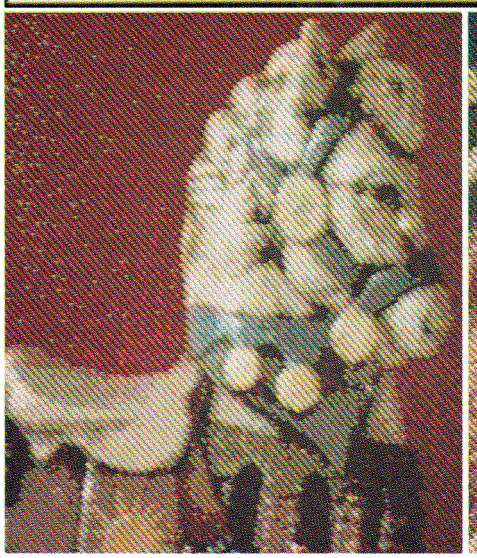




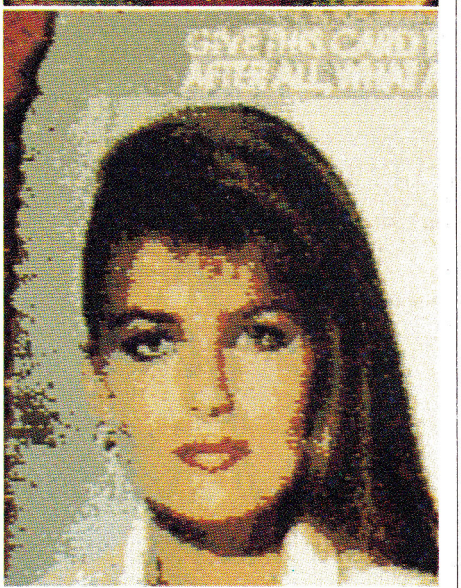
Figure 6: The same photograph (above) captured in Palette Adjust mode and enhanced with a border in Activision's Paintworks Plus. Below, left, is a three-gray-level capture enhanced with a paint program for color and text.

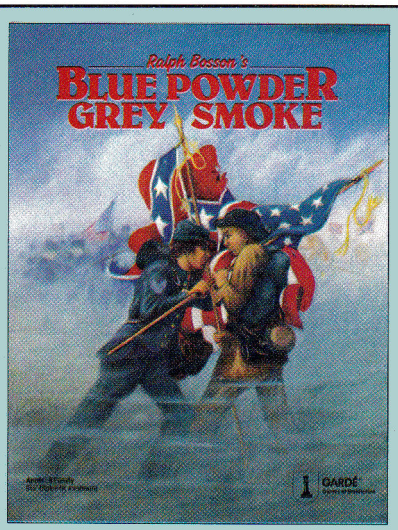
Figure 7: The pictures below and at lower left show some uses for a video digitizer, including insurance inventory of personal items, and arts and crafts.











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Why Digitize?

Many of you may be thinking that you'd like to have a video digitizer, but you can't think of a good reason to own one. Well, put your mind at ease and read on. Here are just some uses; we're sure you'll be able to find many more (see figure 7).

Business

Digitized images can greatly enhance the usefulness of your computerized databases. The AST-VisionPlus's Zoom Out option is particularly helpful because you can reduce the images and still retain clarity.

- For taking inventory, pictures are much easier to deal with than are series of numbers. After all, what was item #156934A again?
- In real-estate offices, your files are more helpful when they include pictures of the properties.
- Personnel records benefit from digitized photo IDs.

You can create your own business stationery with a picture of your storefront, or your business logo.

Desktop Publishing

Create your own clip art. Use digitized images in cards, fliers, and newsletters.

Education

Here're a couple of suggestions straight from the AST users' manual.

Digitize maps and add text and other graphics to emphasize historical events.

Digitize a dental X-ray and change the color of one gray level to make a tooth filling easy for your students to see.

Personal Applications

For insurance records, digitize your possessions, print them, and paste them onto index cards containing relevant information. Or put them into a computerized database.

Do you want a new you? Don't spend weeks growing a beard only to find it looks awful. Don't cut your hair and then hide in the house waiting for it to grow back. Before you buy that bottle of dye, use a video digitizer (see figure 2).

Capture yourself and use the Zoom Out mode to reduce the image to about one-quarter screen size; save it to disk; then capture models with different hairdos, beards, and so on from magazines. Reduce these images and save them to disk. With a paint program, use the Copy and Paste functions to copy the hair, the beard, or whatever from the models onto your own image. Voilà! How do you look?

You'll find many uses for a video digitizer, including business, education, desktop publishing, arts and crafts, and personal applications.

Print personalized stationery for the entire family. Reduce the portraits to about half an inch square and, in a paint program, place them on an otherwise blank document. Print it and then use a copier to make lots of copies. If you want color, look for a copy shop with color photocopy machines.

Create some personalized iron-on shirts by printing your documents with iron-on ribbons.

Arts and Crafts

Have you ever worked on a painting and found you weren't quite sure what colors to use? Instead of taking a chance, you can digitize the painting and then use the color editing options to try different colors. Stained-glass artists can save lots of time and money by doing the same thing.

If you'd like to try your hand at computer animation, digitize something in different stages of movement, such as a person with arms up, arms out, and then arms down. Use the sequence of pictures in a computer-animation program that lets you load in standard GS graphics. You can get some interesting effects if you use Vision Effects' aspect ratio to stretch the images first.

These suggestions, of course, are just the beginning.

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Steve Wozniak, the creator of Apple Computer

An important difference.

With TransWarp, software runs up to three times faster than with other cards, since the others can't accelerate programs in auxiliary memory. That's why TransWarp is so much faster than the rest. Nearly all of today's more powerful programs run partially or completely in auxiliary memory: programs like AppleWorks, Pinpoint, Managing Your Money, SuperCalc 3a, BPI and Pascal, to name a few. Why settle for a card that accelerates only part of the memory?

There's one more important difference. Since TransWarp doesn't use memory caching, you get *consistent* high speed performance.

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the mouse. To increase red, you drag the mouse up, to increase green, you move the mouse up, and so on. The difference between drag and move is that when you drag you hold down the button while moving the mouse. We found this method awkward and prefer the slide-bar technique that the program uses for changing brightness and contrast.

The program's color-editing option needs a real Undo function, one that undoes your last move. You can undo a color change by reselecting a gray level, but doing so changes the entire image back to a gray scale—not very helpful when you've successfully changed 12 of your 16 gray scales and you don't like the last change you made.

As we were experimenting with different video sources, we crashed the program several times. As with most brand-new software, this problem will probably be ironed out in a later version. In the meantime, though, if you want to switch, for example, from camera input to VCR input or from VCR videotape to television, save your image first!

We like the AST-VisionPlus, especially its ease of use and flexibility. Look at the pictures accompanying this article and judge for yourself. As you do, be aware that these images have been photographed from the screen and then printed, so some color intensity and sharpness have been lost along the way.

If you can use a video digitizer, and it does have many uses (see "Why Digitize?" on page 60), the AST-VisionPlus is definitely a product to consider. +

Roberta Schwartz and Michael Callery are contributing editors of A+. They teach at the New School in New York City and are coauthors of a book on Apple-computer graphics.

PRODUCT INFORMATION

AST-VisionPlus
AST Research, Inc.
2121 Alton Avenue
Irvine, CA 92714
(714) 553-0340
List Price: $295
Requires: Apple IIGS; 512K RAM; 3.5-inch disk drive; video camera (color optional), VCR, or any other NTSC-compatible device

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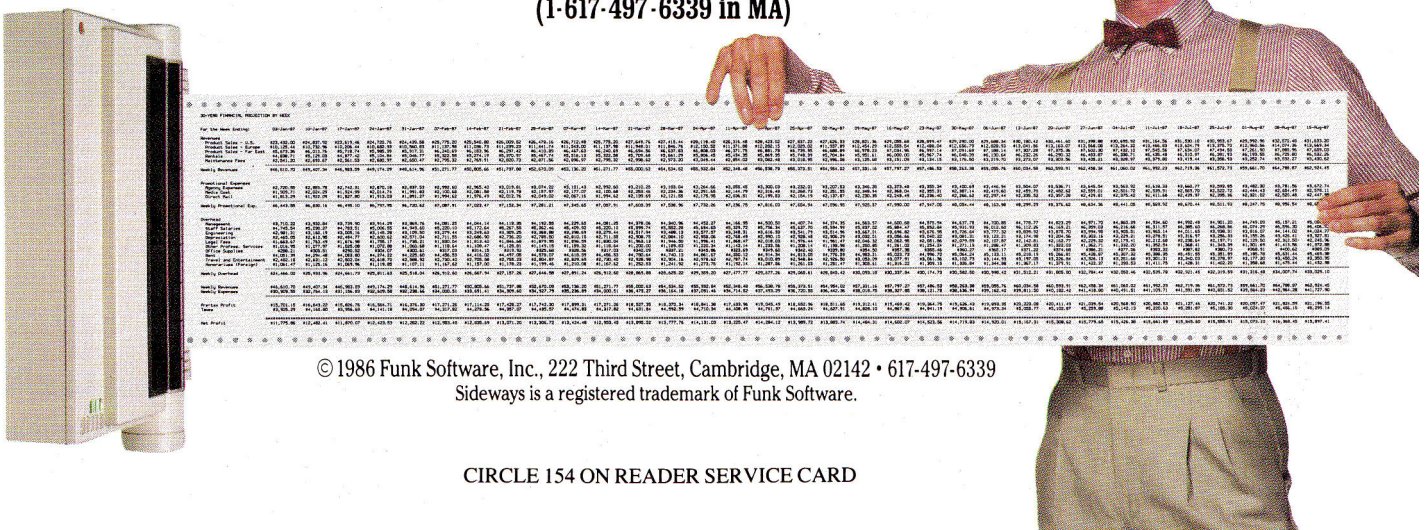

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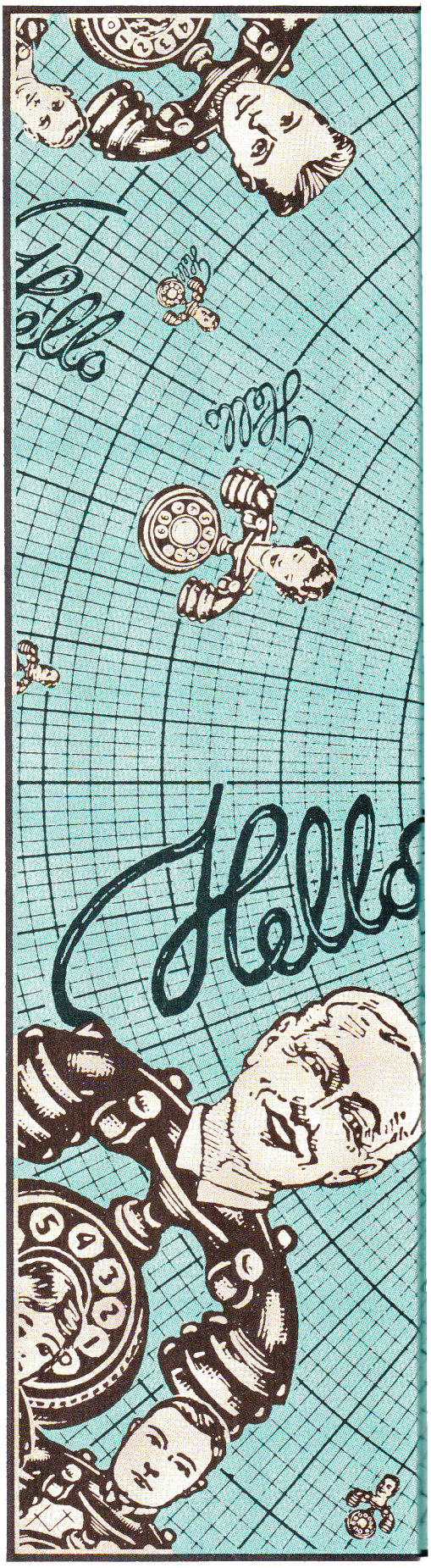
Software for electronic conferencing and electronic mail

DIVERSI-DIAL



Diversi-DIAL is an electronic-conferencing and electronic-mail system for the Apple IIe and IIGS. It works on a 64K II Plus as well, but without the electronic-mail (E-mail) feature. Diversi-DIAL (D-Dial) also requires as many internal 300-bps Hayes Micromodems or Apple-Cat II modems (or compatibles) as its operator can afford, up to seven. With a full complement of modems installed, D-Dial is capable of handling eight participants in a simultaneous conference: seven remote callers and the local operator.

The D-Dial software is expensive ($475), and it requires a significant investment in modems and phone-line installation and monthly charges. (A $5 demo disk is available if you want to sample the software before buying it.)

Savvy D-Dial operators can easily recover these costs by selling passwords to the system, however, making the price less of a barrier. The going rate for a one-month password is $10, so you need only a few steady customers to meet expenses.

About 40 D-Dial systems are already operating around the country. The listing at the end of this article includes some of these stations.

Conferencing

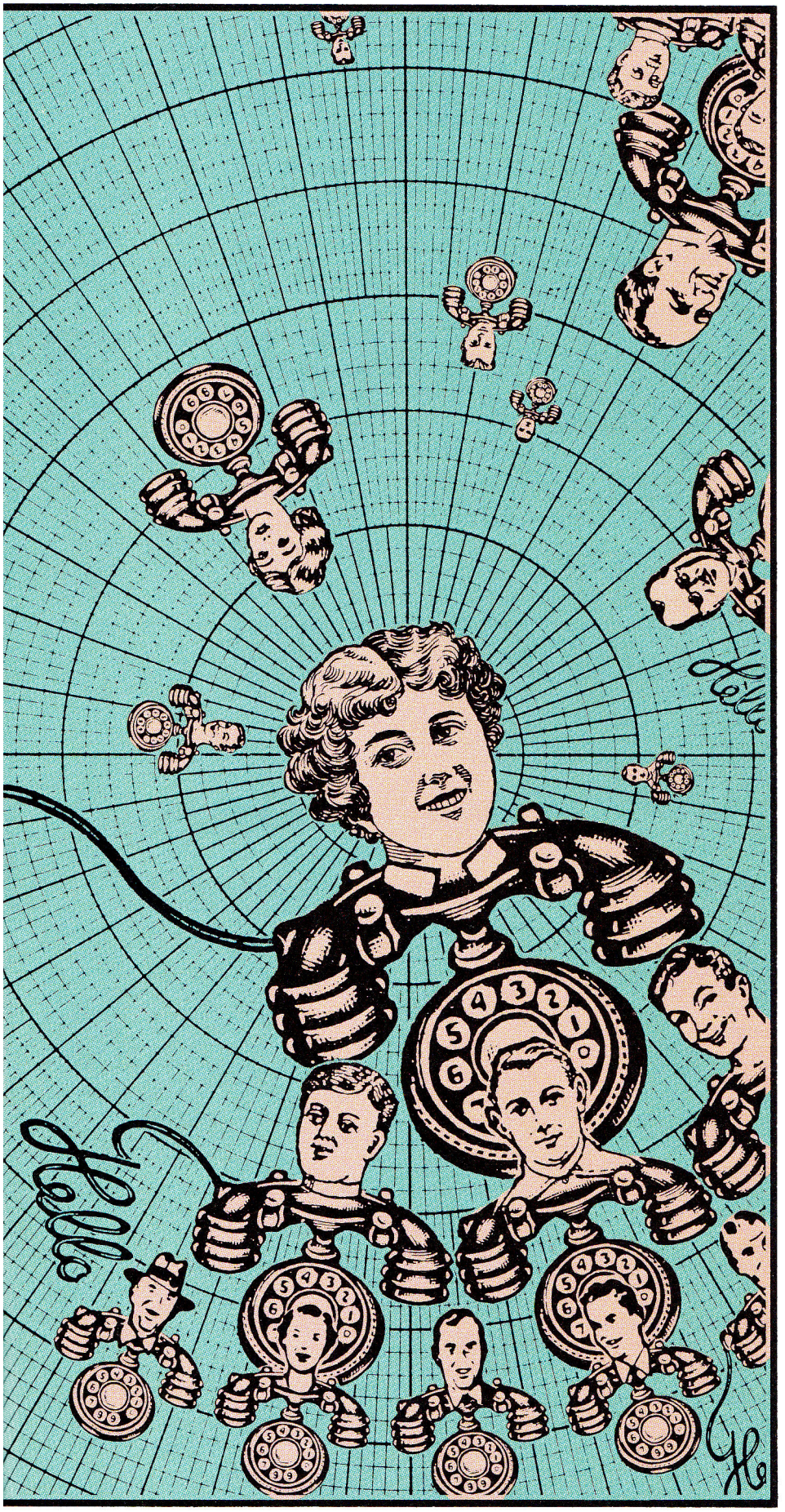
When you first sign onto a D-Dial by entering an assigned password (or pressing Return if you don't have a password yet), you automatically enter a public D-Dial channel, and your presence is announced to other participants. (Public-channel conferences are open to any caller, but there are also private channels on which two callers can have a confidential chat.)

From there you can begin participating in the conference. To send a message to everyone, just type it and press Return. The other participants see the message preceded by a status word indicating who sent it. And, of course, you will see any messages other participants send.

If this procedure sounds easy, it is! About the only conference-related commands a caller might ever want to use are /Tn to switch to a private channel and /S to list the IDs of other members on the system. Help with commands is always a couple of keystrokes away: /? for a summary of all commands and /I for more-detailed help.

Electronic Mail

D-Dial reserves 48K of memory as a post office for electronic mail. The command for sending mail to a



member of the system is /Ennn <text> where nnn is the ID number of the member. The command for reading mail is just /E.

Interestingly, D-Dial never saves its electronic mail to disk. In fact, D-Dial does not need a disk drive at all—the program-caller statistics, passwords, mail, and everything else stays in memory until you turn off the computer. Not being able to save things permanently to disk is frustrating, especially if you're in an area with frequent power outages, but you'll have to cope.

Linking

The most interesting feature of D-Dial is its ability to link to other D-Dial stations across the country. When a link is set up, all conference activity on one system is transmitted to the linked station. Since the other station may, in turn, be linked to another station, an enormous linked network is possible in which you can communicate with anyone on any station (by conference or E-mail). One session I sampled involved D-Dial stations in Chicago, Las Vegas, San Antonio, Detroit, Houston, Dallas, and a host station in Corpus Christi. I was meeting people from all over the continent just by making one call to Texas!

I was meeting people from all over just by making one call!

Linking is an attractive feature for those who are in the local calling range of a D-Dial station, because they have no long-distance toll charges to pay. It is the D-Dial station that pays for the call to a link station in another city. D-Dial operators can minimize telephone charges by using a new long-distance calling service called PC Pursuit.

The PC Pursuit service is available from GET Telenet. For a fixed fee of $25 per month, you can make a modem call (evenings and weekends) to any of 14 major cities through your local Telenet access port. This service makes linking to D-Dial stations in these cities affordable. For more information on PC Pursuit, call (800) 368-4215.

System Operators

I'm convinced the people who enjoy D-Dial the most are the system

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operators. They're the ones responsible for maintaining the system, assigning passwords, locking out twit callers, setting parameters, and so on. D-Dial has a rich set of system-support commands for doing all these chores.

Some of the keener operators even publish newsletters for their members. If you join Corpus Christi's Arcturan Outpost at (512) 992-4782, for example, you'll receive *News from Arcturus* every month. One issue I read announced a weekend campout for Texan D-Dialers, a computer-art contest, and a report on "a group of Vogons" trying to disrupt another D-Dial system. These people are having fun!

Obviously, the goal of most D-Dial operators is not to make money from password fees but to make friends and have some fun tinkering with the Diversi-DIAL program. D-Dial members like it because they can become involved in large national conferences without paying the hourly rates of the large commercial information services.

Is Diversi-DIAL for you? Perhaps the best way to find out is to call one of the D-Dial stations listed below. If you're a system-operator candidate, by all means purchase the $5 demo disk from Diversified Software. ✚

Gary Little is the developer of Point-to-Point, a communications program for the Apple IIe, IIc, and IIGS published by Pinpoint.

PRODUCT INFORMATION

Diversi-DIAL
Diversified Software Research
34880 Bunker Hill
Farmington, MI 48018-2728
(313) 553-9460
List Price: $475
Requires: Apple II Plus, IIe, or IIGS; 64K RAM

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CURRENT DIVERSI-DIAL STATIONS

To find out if Diversi-DIAL is for you, you could call one of the D-Dial systems already operating in this country – some of which are listed below alphabetically by state.

LA-D-Dial
Los Angeles, CA
(213) 399-2009

The Chat-Line
Fountain Valley, CA 92708
(714) 963-3637

Sofia System
San Jose, CA 92170
(408) 257-1853

The Three-Ring Circuit
Huntington, CT 06484
(203) 926-1557

Fantasia
Satellite Beach, FL 32937
(305) 777-7580

The Booth
Conyers, GA 30207
(404) 922-2428

Midwest Relay
Rockford, IL 61111
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Utopia
Chicago, IL 60629
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Rockford, IL 61111
(815) 633-4400

The ASCII Connection
Chicago, IL
(312) 284-6124

Kaleidoscope
Darien, IL 60559
(312) 968-4820

Kink Heaven
Wilmette, IL 60091
(312) 256-8891

The Call Box
Elgin, IL 70121
(312) 741-9782

5150 Chat Line
Revere, MA 02151
(617) 289-8023

Diversified Software Research, Inc.
Farmington, MI 48018
(313) 553-4373

Cat House
Novi, MI 48050
(313) 326-1155

CompuChat
St. Louis, MO 63144
(314) 725-1200

The Computer Connection
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(702) 734-8724

Beyond Reality
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(201) 972-8731

First Amendment
Florham Park, NJ 07932
(201) 377-1803

Interchat
North Bergen, NJ 07047
(201) 861-7680

Flash-Talk
Bloomfield, NJ 07003-1451
(201) 743-4850

Frankly Speaking
Riverdale, NJ 07457
(201) 839-9440

Attic-Static
Westfield, NJ 07090
(201) 654-1680

Out of the Blue
Old Chelsea Station
New York, NY 10113
(718) 615-2026

The Great Beyond
New York, NY 10009
(718) 339-5053

American Link-Line
Buffalo, NY 14224
(716) 823-1409

Isle Chat
Old Bethpage, NY 11804
(516) 822-0144

Earth News
Brooklyn, NY 11235
(718) 891-8099

Austin Party Line
Austin, TX 78764
(512) 892-6521

Arcturan Outpost
Corpus Christi, TX 78412
(512) 992-4784

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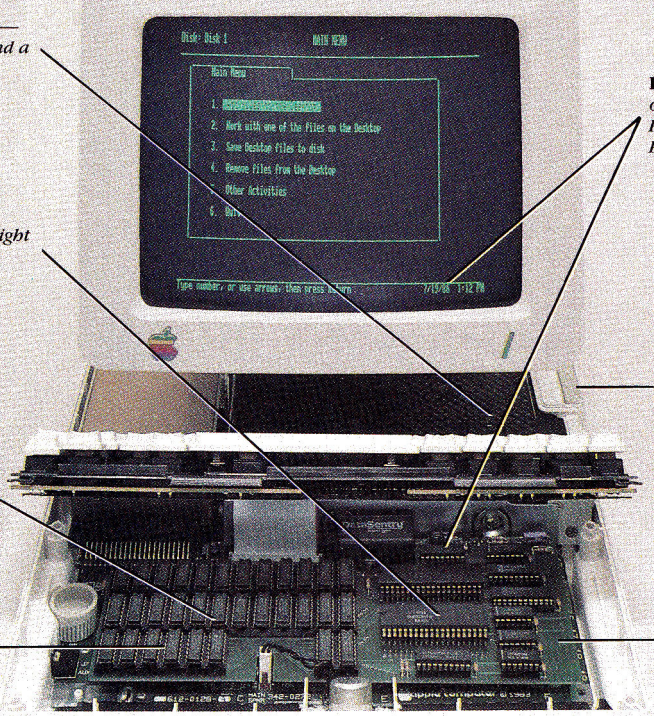

Real-time clock *displays time and date on AppleWorks™ screens and files, and is PRO-DOS compatible for use with other PRO-DOS software.*

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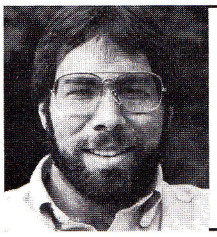

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Steve Wozniak, the creator of Apple Computer

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256K—$269.00 512K—$319.00 1 MEG—$399.00
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Pinpoint with RAM enhancement software $79.00
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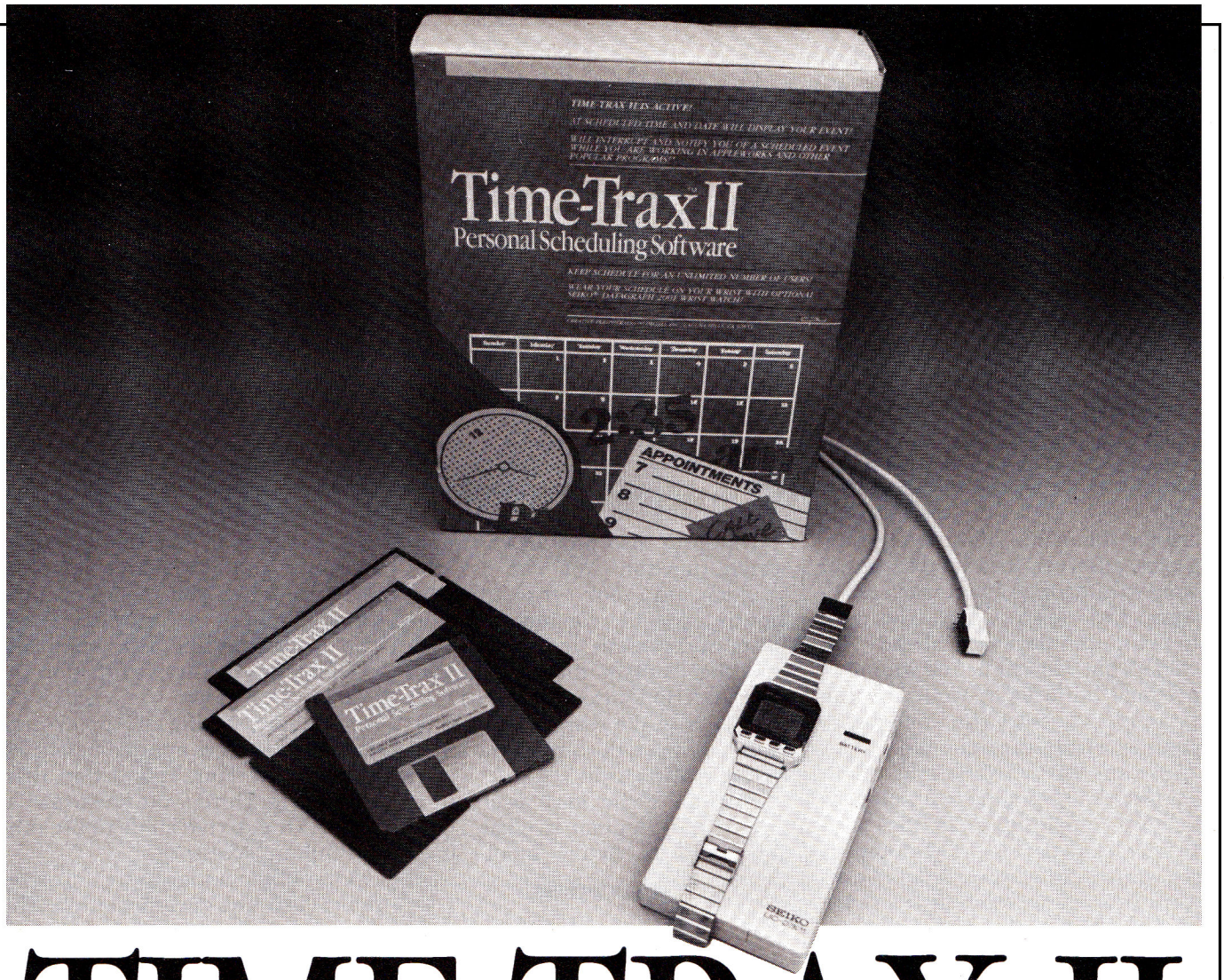

TIME-TRAX II

SOFTWARE *BY ROBERT L. TIGHE*

You may never forget your appointments again. If your computer doesn't remind you, your wristwatch will.

Do you sometimes get so involved in your work that you forget to look at your watch? Do you have an appointment-calendar program for your computer but forget to look at the schedule? Can you remember all your appointments?

If you're like me, there are times when you could use an appointment alarm system—something to signal you before an important event. Now an Apple II program is available that promises to give you just such a signal and perform several other useful functions. The program is Time-Trax II, a calendar-scheduling utility you can use by itself or as a Pinpoint accessory. It can also download your hectic schedule into a special wristwatch.

The Appointment Calendar

Time-Trax II saves appointment information in potentially large disk-based files. Each file is designed to hold up to 23 consecutive months of data, and you can create and use an unlimited number of such files.

The program marks each appointment or event in a file with the time of the event; an event category label such as Appointment, Meeting, Phone, or Birthday; and a note that can contain up to six 40-column lines (see figure 1). You type this information in response to questions the program asks. Each month can contain up to 311 such event entries, with up to 99 entries on any single day. You can print out the calendar screen or the entries for any set of days.

The structure of the calendar program allows for flexibility. You can

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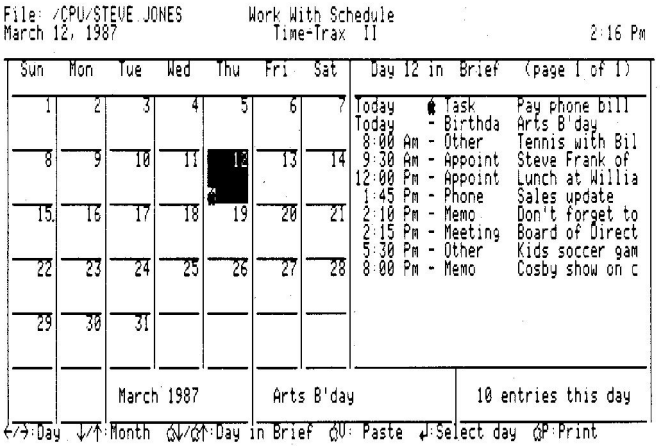

Figure 1: Time-Trax II lets you easily enter up to 99 events per day that designate the time and task and include a brief note. You can keep separate sets of appointments in different files.

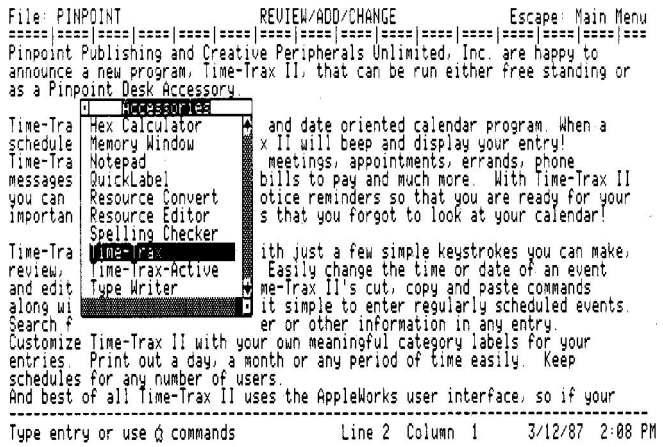

Figure 2: Adding Time-Trax as an accessory to Pinpoint lets you use Time-Trax with AppleWorks. When Time-Trax is active, appointment notices pop up while you are working.

change the names of the event categories; a lawyer, for example, might want to categorize events such as Divorce, Probate, or Court. The most common holidays are already included, but you can define your own personal holidays as well. You can also copy any entry from one day to another within the same file.

Besides the schedule and calendar, each file contains two notepads that can contain up to 25 lines with 40 characters per line. The notepads act much like the AppleWorks word-processing module does, except that they don't have word wrap-around.

You gain access to all of the features of the program, including disk access for working with files and directories, through a built-in menu system that is similar to AppleWorks menus, so the program is simple to learn and use. It employs some open-apple commands, but they are listed at the bottom of the appropriate screens.

So far, Time-Trax sounds like no more than just another full-featured calendar program, but it has several abilities that go beyond those of other scheduling programs.

Pinpoint Enhancements

When you add Time-Trax as an accessory to Pinpoint (itself an accessory program—see figure 2), you get a calendar similar to the Pinpoint appointment calendar but with some important new features. The file system itself allows you to keep many distinct sets of appointments, for different people or different purposes, in separately named files. Only one file can be in use at a time, but you can easily save one and load the next without leaving Time-Trax.

Time-Trax also provides a simple search function. You can ask the program to look through any months in a file for any character string and present you with all entries that contain those characters. This function also allows several characters in the search string to be replaced by a wild-card character.

Active Notification

Potentially the most useful feature in the program is what Time-Trax calls its Active mode. It is

Time-Trax represents a step into the future of appointment-scheduling programs.

standard while you are using the Time-Trax program by itself, but you can also add it to other programs as a Pinpoint accessory. When you begin using an application program with Pinpoint and Time-Trax installed, you call up the Pinpoint menu and select Time-Trax Active. From then on, as long as you continue working in that application, Time-Trax beeps and presents you with an informational window whenever the time comes for an appointment. You can even tell the program to notify you prior to an event, selecting an advance time from 1 minute to 14 days ahead. When you finish reading the notice, you simply press Return, and you're back where you left off.

Unfortunately, the system has some inconveniences. It takes almost a minute to load the Time-Trax accessory and the Active appointment file when you request it. Like other Pinpoint accessories, Time-Trax loads from the disk when you need it. Also, the Active function appears to slow down some activities. For example, sorting an AppleWorks database file takes approximately 5% longer with Time-Trax active than without it. Third, you have to disconnect the Active mode to use other Pinpoint accessories.

One other unnecessary inconvenience is in the documentation. The manual is clearly written, but it needs improvements in organization. For example, you have to follow instructions in chapter 7 and appendix B to install Time-Trax into an application program. The manual does not tell you to do both.

You also have to deal with some incompatibilities. The program requires a IIGS, IIc, or IIe. You need a ProDOS-compatible clock, and to access the built-in clock on the IIGS, you have to use ProDOS 8 rather than the ProDOS 1.1.1 that comes with Time-Trax. Fortunately, the program disk is not copy-protected, and you can transfer all files to another floppy disk or a hard disk.

Time-Trax does not work with any Pinpoint version older than 1.3, nor does it work with AppleWorks 1.2 or 1.0. In theory it works with any application program compatible with Pinpoint, but the combination of programs can get quite complex and may not function for all versions. Finally, a disappointment for Applesoft programmers: You can call up the Time-Trax program as a Pinpoint accessory while you are programming in ProDOS, but the

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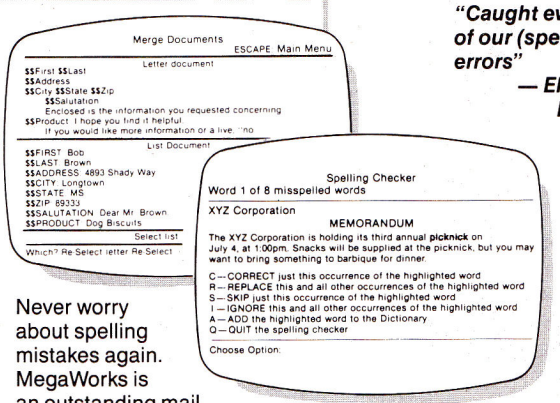

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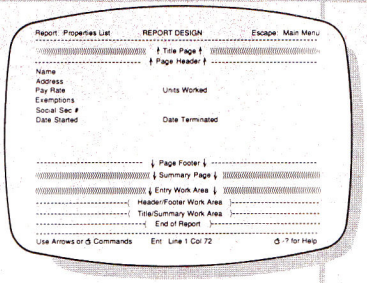

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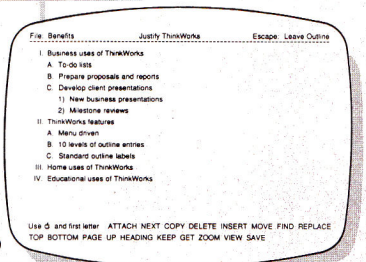

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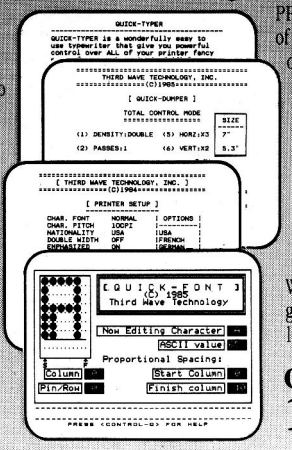

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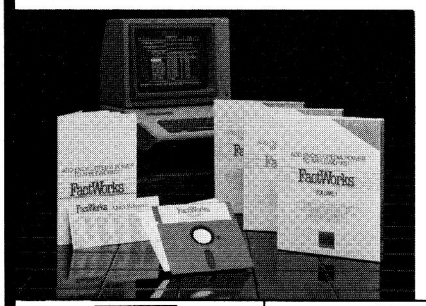

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Perhaps you don't spend all of your time at the computer or working in Pinpoint-compatible applications, but not to worry. If you buy a Seiko Datagraph UC-2001 watch and the UC-2301 computer/clock interface (from Computer Peripherals), you can download your Time-Trax schedule into your watch and take it with you.

The watch itself is fairly large, with a four-row by ten-column LCD display. The clock interface is an external ProDOS clock that looks like a flattened mouse and plugs into the modem port of the IIc or the internal game-paddle port of the IIe or IIGS. To transmit data to the watch, you simply lay it on top of the interface box and follow the instructions on the computer screen. You can then list your schedule and the contents of the notepads on the watch screen, and the watch will beep and display your schedule for you at the appropriate times.

Time-Trax can no doubt be valuable for someone with a packed appointment schedule. It also represents a step into the future of appointment-scheduling programs—a future in which we might see a growing number of programmable computer accessories that will make our data systems both more automated and more portable. ✚

Robert Tighe lives in Albuquerque, New Mexico, and teaches computer applications to high-school and community-college students.

PRODUCT INFORMATION

Time-Trax II
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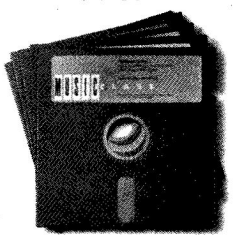

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THE PERSONAL CHOICE COLLECTION

Most anyone who uses a personal computer is aware of the advantages integrated software affords. Single programs that combine several applications are not only easier to learn and use than separate programs, but they can also do more. They reduce disk swapping (an annoying and risky operation, given the flimsiness of floppies) and generally cost less than analogous stand-alone software.

Occasionally, companies offer programs as "companions" to each other, which is marketing talk for "separate, but compatible." Since these programs lack full integration, they're less convenient to use than their fully integrated counterparts. On the other hand, since you buy them as a unit, you should expect the components to share a common design and command structure. The level of overall performance should also be uniform. If one of the programs is a dog, you won't use it, which defeats the purpose of buying the package in the first place.

A recent addition to the ranks of companion software is Personal Choice Software's Personal Choice Collection (distributed and marketed by Activision), three programs billed as "the most complete, easy-to-use set of personal productivity tools you can find." Although it does not live up to that claim (what product could?), the collection has several useful features and a few surprising capabilities. You should know about some equally surprising limitations, however, before making it part of your personal collection.

Will you want these 'companion' programs as your companions?

Designed for home, school, and small-business use, the Personal Choice Collection contains a word-processing program, a 50,000-word spelling checker (not available for the Apple II Plus), a database program, and a spreadsheet program.

Sweet Spreadsheet

Planner's Choice is a honey of a spreadsheet program. It is accurate, flexible, easy to learn, and easier to use. It offers both automatic and manual recalculation; variable column width (2 to 37 or 77 characters, depending on the screen display you choose); a windowing option that lets you view two sections of a spreadsheet and scroll them together or independently; plus the ability to copy a row, column, or block of cells, which you can paste with or without adjusting cell references. With an available work space of 16,320 cells (64 columns by 255 rows), the Planner's Choice program should meet most home and small-business needs.

With Planner's Choice you can add, subtract, multiply, divide, and exponentiate. The program also offers several built-in functions, enabling automatic calculation of sums, averages, maximum and minimum values over a range of cells, payments, and present and future values. It does

counts (to determine the number of nonblank cells in a given range); returns absolute values; and computes the sine, cosine, or arctangent of any angle expressed in radians.

Using a formula is simple. Say you want to total the entries in the range AA,1 to AA,7 and place that value in cell AA,9. First you place the cursor in cell AA,9 and type @, the word SUM, and a left parenthesis. Next you use the arrow key(s) to move to cell AA,1 and type a > symbol; then place the cursor in cell AA,7 and type a right parenthesis. After you press the Return key, the formula should look like this: @SUM (AA,1 > AA,7).

My only complaints concern use of nonstandard cell notation, some difficulty in editing values with a IIe or IIc, and the need to erase a cell's contents before replacing them with data of a different format.

Most spreadsheets, electronic or otherwise, start at column A, but Planner's Choice begins at column AA. Others list cell coordinates as A1, A2, and so on, but Planner's Choice inserts a comma before the row number—e.g., AA,1; AA,2; and AA,3. These discrepancies may cause confusion, at least initially.

Editing values in the input area—the third through fifth lines from the top—is slightly more of a bother. If you need to change a formula from @AVG (AA,12 > AA,30) to @AVG (AA,12 > AA,35), for example, you can't simply press the right-arrow key until the cursor is over the 0 and enter a 5—unless you own an Apple II Plus. Apple IIe and IIc users have to use Control-N to move right and Control-B to move left.

Smart Data Manager

Filer's Choice, the database program, is also useful. Records can be up to 80 lines long, and you can insert new data fields as you need them, search any number of fields using standard Boolean operators, sort on either the primary (first) field or one you can specify (and change), print individual records, and display reports on-screen or save them to disk for use in creating form letters.

The program is well designed and easy to operate. I especially like the contextual help screens, a system that frees you from having to scroll through all the available commands to find out how to perform a particular operation. The program keeps track of where you are when you ask for help, displaying only those instructions that are relevant to your current location. Smart.

Although Filer's Choice is very good, it isn't perfect. You can browse through records in one direction only, and you can't delete individual fields. In addition, although several commands are highlighted at the bottom of the screen, some are often inoperative, depending on where you are in the program. In the Browse mode, for example, with a record on the screen, the command Control-P (Help) appears at the lower right, but that keystroke combination works only when you're viewing a blank form. Such flaws are easy to overlook, however, when you consider the program's positive attributes.

The spreadsheet program is accurate, flexible, easy to learn, and easier to use.

Write Is Sometimes Wrong

With Writer's Choice, you can enter, delete, insert, copy, and move text; save files or text blocks to disk; search and replace; force page breaks; add headers and footers; and append disk files to the one currently in memory. You can also insert nonprinting comments into documents; turn on boldface, underlining, centering, and full justification; vary line spacing and margins within a document; create form letters; link files at printing; number pages automatically; and even preview documents on-screen to verify formatting and other settings before printing.

After booting (label side up for 80-column display, label side down for 40), you specify the model and memory limits of your computer (up to 128K). In about 20 seconds, the main menu comes into view and presents several standard options, such as Load Document, Save Document, and Print Document. To make a selection, you type the number corresponding to your choice and press the Return key.

Help is always available. Pressing Esc-? (Apple II Plus owners press Control-A, then ?) displays three screens containing the keystroke combinations for text operations and embedded print commands. The second screen betrays some rather slipshod programming, for the user prompt (Press Any Key to Continue) almost completely overwrites one of the commands.

In actual operation, Writer's Choice is uneven. On the positive side is its impressive array of text-formatting options. Most similarly priced word-processing programs (and some that cost a good deal more) provide either single- or double-spacing (although not in the same document), and they generally mandate a single line length.

With Writer's Choice, however, you can print an entire document with up to nine spaces between lines or use embedded print commands to set any line spacing you want for any portion of the document. You can also specify different line lengths within a single document. A common application of this flexibility is a report or term paper requiring double-spaced text and single-spaced, inset quotations.

Other features include the ability to insert one text file into another, either on-screen or during printing only (which conserves memory), and to merge spreadsheet and database reports created with the companion programs.

On the negative side are the program's cumbersome print commands, nonuse of the Tab key, and painfully slow operation in the Insert mode. How cumbersome? If you want to center, underline, and boldface the word *Proposal* and then return to normal printing, you have to type Control-@, C, Control-@, Control-@, UB, Control-@, Control-@, BB, Control-@, Proposal, Control-@, UE, Control-@, Control-@, BE, Control-@. That cumbersome.

Instead of using the Tab key, Writer's Choice uses embedded print commands to arrange text in columns. In order to tab to column nn, for example, you type Control-@, Tnn, Control-@. This approach may be necessary because the program uses Control-I (which generates the same ASCII code as the Tab key) to enter the text-insertion

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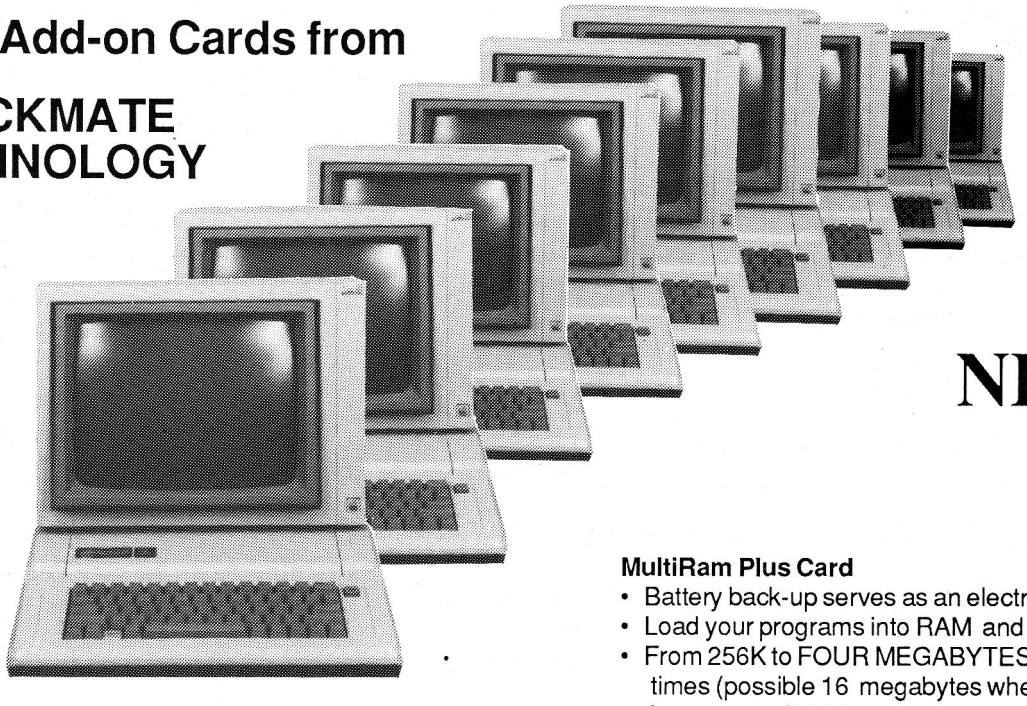

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mode. Although this system means you can use the Tab key as a shortcut to the Insert mode, all but the worst typists will be sorry to get there. The program's type-ahead buffer slows way down in this mode, often missing characters even at moderate typing speeds.

If you plan to use Spell-Right, the spelling checker that comes with Writer's Choice, you'd better have plenty of time and patience. The operation requires three disks: the Writer's Choice program disk, the Spell-Right dictionary disk, and your document disk. Like Writer's Choice, Spell-Right cannot access a second disk drive, which means some serious disk swapping, especially if you plan on having Spell-Right do any work at all, such as looking up words.

To run the spelling checker, you boot Writer's Choice and select option 3 from the main menu. The spelling program loads in about 30 seconds, the dictionary in another two minutes or so, after which you must insert the disk containing the document you want verified. The text runs through the checker in 300-word blocks, each requiring a scan time of more than two minutes. In other words, the program will be running for more than five minutes before you're able to check any spelling.

The database and spreadsheet programs are a real bargain. I'm less enthusiastic about Writer's Choice.

What you finally see is a portion of your document with all "misspelled" words highlighted in context and the first highlighted word reproduced in the bottom left corner. You can accept this "working word" as is (Control-O), correct just this one occurrence (retype, then Control-O), correct all occurrences (retype, then Control-A), or look it up (Control-L). The program retains in memory any words you designate with Control-A and, if you choose, saves them as a "working dictionary" on side A of the dictionary disk. Roughly 50K is available for this use.

Each time you type Control-L to look up a word, however, you have to remove your data disk, insert the dictionary, and then wait nearly a minute until 15 or 20 alternative words load. Whether or not you select one of these alternatives, you'll have to swap disks again in order to continue—a long and laborious process, one ill-suited to anyone who needs results quickly.

The manuals that come with the programs in the Personal Choice Collection are well written and fairly comprehensive, providing introductory, tutorial, reference, and appendix sections. The appendix is where you'll see which interface and printer combinations the program lets you use, together with a list of the available printer configurations (driver files) the program employs to print your documents.

Unfortunately, this information is incomplete. According to the manuals, ImageWriter owners have only one choice, IMAGE10, a file that sets the pitch to 10 characters per inch. In fact, the Writer's Choice program disk contains two other ImageWriter drivers, IMAGE12 and IMAGE17, which allow printing at 12 and 17

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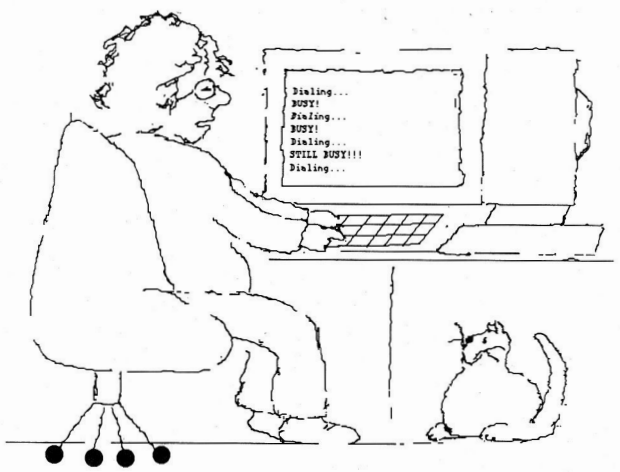

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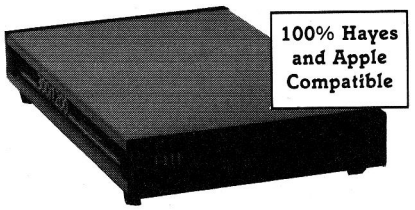

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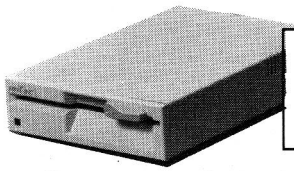

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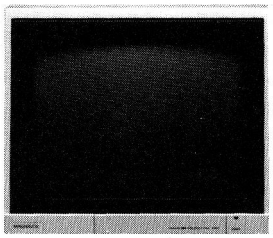

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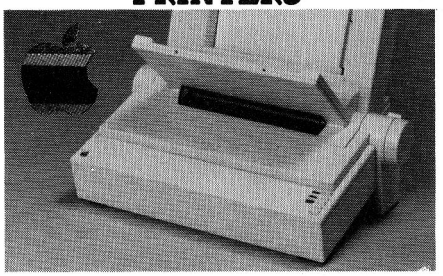

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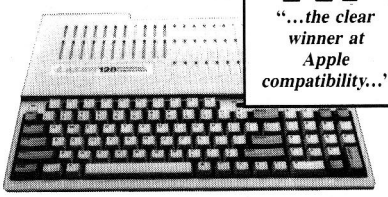

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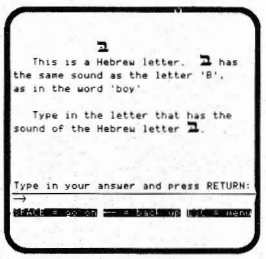

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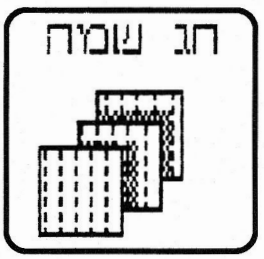

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characters per inch, respectively. The appendix neglects to mention several other configurations as well: GEMINI17, IDS10, IDS12, IDS17, and CITOH17.

In sum, I'd recommend both the database and spreadsheet programs in the Personal Choice Collection for most home, school, or small-business applications. They're fast; easy; and, even at $39.95, a real bargain. I'm less enthusiastic about recommending Writer's Choice, however, especially to anyone who does a lot of writing. If you're already using a DOS 3.3 word-processing program and you like it, you might want to consider buying the filing and spreadsheet programs separately. Since the reports these programs generate are saved as standard ASCII text, your word-processing program should be able to read them. ✚

Note: Activision says it has completed a major revision of The Personal Choice Collection, but details were not available at press time. Also, be careful not to confuse Writer's Choice with Writer's Choice elite, *the MacWrite clone for the IIGS.* —*Editors*

Wayne Sassano, Ph.D., is a communications consultant based in Connecticut.

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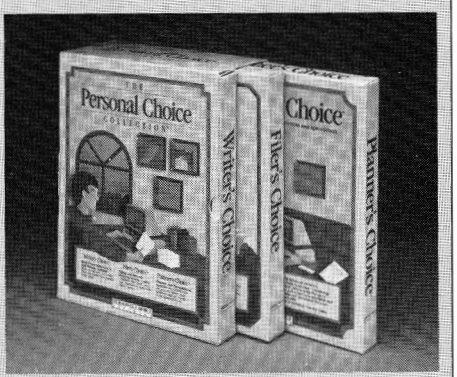

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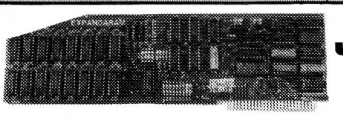

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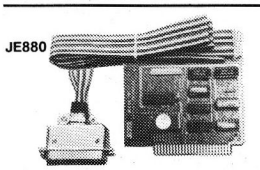

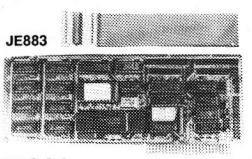

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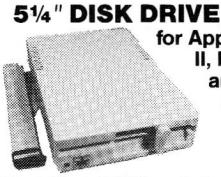

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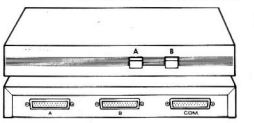

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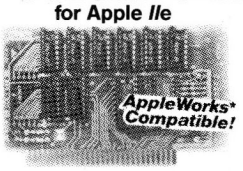

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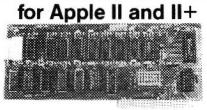

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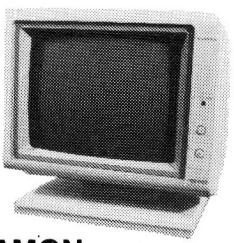

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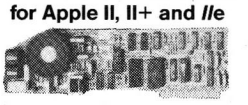

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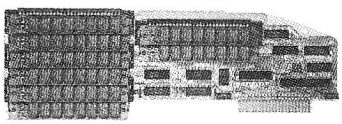

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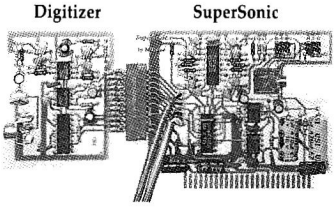

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CIRCLE 241 ON READER SERVICE CARD

BY ROBERTA SCHWARTZ AND MICHAEL CALLERY

PAINTWORKS PLUS

An evaluation of the first paint program available for the Apple IIGS computer

As promised, we're going to tell you about PaintWorks Plus. Perhaps the easiest way to describe this program is to reiterate what other reviewers have said, that it's a color version of MacPaint, the much-heralded paint program for the Macintosh computer. This description is accurate, to a degree, but the Macintosh and the IIGS are different machines, so we'd rather avoid comparisons. Instead, we'll just tell you what we like (many things), and don't like (some significant things), about the first paint program available for the Apple IIGS.

PaintWorks Plus

PaintWorks Plus is a full-featured paint program that includes an animation feature. When you open PaintWorks Plus from the launcher, you're presented with your "easel." Across the top of the screen is the menu bar. Down the left side of the screen are your tools, and along the bottom of the screen are your Border, Color, and Pattern palettes. Sandwiched between these menus and icons is your drawing window, a section of your full-page (8 × 10-inch) document.

The Tools

Most Apple artists will be more than satisfied with the drawing and painting tools in this program. These include a pencil that lets you draw a thin line in any color or pattern; a paintbrush that can be any one of 32 shapes; a paint bucket that lets you fill an area with a color or pattern; a spray can that sort of spatters your color onto the screen; and line, rectangle, oval, and polygon tools that allow you to draw the respective shapes outlined (in any of four line widths, in any color or pattern) or filled with a color or pattern. In addition, there's text; an eraser; an edit or marker box with which you select a rectangular area of your picture to edit; and a lasso, which serves the same function as the marker box but allows you to select part of your image and lift it off the background.

PaintWorks Plus for the Apple IIGS is a full-featured paint program that includes an animation feature.

The Menus

The program has six pull-down menus. The apple menu contains the desk accessories, information about the program, and Help screens.

In the Edit menu you'll find Undo, Cut, Copy, Paste, Clear, Invert, Flip Horiz., Flip Vert., and Rotate. The Goodies menu includes Grid, FatBits (a zoom option for editing pixel by pixel), Show Page, Full Screen, Brush Shape, Brush Mirrors, Edit Pattern, Compress, and Show. Under the Color menu you'll find a useful option, Search Color, that lets you identify which parts of your picture use which colors in the palette. Also on the Color menu is Dispose Color. With this option you can select a color in your picture and replace it with another color. We'll talk about the Color Palette and Palette Table options later on.

The Font menu offers six fonts, each available in six sizes and six styles. Your text can align at the left, middle, or right.

Palettes and Patterns

PaintWorks Plus lets you use 16 colors in a single picture, and you can choose your colors from a palette of 4096. To change the colors in your palette, you select Color Palette

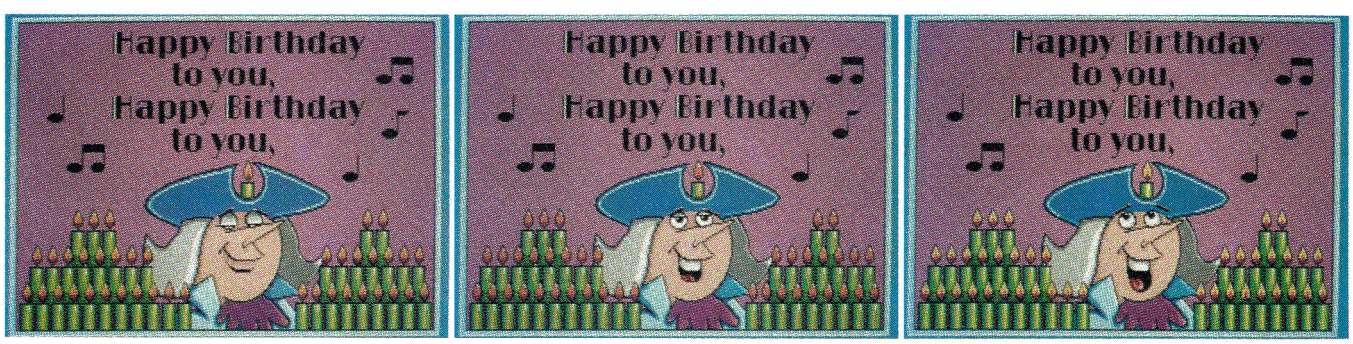

Figure 1: ***We used Animation in PaintWorks Plus to create this animated birthday card.***

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from the Color menu. A window with vertical bars of color appears in the lower half of the screen. Each of the first three bars controls one of the primary colors. Next to each of these color bars are smaller bars that show the range of intensities available for the primaries. Two color-mixer bars on the right side of the window control the shade—the lightness or darkness—of a color. As you move the sliders up and down the mixer bars, the color you're working on changes.

With the mixer bars, you can create colors in many ways. Whichever method you select, you're bound to be delighted by the subtle variations of hues and intensities available to you. (For more information about color creation on the IIGS, see our February 1987 column). As you create your colors, you can test them out at the top of the screen, on the displayed part of your picture. When you return to the full drawing, whatever practice strokes you made are automatically undone.

When you create new color palettes, the Palette Table option lets you save up to 128 of the palettes to disk.

Animation

Animation in PaintWorks Plus is like page-flipping. After you've saved a series of sequentially numbered images in a special compressed format, the program asks you to indicate the timing for your animation. The compressed images and the timing are saved in a special Show file. To run the animated sequence, simply choose Show from the Goodies menu and select the file to be shown, and the sequenced images appear in rapid succession. We used this feature to create an animated birthday card (see figure 1). It would be a great boon if the program let you access animation and show it from within your own programs, but this ability is not available at present.

Other Features

PaintWorks Plus seems to work with any input device that connects to the desktop bus, including the mouse and the Kurta graphics tablet. Older graphics devices, such as the Apple graphics tablet, are likely to give you trouble with new programs optimized for the IIGS, however (see below). The program can give you full-color printouts if you have a color printer.

According to the documentation, you can integrate PaintWorks Plus with Writer's Choice elite, an upcoming word-processing program, to create illustrated newsletters, and so on.

Where Did They Go Wrong?

PaintWorks Plus uses the IIGS's 320 × 200 super-hi-res graphics mode. Drawing in 16 colors with this resolution would be quite delightful if it weren't for the program's limited drawing-window size. You don't see your entire picture as you work. In fact, you don't even see an entire screen, because the menu bars, tools, and palettes obstruct much of it. How many painters could tolerate it if part of their canvas were blocked off as they worked on their painting? Unfortunately, this approach has become an accepted way of designing computer-graphics programs. Drawing and scrolling, a little at a time, is not an artist's dream.

If PaintWorks Plus is to beat the competition, an upgraded version that lets you work on the full screen is essential.

To see the entire screen, you must select Full Screen from the Goodies menu, which removes all menus and palettes from the screen. This full screen is for viewing only, however; you cannot work on your picture. To see the entire document, the full page, you choose Show Page. Here too, it's just for viewing. We see no justifiable reason for a graphics program not to allow you to remove palettes and tools from the screen as you work. Most of the latest paint programs for the Apple II and the Macintosh have incorporated a removal feature. This omission is PaintWorks Plus's biggest minus.

Have Tablet, Can't Paint

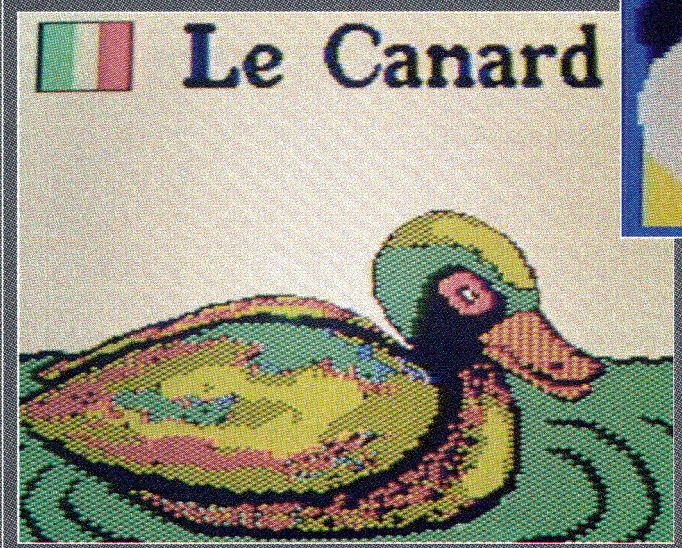
We mentioned in our last column that we had a problem with PaintWorks Plus when using an Apple graphics tablet with the IIGS. We spoke to a few people at Activision and, interestingly enough, they had never heard of this tablet and

SPEAKING OF GRAPHICS GALLERY

ANIMAL FARE

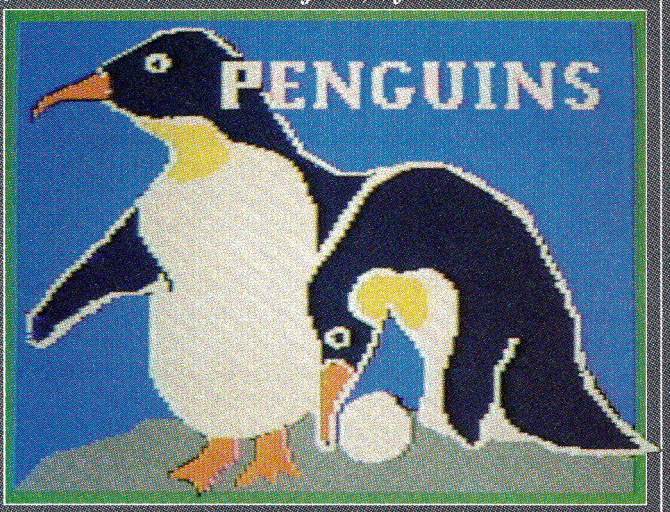
Artists Julia Roederer and Jodi Sack pay homage to nature's creations in French and English. Le Papillon and Le Canard are standard hi-res graphics created with Blazing Paddles and Designer's Toolkit, and then enhanced with Font and Fontrix. Penguin, Panda, and Alligator are double hi-res images created with Dazzle Draw.



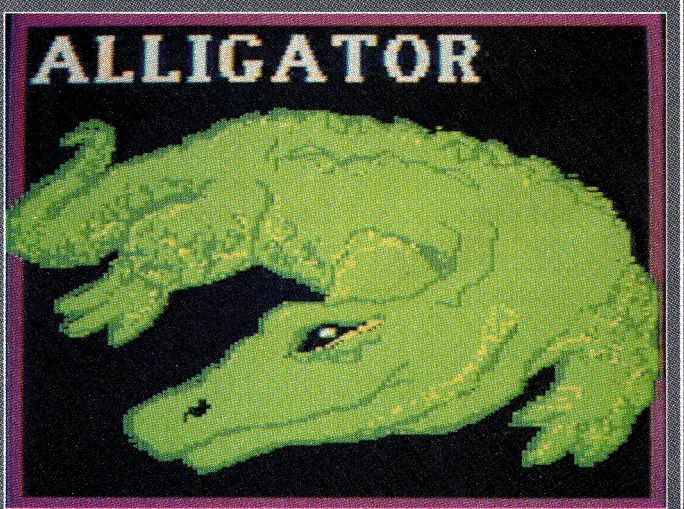


JULIA ROEDERER, *New York, NY*

JODI SACK, *North Plainfield, NJ*







A+ invites readers to submit artwork created with the Apple II to the "Speaking of Graphics Gallery." We will pay $25 for pictures selected for publication. Submissions must be on a diskette and include a written description of the hardware and software used. When submitting pictures made with Dazzle Draw, please format your disk with a slide-show option so we can boot the disk and look at the pictures. Send your artwork to: *A+* magazine, 11 Davis Drive, Belmont, CA 94002, Attn: Graphics Gallery.

couldn't explain what the problem was. Be advised, therefore, that if you install an original Apple graphics tablet in your GS, you'll have to use the Control Panel to turn off the slot into which your card is plugged. In addition, you may have to turn off slot scanning. We have not had such a problem with other programs.

Don't Believe Everything You Read

When you save your PaintWorks images, a dialog box gives you the option of saving your picture in either the Paint format or the Screen Format. We discovered, the hard way, that the documentation gives completely erroneous information on this subject.

According to the PaintWorks Plus users' manual, you use the Paint format to save the entire page a picture is on, and the Screen format is for saving only the part of the picture that's visible in the drawing window. Therefore, says the manual, you can save more pictures on a disk in the Screen format than you can in the Paint format.

Not so. The opposite is the case. When you save your picture in the Screen format, you get a 65-block-long file; a Paint format file is 33 blocks. This discrepancy is not a major issue if the only consequence is that you end up with a larger or smaller file than you anticipate, but, to our dismay, we found that when we tried to save our files in the Paint format, none of the patterns we had created were saved. For one picture, Roberta had edited all 16 patterns, pixel by pixel, and then saved her document in the Paint format. The next day, when she loaded the file from disk, none of her patterns were there: She had only the program's default patterns. The documentation clearly states that your patterns are saved when you save your pictures. Remember, if you've edited the patterns, save your files in the Screen format!

Summing Up

All in all, we like PaintWorks Plus. We do think revised documentation is a must, immediately. At the time of this writing, PaintWorks is the only paint program available for the IIGS, but we expect at least two other programs to appear shortly. If PaintWorks Plus is to beat the competition, an upgraded version that lets you work on the full screen is essential.

The Hackers Are At It

On CompuServe, the Apple II forum has a IIGS section. We were delighted to discover several useful utilities that work with PaintWorks Plus documents. One of them is a slide show.

Next month we'll tell you more about these programs. In the meantime, if you haven't done so already, we recommend you get a modem, a telecommunications program, and a CompuServe account (see the cover stories in the April 1987 *A+*). We're sure these on-line offerings are just the beginning. ✚

PRODUCT INFORMATION

PaintWorks Plus
Activision, Inc.
P.O. Box 7287
Mountain View, CA 94039
(800) 227-9759
List Price: $79.95
Requires: Apple IIGS, 512K RAM, 3.5-inch disk drive, mouse

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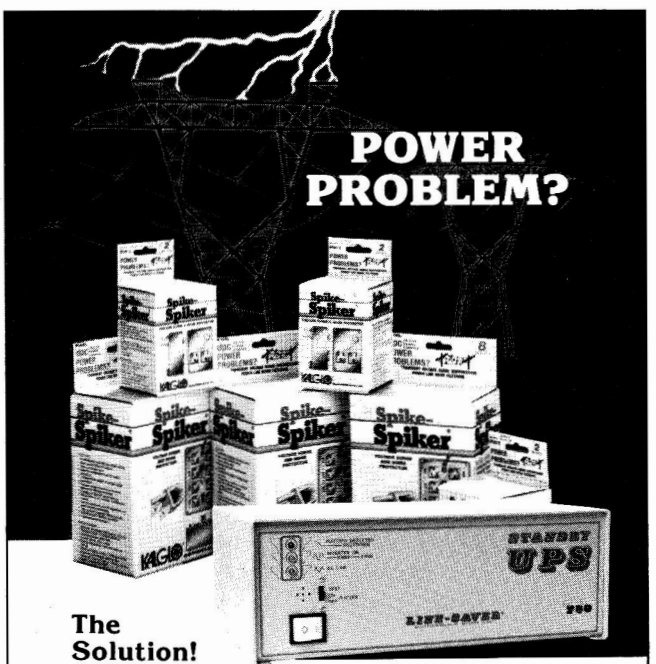

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FEATURE REPORT
APPLEWORKS AND YOUR PRINTER

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A+ APPLEWORKS REPORT

How to get the most out of your printer with AppleWorks, questions from readers, and some useful tips

FEATURE REPORT *BY CHRISTOPHER VAN BUREN*

APPLEWORKS AND YOUR PRINTER

"You get what you pay for" is an adage that just doesn't apply when it comes to AppleWorks and your printer. Chances are, AppleWorks is shortchanging you in this regard.

Most dot-matrix printers are capable of some pretty incredible feats, including producing graphics and many different print styles and sizes. You can control every move of most printers by using control codes. Normally, software programs use control codes to their best advantage, but with the number of different printers on the market—each with its own codes—programs cannot work with all of them. Unfortunately, AppleWorks is among the worst at printer control, not even taking full advantage of the printers it claims to work with. The ImageWriter, for example, is capable of far more power than using AppleWorks would lead you to believe, and if your printer is not one of the ones AppleWorks works with automatically, you're faced with a custom printer setup .

Even if your printer is one of the "built-in" (predefined) printers in AppleWorks, you might find the need to treat it as a custom printer so that you can take advantage of more of its features. Let's look at how to set up a custom printer and how to control any printer function in AppleWorks.

Custom Printer Setup

Begin by going into the AppleWorks Custom Printer Setup menu. Select option 5 from the main menu and then option 7 from the following menu. The screen shown in figure 1 should appear.

The next step is to add a new printer to the list. Though AppleWorks has many printers in its built-in printer list, AppleWorks lets you specify information for only three of them. If your printer is not on the list, you can substitute *one* custom printer (only one of the three printers may be defined as a custom printer). Often it is convenient to have more than one custom-printer setup, and you can create additional setups in three ways: (1) reconfigure the current custom-printer setup, (2) use a macro-generating program to reconfigure the custom-printer setup (see "Macro Mania" in the April "AppleWorks Report," pages 83–88), and (3) keep several copies of AppleWorks, each with a different custom-printer setup.

After selecting the Add a Printer option, you will see AppleWorks' list of printers. Select option 12 to add a custom printer and type a name for this printer. AppleWorks

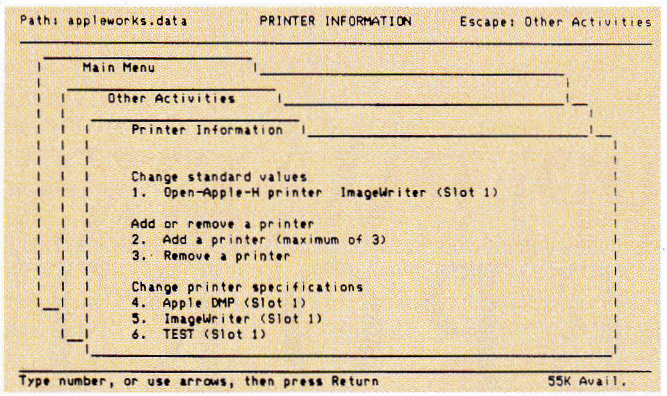


Figure 1: Here you specify information about your printer.

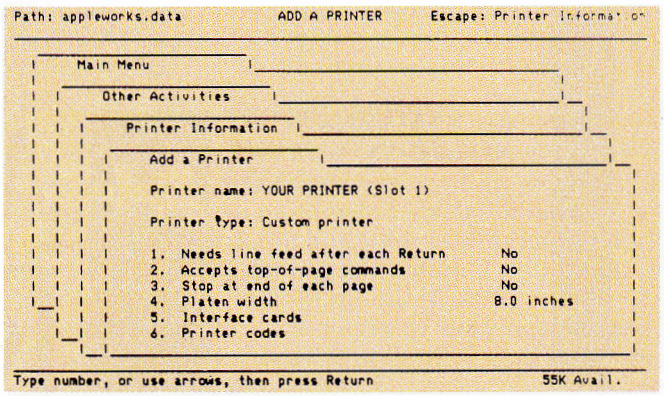


Figure 2: AppleWorks seeks more information about your printer.

now asks for the slot containing your printer-interface card. Apple IIc owners are safe in selecting Port 1. The next set of options appears as shown in figure 2.

If you're not sure how to answer the questions in figure 2, just guess. You cannot damage your printer or AppleWorks by choosing the wrong options here. Try printing a sample document from the word-processing module to test your guesses, making sure this document is at least two pages long. If everything overprints, then you know that a line feed is necessary after each carriage return. If everything is double-spaced when it should be single-spaced, then you know to turn off the line feed. Keep the Stop after End of Each Page option set to No. You can always use the PE (Pause Each Page) printer option in the word-processing module to pause after each page.

The Mysterious 80N Bug

If you have a parallel printer and interface card, you may often see mysterious characters, such as 80N, at the top of each document. You can cure this problem by sending the proper control codes to your printer-interface card. Consult the manual for the control code that turns off the card's "transparency mode." This code will be either CTRL I0N (Control i zero n) or CTRL IN (control i n).

While in AppleWorks, you can send this control code to the interface card by selecting the Interface Cards option and typing the keys as shown there (hold down the Control key while you tap the *i* key; then let go and enter the remaining keys). Press Shift-6 to accept this code.

Printer Codes

The most important part of controlling your printer is setting up the appropriate printer control codes. Let's look at how AppleWorks uses printer control codes. The word-processing module contains print options that control various printer functions. You can view these options with the open-apple/O command in that module (see figure 3).

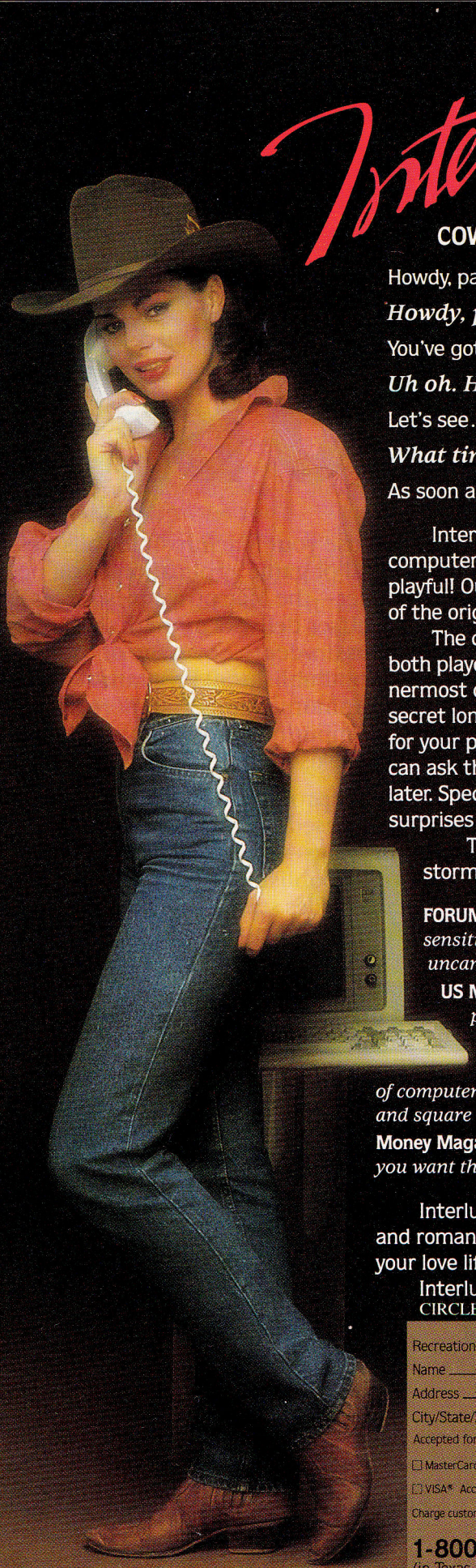
Of the options available, only eight (Characters Per Inch, Lines Per Inch, Proportional 1, Proportional 2, Boldface, Superscript, Subscript, and Underline) are controlled by printer control codes.

When you use one of these options in a document, AppleWorks looks up the appropriate control code for the printer you have selected. Control codes for all predefined printers are built into AppleWorks, but when it comes to a custom printer, you must supply AppleWorks with the appropriate control codes (see explanation below). When you use the Boldface option, for example, AppleWorks looks up the control code you specified for turning on Boldface print. The rest of the options on the Printer Options menu are not controlled by control codes but are handled by AppleWorks itself and have nothing to do with your printer. Therefore, never try to control margin settings, spacing, or any of these options by using printer control codes.

The two Proportional commands apply only to predefined AppleWorks printers. AppleWorks does not give you a place to specify proportional print codes for a custom printer (many printers don't even have proportional-print features). That leaves only six control codes for use with custom printers. Pretty meager. Luckily, AppleWorks does not require you to supply the appropriate code for every printer option. If you don't particularly care about having superscript, for example, you can enter the codes for some other function in the spot reserved for superscript codes, and AppleWorks will never know the difference. Every time you use the superscript option in a document, AppleWorks

```
    PW=8.0  LM=1.0  RM=1.0  CI=10  UJ  PL=11.0  TM=0.0  BM=2.0  LI=6  SS
Option:             UJ: Unjustified    GB: Group Begin      BE: Boldface End
                    CN: Centered       GE: Group End        +B: Superscript Beg
PW: Platen Width    PL: Paper Length   HE: Page Header      +E: Superscript End
LM: Left Margin     TM: Top Margin     FO: Page Footer      -B: Subscript Begin
RM: Right Margin    BM: Bottom Margin  SK: Skip Lines       -E: Subscript End
CI: Chars per Inch  LI: Lines per Inch PN: Page Number      UB: Underline Begin
P1: Proportional-1  SS: Single Space   PE: Pause Each page UE: Underline End
P2: Proportional-2  DS: Double Space   PH: Pause Here       PP: Print Page No.
IN: Indent          TS: Triple Space   SM: Set a Marker     EK: Enter Keyboard
JU: Justified       NP: New Page       BB: Boldface Begin
```

Figure 3: Print options in the word-processing module



Interlude II

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Howdy, partner???

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Uh oh. Have you been playing Interlude again?

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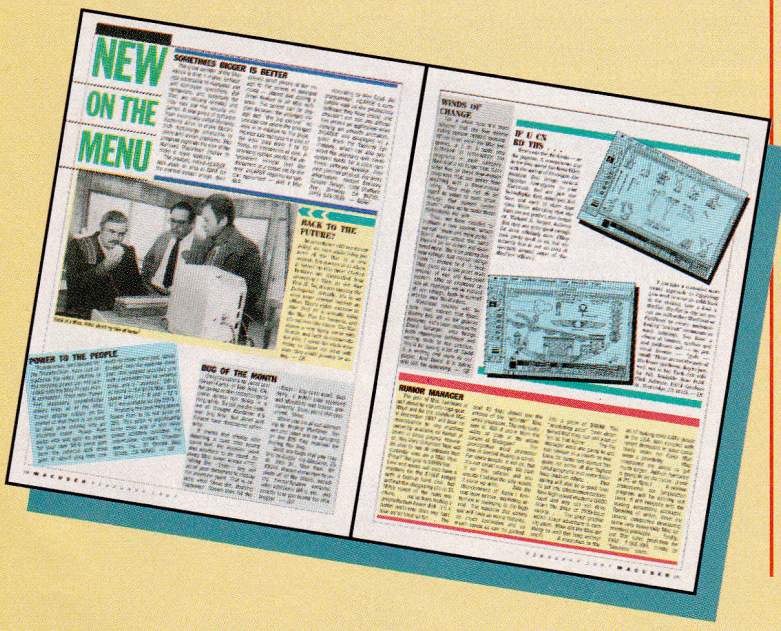

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will instead send whatever code you've told it to send for superscript.

Setting the codes is fairly simple. First from the Other Activities menu, where you specify information about your printer(s), choose Change Printer Specifications and then select the Printer Codes option. You will see a menu containing the six customizable printer functions. Each feature requires a Begin and End code. Check your printer manual for the codes that turn these features on and off and use the codes' ASCII values. Often printer manuals supply several versions of a code (ASCII, hexadecimal, and decimal). Simply choose one of the options and enter the desired code by pressing the keys associated with the ASCII values. For example, the code Escape-! turns on boldface print for the ImageWriter. To enter this code, press the Escape key and then the ! key (Shift 1). Exit by pressing the ^ key (Shift 6).

As mentioned above, you can substitute any printer code for the ones expected by AppleWorks and thereby access any printer function, but doing so can cause some problems. Each of the print options has several restrictions, because AppleWorks is not expecting substitutions. For example, if you use the boldface or underline options, AppleWorks automatically turns off the boldface or underline at the end of a paragraph. If you substitute another control code in the Boldface option—double-size print, for example—AppleWorks still automatically sends the Boldface End control code at the end of the paragraph where you've used the double-size print. The program doesn't send a Double Size Print End code, however—that requires a separate step.

Regarding characters-per-inch settings: AppleWorks uses the cpi settings with the current platen-width setting to determine the number of characters to place on each line. If you substitute a different printer code in the cpi setting, you might end up with problems in the line length of a document. When it comes to the superscript and subscript settings, AppleWorks knows that your printer cannot have both superscript and subscript active at the same time. Therefore, it does not let you enter a superscript code if subscript is on—and vice versa. If you are substituting some other code in the superscript and subscript settings, the restriction still applies, even though the two features you've substituted might be capable of being active at the same time.

One way around many of these problems is to use what I call the all-purpose printer code, a single control code that you can use in a custom-printer setup to access almost any printer function directly without relying on AppleWorks print options. It's very easy to use; in fact, it's the only control code you'll need. To substitute the all-purpose printer control code for your printer's Boldface Begin control code, just go to the Printer Codes screen (figure 2) and select the Boldface Begin category. Now press the Escape key once and exit by typing Shift 6.

As you might guess, whenever AppleWorks comes across the Boldface Begin option in a document, it sends the Escape control code. Of course, Escape does nothing by itself, but most printer codes begin with the Escape key. For example, the ImageWriter uses Escape K3 to activate the color red on a color ribbon. So, to start printing in red, use the Boldface Begin printer option and then type K3. This sequence appears as ^K3, but the printer receives Escape K3 and activates red print. The K3 does not print as part of the document. ✚

QUESTIONS FROM OUR READERS

APPLE IIGS CLOCK PROBLEM

Q. *I am using an Apple IIGS and have upgraded from AppleWorks 1.3 to 2.0. I find that AppleWorks 2.0 does not recognize the clock in the IIGS computer. I know my clock works because I used the desktop to copy some of the AppleWorks files to another disk and found that the files showed the date and time. When I create files under AppleWorks 2.0, however, the time is missing. Plus, I have to enter the date when I start with AppleWorks 2.0.*

L. Munn
Inglewood, CA

A. Old versions of ProDOS cause these and other problems when you use them with the IIGS. Make sure that you're using ProDOS version 16. Replace the ProDOS currently on your AppleWorks Startup disk with the new version.

EPSON TYPESTYLE WITH APPLEWORKS

Q. *How do I get an Epson FX85 to print compressed type (or any other typestyle) with the SelecType feature while I'm using AppleWorks? AppleWorks seems to send signals to the printer that override the commands I manually select.*

Tom Russo
Myrtle Beach, SC

A. This month's "Feature Report" is all about getting more out of your custom printer with AppleWorks. By using the all-purpose printer command it describes, you can activate almost any function of your printer from AppleWorks. You must first find the ASCII codes that access the features in the printer's manual. Then read the "Feature Report."

TIP FOLDER

BY CHRISTOPHER VAN BUREN

SPREADSHEET MENU

AppleWorks spreadsheets can be large at times. Often they are designed to have several sections, each performing a different function for the overall application. It gets increasingly hard to locate these sections when the spreadsheet grows past the size of the screen. Often someone other than its creator uses a spreadsheet, making it even more important to aid the user in finding the various sections.

A simple and effective technique will help. Set up menus in the upper left corner of the template that direct the user to the coordinates of the different sections. Do this by labeling the sections. For example

Transaction Entry Area
Calculations & Solutions
Report Setup

These areas of the spreadsheet correspond to coordinates (i.e., cell names). Enter the cell names of the upper left corner of each section next to the label, and enter the cell name as a formula, like this:

Transaction Entry Area +C25

Normally, the coordinate names are hidden, but pressing open-apple/Z shows them when you need them. To move to the coordinate, enter the open-apple/F command, choose the Coordinate option, and then enter the cell name and press Return. Entering the coordinates as formulas in this way keeps them current when rows and columns are added or removed from the spreadsheet. You can design a macro that automatically moves to the correct cell location when you place the cursor on the name of the section in the menu and press the macro keystroke. Instead of cell names next to the section names, you can place the macro keystrokes that get you there. Another macro moves you back to the menu from anywhere in the spreadsheet.

MOVING INFORMATION

Do you know that if you move a block of cells from the spreadsheet module to the word-processing module by printing to an ASCII file with the open-apple/P command, each cell appears on a new line in the word-processing document? Instead, try *printing* to the Clipboard. Doing so retains all spacing and formatting from the spreadsheet.

If you try copying to the Clipboard and pasting into a word-processing file, AppleWorks will tell you that the Clipboard does not contain word-processing information and will not let you finish. This message won't appear if you've printed to the Clipboard by using the open-apple/P command and selecting the Clipboard as a destination. This is especially useful when used with our "Spreadsheet Menu" tip. Once it's in the word-processing module, you can manipulate the information in any way you like. ✚

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- **How to print on postcards and forms.**
- **How to autoload your RamWorks card.**
- **Review: Will 1040Works do your taxes?**
- **Sticky spaces: What they are & how to use them.**
- **How to improve your printouts with FontWorks.**
- **Data base: How to get more than 3 selection rules.**
- **How to transfer data between spreadsheets.**
- **Cataloging tricks for your disk library.**

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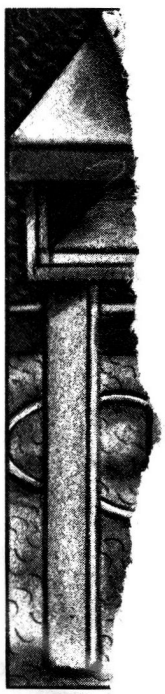
BY DAVID D. THORNBURG

TEACHER! THE MOUSE IN

Some reasons why mi and students don't m.

Page Torn & Missing

Ever since the introduction of Lisa computer, Apple has been i. tent on turning us into a nation c mouse users. Even though the Macintosh perpetuated the idea of the mouse as the ultimate high-tech pointing device, the Apple II line was moderately insulated from the world of mice until the introduction of the Apple IIGS.



Now we face a new future for all Apple users based on a notion our species abandoned many millenia ago—a future where, like our cave-dwelling ancestors, we draw pictures with rocks.

I admit the mouse is a high-tech rock, but just because it has a wire coming out the back doesn't make it any less of a rock than the stones our post-simian forebears used to create pictorial databases of their hunts (and to think that they managed to do without Filevision!). Perhaps I am being too hard on the mouse. After all, it is always easy to take potshots at marginal technologies.

It Would Be Nice If It Worked

My main reason for exploring th limitations of the mouse is that, b cause of its inclusion with the App IIGS, schoolchildren and their teach ers will have to deal with this tech nology daily.

ILLUSTRATION BY ANDREA EBERBACH

at a time without "sticking." (*Sticking* refers to what happens when you move the mouse and nothing happens or the movement is sluggish.)

With numerous patents behind these improvements, the mouse seemed to be gaining some degree of reliability, even though it cost more than a hundred dollars to build.

Buried in a desk drawer of most Alto users were m[illegible]ic potions, alcohols, solvents [illegible]e rags, Freon [illegible]se.

It isn't Apple's fault that its mouse doesn't work very well—the design was flawed from the beginning.

wished to keep their mice in good working order. Some people opted for magic surfaces on which to run [illegible]nvinced that

mouse damage took place while they were sleeping, kept their mice locked in a drawer at night.

And any time someone needed to do a special demonstration for senior management or high-class visitors, a cry went out for the loan of a "good mouse."

Good mice were hard to find.

The Mouse That Roared

One high-class visitor who came to Xerox was Steve Jobs. He was sufficiently impressed with what he saw that he did everything possible to bring Xerox technology into Ap[illegible]. Although he acquired a lot that [illegible]derful, he apparently didn't [illegible]hat the mouse didn't work [illegible]ell. (Remember, he got the [illegible]l demo!)

[illegible]d so, even with many other [illegible]ing devices to choose from, [illegible]felt that the mouse was the [illegible]nting device of the future, and [illegible]pple set out to make a mass-pro[illegible]ucible mouse for a price mortals [illegible]could afford. It isn't Apple's fault that its mouse doesn't work very well—the design was flawed from the beginning.

In fact, I have sometimes wondered if encouraging Apple to adopt the mouse was just a cruel joke Xerox perpetrated in retaliation for the "brain drain" that Apple had inflicted on the copier giant.

The Classroom Mouse

None of this background would be very important if Apple hadn't decided to pack a mouse with the Apple IIGS. Because of the high rate at which schools are adopting this computer, mice will be commonplace in the classroom before long. My fear is that, rather than making computers easier to use, mice, with their frequent repair requirements, will frustrate children and teachers. You could use a disk drive for a door stop and risk less damage than the normal wear and tear an Apple mouse gets.

Although my office is not the most dust-free environment I have encountered, at least it has no chalk dust in the air, and my desk is (moderately) clean. I have two Apple [illegible]mice that I keep in rotation. When [illegible]one of them starts sticking, I use the [illegible]econd one and completely dismant[illegible]e my bad one, scrape the dirt from [illegible]ıe rollers inside, clean the ball, [illegible]low out all traces of dust and fuzz, [illegible]reassemble the mouse and pack it [illegible]way for the time, a few weeks later,

Page Torn & Missing

when its replacement is no longer usable.

Fortunately, a full mouse cleaning takes me only about 30 minutes, since I do it all the time.

Let's see—a computer lab full of mice times 30 minutes works out to about 7 hours of mouse repair every month or so. Do you know any teachers with that kind of time to spare?

Let's Play Jacks!

Dirt and wear and tear are part of normal mouse problems, but they pale in comparison with the other trials to which the poor device can be subjected in the classroom. How long do you think it takes the average ten-year-old to figure out how to remove the rubber ball inside an Apple mouse? I have seen kids master this feat in less than five minutes.

Of course (if you have ever tried it), the mouse's rubber ball doesn't bounce very well. In fact, it is useless for a game of jacks or handball, but this limitation won't keep kids from trying to play games with it anyway. It works very well as a large marble and makes a very nice "thunk" as it blasts its glass counterparts out of a circle scratched in playground dirt.

The motivation behind the mouse is wonderful. It serves as a compact pointing device with minimal storage requirements that affords an improvement over cursor-control-key user interfaces. Unfortunately, the unreliability of the present Apple mouse design allows a piece of chalk dust to undo all the gains in user-interface design.

What's the Alternative?

This story doesn't have to have a sad ending. Last year, out of frustration, I invested in a trackball to replace my mouse. I have used this device for close to a year without its sticking, and I find it just as easy to use as the mouse. Other alternatives to the mouse are also worth exploring, and optical mice are on the market that have no moving parts to wear out.

Alternatively, Apple could start selling mice in ten-packs. ✚

David Thornburg has used a mouse for more than ten years. In the late 70s, in retaliation, he invented what became the KoalaPad touch tablet. Now he contents himself with writing books and articles and designing software. Of course, if he stumbles onto a solution to the mouse problem . . .

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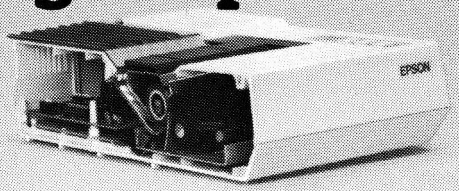

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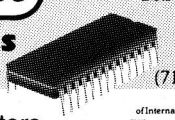

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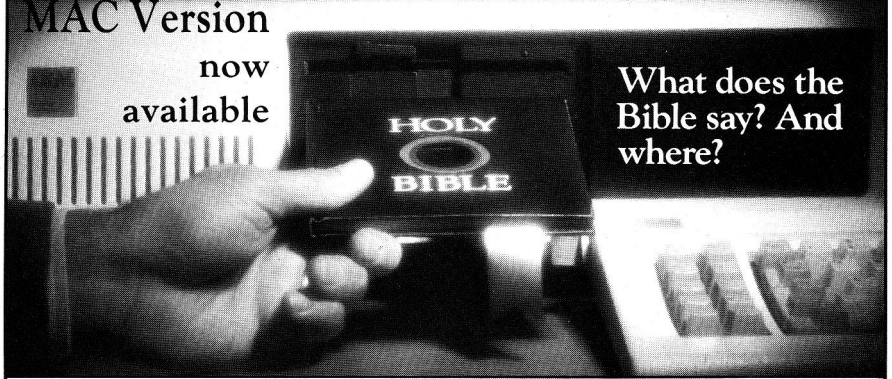

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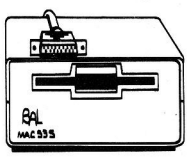

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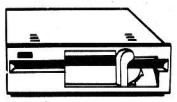

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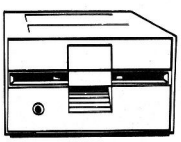

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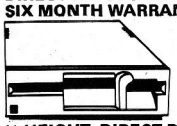

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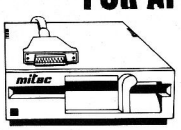

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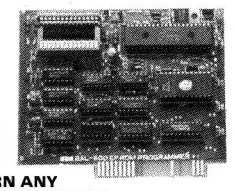

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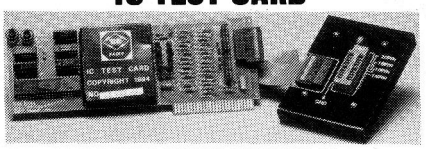

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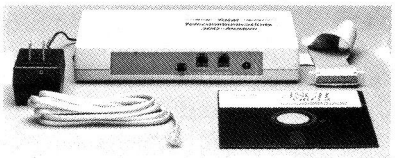

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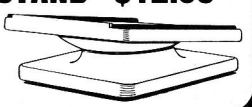

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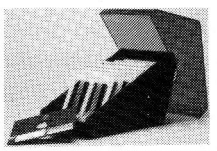

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Wondering which of the thousands of educational software programs are worth your money and attention? We've created *A +* Teachers' Toolbox to help educators, parents, and students sort through the vast array of educational software for the Apple II Plus, IIe, IIc, or IIGS. Each month, *A +* has a group of nationally recognized education experts select some of the best programs in different educational categories. This month, our recommendations come from the 1986 edition of *Only the Best*, an annual directory from Education News Service in Carmichael, California. *Only the Best* draws its listings from reviews by 22 educational organizations across the country. Only the products that receive consistently superior ratings appear in this publication. This month, we feature language-arts programs for grades 4 through 6. Please note that many programs are also appropriate for other grade levels.



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List Price: $349; $429 with backup. Encyclopedia Britannica Educational Corporation, 425 North Michigan Avenue, CBL Dept 223, Chicago, IL 60611; (800) 554-9862

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List Price: $225. Random House School Divison, 400 Hahn Road, Westminster, MD 21157; (800) 638-6460; in MD (800) 492-0782; in AK, HI (301) 848-1900

Requires: Apple II Plus, IIe, or IIc

ALPINE SKIER: GETTING SENTENCE MEANING

Reading-comprehension drill-and-practice program in game format. Students determine the success of an animated skier by deciding which word does not belong in a series. Requires 15–30 minutes of playing time.

List Price: $29.95. Data Command, P.O. Box 548, Kankakee, IL 60901; (815) 933-7735

Requires: Apple II Plus, IIe, IIc, or IIGS; 48K RAM

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Word game for one or two players in which students discover hidden words on four sides of a rotating cube to develop vocabulary and spelling skills. Uses animation and sound. Program includes 1000 words organized by subject and allows users to add new words and create new puzzles. Vocabulary levels range from age 8 to adult. Game requires 30–60 minutes. Includes lessons for younger and older students as well.

List Price: $39.95. DesignWare, Inc., 185 Berry Street, San Francisco, CA 94107; (800) 572-2272; in CA (415) 546-1866

Requires: Apple II Plus, IIe, or IIc; 48K RAM

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Generates thousands of practice sentences and covers 38 capitalization rules in exercises and tests. Computer superimposes corrected sentences on top of student responses, highlighting letters to be capitalized. Allows teacher to edit the word lists. Includes lessons for older students as well.

List Price: $44.95. CBS Interactive Learning, One Fawcett Place, Greenwich, CT 06836; (800) CBS-ASK4

Requires: Apple II Plus, IIe, or IIc; 48K RAM

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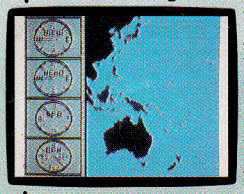

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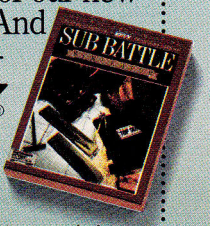

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CIRCLE 145 ON READER SERVICE CARD

you've got people to talk to; you've got places to go and things to do beyond the aspect of just building up characters and fighting," he explains.

The inhabitants of cities and castles who "just kind of moved around and bumped into walls " in previous Ultimas now follow a daily schedule: traveling to the office, eating lunch, returning home to bed. When those cities clear out at night, unscrupulous adventurers can do untold mischief under the cover of darkness, but watch out for fireplaces and streetlights that can cast a pool of luminous visibility around your thievery.

In response to Ultima players who've criticized the combat system, Garriott has added more substance and strategy to the battle sequences.

"In all of the early Ultimas, " says Garriott, "the combat systems required brute force. In Ultima V, on the other hand, we've designed a combat system that was play-tested for balance even on paper before we ever put it into the game. " Adventurers can now carry and use more than one weapon, more than one piece of armor. "For instance, you can wear a helmet and breastplate and hold a sword in one arm and a dagger in the other—but, if you have a two-handed sword, you can't use anything else. " A newly added feature provides a cross hair in combat sequences that allows combatants to take aim at any on-screen character in any direction, not just the north, south, east, or west of past versions.

One of the most notable and controversial developments of Ultima IV was Garriott's sudden attack of morality. In place of the lie, cheat, and steal scenarios of the first three Ultimas, the game required players to quest for virtue and wholesomeness. Ultima V will also revolve around moral issues but in quite a different way.

"Ultima IV was my first serious attempt to put together an intricate, interconnected story line with some meaning to it," recalls Garriott. "Ultima IV is the first one about which I said, 'Hey, we're going to put more into these games than just Go and Fight the Bad Guy. We're going to have a real story with real meaning so people can enjoy the total environment of both the story and the world.'

"Ultima V has some of the same philosophical overtones as Ultima IV did, but it's from a different angle. In Ultima IV, you're personally going out there to prove yourself as this glorious and virtuous person—and all of the towns and villages are preaching or at least expounding on the virtues. Ultima V shows the dark side. It takes on the fact that people can become self-righteous and take these virtues too literally and too far. You and all your friends are going to become Robin Hood-ish outlaws. The whole system of virtues has kind of gone amok. "

How long can Garriott maintain his momentum with the Ultima series? As long as he can improve the play system and as long as the games continue on their best-selling track (each one has outsold its predecessor dramatically), the Ultimas will keep coming.

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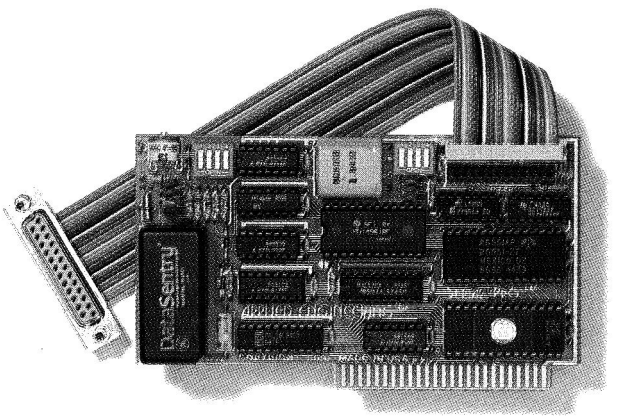

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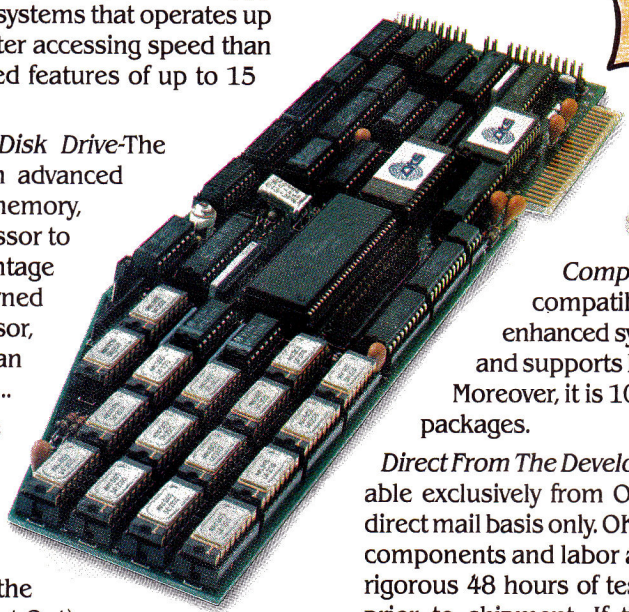

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The standard Kache Plus Card comes complete with several of the most popular expansion features to date. And, with the optional features offered it can be easily upgraded to grow with the sophistication of the computer market. In addition, future innovations from OKS will be carefully engineered for easy assimilation into the standard Kache Plus Card design.

Standard Features: 256K Cache Memory/RAM Disk, On Board Clock/Calendar with Battery Back-up; Utilities for Clock/Calendar; Back-up Utilities Diskette; Concurrent Operation of 2 Floppy Drives; User Friendly/Mouse Compatible Menus; On Board Firmware Utilities for Future Upgrade.

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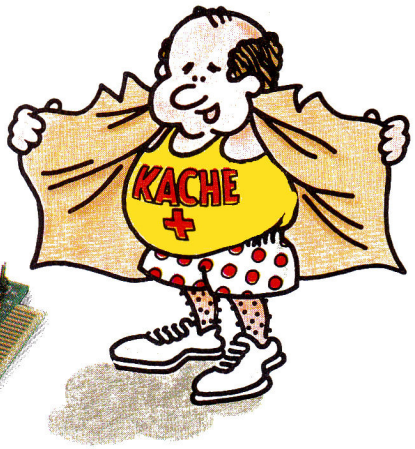

Compatibility - The Kache Plus Card is compatible with Apple *II*, *II+*, *IIe* and *IIe* enhanced systems with 1-6 floppy disk drives, and supports DOS, PASCAL, ProDOS and CP/M. Moreover, it is 100% compatible with all software packages.

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CIRCLE 178 ON READER SERVICE CARD

After eight years of designing Ultimas, however, Garriott has a few other game ideas. With the completion of Ultima V, he plans to split his six-person team into two groups. One will move on to Ultima VI, and the other will begin a new non-Ultima game. "It will still be a fantasy/role-playing project," Garriott confides, "but of fairly different overtones and genre. My intent is to start a second game line in addition to Ultima, and that way we can also start staggering them so that they come out every year instead of every two years."

Uh-oh—there goes the summer of 1988!



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Some men (and women) are content to slay Grues that others have slain before them. Some adventurers find contentment in tramping through Colossal Caves that have supported the weight of many other pounding fingers.

And then there are those who feel compelled to adventure where no man has adventured before. For them, Stuart Smith has created Electronic Arts' Adventure Construction Set.

Using the software tools Smith has provided, creative adventurers can give birth to graphic-adventure worlds that have never previously existed until they save them to disk.

Electronic Arts made four world-building virtuosos $1000 richer this year as the winners of Electronic Arts' Adventure Construction Set contest. Will Bryant of Dallas; Peter Schroeder of Buffalo Grove, Illinois (a fantasy locale if ever I've heard of one); Albert Jerng of Montville, New Jersey; and Robert C. Purrenhage of Malvern, Pennsylvania, received the cash prizes for fantasy, science-fiction and spy/mystery adventures they'd developed with ACS.

Apparently, a groundswell is developing out there in the real world of adventure do-it-yourself fans. One of the gurus of this mass escape from reality is Ken St. Andre. He heads the ACS Fan Club, a group of like-minded individuals dedicated, perhaps, to the proposition that all men are created equal, except for those created (with ACS) to pound monsters or purloin international military secrets.

The club publishes a newsletter, maintains a special Apple-computer division, and compiles a library of the best home-grown ACS adventures, including the prize-winning ACS contest entries.

For more information, write Ken St. Andre, ACS Fan Club, 3421 East Yale, Phoenix, AZ 85008.

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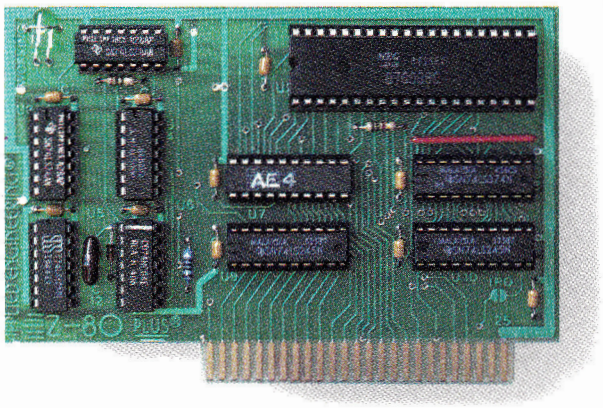

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The new 5.1 boasts advanced features like built-in disk emulation for popular memory expansion boards, boosting both system speed and storage capacity. And menu-driven utilities that let you get to work faster. The Z-80 Plus also lets you run older CP/M programs—all the way down to Version 1.6 (2.2 is the most popular).

The Z-80 Plus is the only card on the market capable of accessing more than 64K. If you have an extended 80-column card, all 128K is usable. And if you have RamWorks, RamFactor, GSRam, GSRam Plus, or an Apple memory card in your IIe, IIgs or II+, up to 1088K is available.

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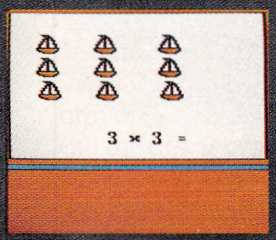

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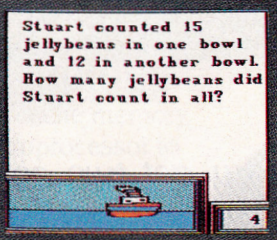

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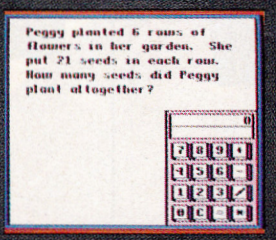

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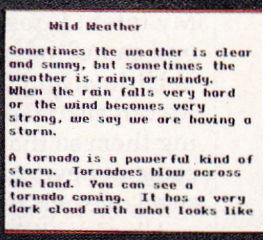

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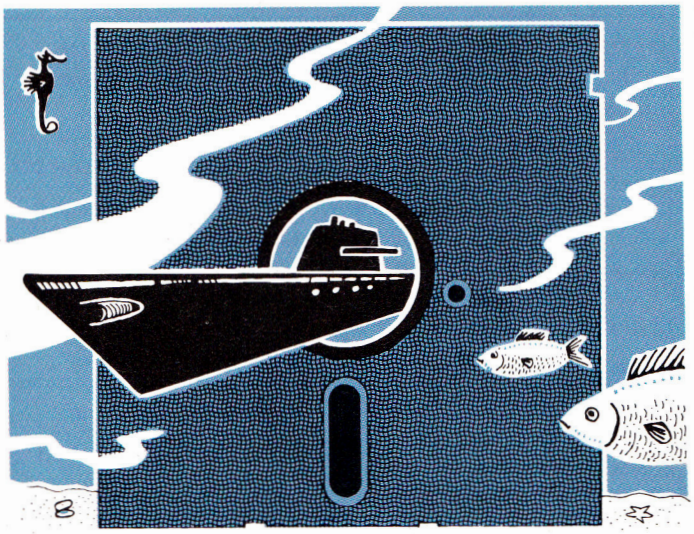


HOW LOW CAN YOU GO?

For subsurface aquabatics, Digital Illusions has created Sub Battle Simulator. Several submarine simulators already are fishing around in software stores, but this new effort may rise to the top of the waves.

Maps, radar and sonar displays, binoculars, periscope, deck views, and a variety of fire power are available to the undersea and over-keyboard captain. All can be accessed through a user interface that is the model of elegance. You won't spend tedious hours learning the ropes here. A few intuitive tries and you'll be commanding your own underwater marauder.

Several missions test the player's navigation and combat skills. For those who lean more toward fast action than measured strategy, a time-compression feature allows impulsive players to speed up the pace.

Sub Battle Simulator promises to be a seagoing winner. It is published for the Apple IIe, IIc, and IIGS by Epyx.

DON'T CALL THEM CHEATS

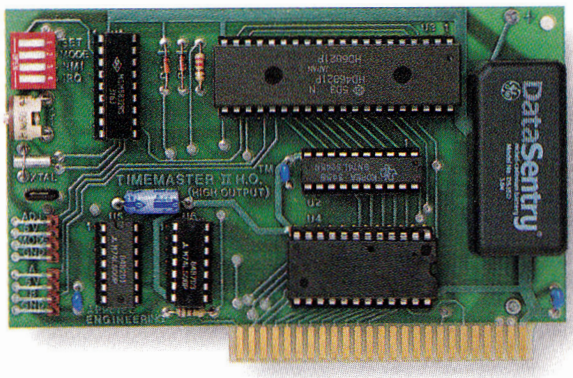
Readers of GamePort are a generous bunch. As soon as my second pathetic plea for game hints went out, the letters started crowding in. Here are a few of the gems from the past few weeks:

First of all, Steve Dunbar (whose note didn't tell me what city he's from) upbraided me for passing along the cheat technique on Wizardry. "The tip that you disclosed . . . is one of the worst things you could have done. . . . Using this character is not only outright cheating, but underminds the purpose of the game: To challenge you."

And Donnie W. Cambre of Irving, Texas, has a problem with semantics. "Although they are called 'cheats,' I don't consider it cheating because I am only using the program as it was written with the options provided."

Good points, guys, I stand corrected. So, obviously, the thing to do is not to stop cheating but, instead, to come up with a new, less offensive

The first clock card to add time and date to AppleWorks'™ screens and files.



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MACROWORKS

by Randy Brandt
$34.95–Apple IIGS, IIc and 128K IIe
For AppleWorks version 1.3 or earlier.
(Version 2.0 requires Super MacroWorks.)

"...THE BEST SINGLE APPLEWORKS ADD-ON AVAILABLE TODAY."
–A+ Magazine, October 1986

"What is your FAVORITE Apple II software for 1986?"
1. AppleWorks
2. The Print Shop
3. MACROWORKS
–InCider Magazine's "Reader's Choice" Poll

MACROWORKS PUTS *YOU* IN CHARGE OF APPLEWORKS

After updating your AppleWorks disk once, you can put the MacroWorks disk away, then use AppleWorks like you always do. MacroWorks remains invisible until you need it. Most new features are accessed using the SOLID-APPLE (🍎) key (or IIGS OPTION key). All standard AppleWorks commands remain in effect.

Here are some of the new features that MacroWorks adds to AppleWorks:



APPLEWORKS MOUSE CONTROL
Optionally use your mouse for quick, precise control of menus, scrolling, highlighting, etc.

❑ **CREATE YOUR OWN MACROS**
Convert any series of AppleWorks keystrokes into a new single-keystroke AppleWorks command or "macro." Use our built-in macros or create your own.
For example, 🍎-N could type and center your name and address. Or 🍎-P could print (or save) *all* of your Desktop files, nonstop.
Or you could set up a macro that skips unwanted questions like *"How many copies?"* and *"Are you sure...?"*.

❑ **NEW SINGLE-KEYSTROKE WORD PROCESSOR COMMANDS**
- Character-delete and Word-delete
- Jump to the start or end of a line
- Erase an entire line
- "Undo" the last delete command
- Many more.

❑ **FOR THE WORD PROCESSOR, DATA BASE AND SPREADSHEET**
Create macros for all three applications. For example, in the Spreadsheet, you may find yourself typing the same series of keystrokes every day to sort a column of numbers. Set it up as a one-key macro!

❑ **PERSONALIZED HELP**
Rewrite AppleWorks' "Help" screens to display whatever information you want.

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Works with the Applied Engineering™ and Checkmate™ Desktop Expanders.

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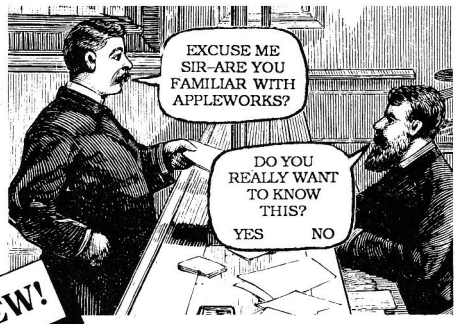

NEW!

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For new AppleWorks version 2.0.
(Version 1.3 & earlier requires MacroWorks.)

←MACROWORKS FEATURES PLUS...

Super MacroWorks provides the same AppleWorks enhancements and improvements as MacroWorks (left), **PLUS** the features below.

❑ **AUTO STARTUP**
Boot AppleWorks and it gets itself up and running without another keypress. You can also have any file automatically load, so you're ready to go to work!

❑ **DIRECTORY DATABASE**
Quickly read the file names from any or all of your ProDOS disks into the Data Base. Search and sort by file name, type, date, etc., and make printouts, to see what's *really* in that disk library of yours.

❑ **ON-THE-SPOT COMPILING**
Create and compile new custom macros "live" without leaving AppleWorks.

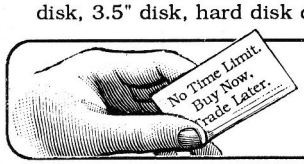
❑ **NO MORE TYPING PATHNAMES!**
When you want to access another disk or directory, you now select from a menu instead of typing a pathname. Simply highlight the directory name you want–it's just like loading files.

❑ **LINKED FILES**
Many possibilities–like the ability to define custom macros that work with a particular file. One keystroke can load a file, then load its associated macros.

❑ **READ-THE-SCREEN MACROS**
Lets you do many things, like convert characters, words or paragraphs from lower-case to UPPER-CASE and back.
And now you can cut and paste *anywhere*, including from field-to-field and record-to-record in the Data Base.

❑ **LOCAL/GLOBAL MACROS**
Define macros that work differently in different applications. For example, you could make 🍎-N do 3 different things:
- Word Processor ..... Type your name
- Spreadsheet ..... Type "3.14159"
- Data Base ..... Sort by Zip code

❑ **TIME & DATE MACROS**
One 🍎-keystroke automatically types the current date or time in any document.



Trade Up to SUPER MACROWORKS

MacroWorks owners with AppleWorks 2.0 may get a Super MacroWorks trade-in by mailing the front cover of their MacroWorks manual+$22.50 to Beagle Bros. (Calif. add $1.20 tax)

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by Rob Renstrom
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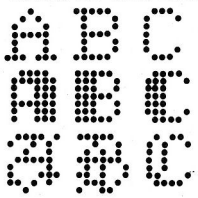


Power Print lets you "download" a second typestyle into your printer's memory so you can alternate printing with your printer's standard font and a new font with special characters and symbols.

OUR FONTS OR YOURS
Ten different fonts are included on the disk. An easy-to-use font editor lets you redraw any character in our fonts or design your own fonts from scratch.

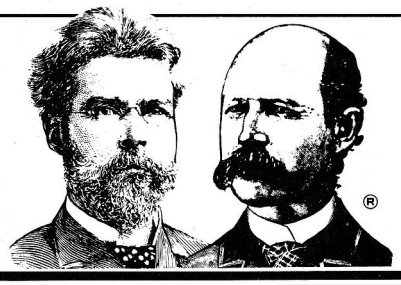
APPLEWORKS COMPATIBLE
In fact, Power Print is *everything* compatible. Just download a font (in less than 2 seconds), then boot AppleWorks, AppleWriter, ProDOS, DOS 3.3–or practically anything else–and custom printing is yours!

MIX GRAPHICS AND TEXT
Design up to 96 custom characters that combine to print a small illustration.



You may then include this drawing as part of your regular printouts.
←This logo was actually typed with AppleWorks and printed on an Apple ImageWriter. Other software and printers work equally well.

FULL-SPEED AHEAD!
Unlike other font software, Power Print *won't* slow your printer down one bit. Power Print works with most full-font downloadable printers, including:
APPLE DMP and **IMAGEWRITER** (I and II), **BROTHER** M1509, **CITIZEN** (20, 25), **EPSON** (EX, FX, JX), **OKIDATA** (92, 93, 192, 193), **PANASONIC** (1092, 1093), **STAR** (Delta, Radix, SG, SD, SR), and others



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AD #361

CIRCLE 148 ON READER SERVICE CARD

phrase to describe these ch**ts (shhh!).

"Undocumented feature" is an oldie but goodie. Or how about "innovative strategy"? If you have a better idea, send it in to me. You'll earn the appreciation of all the innovative strategists who read "GamePort" as well as a mention in the column.

Don't think for a minute, though, that Steve and Donnie don't believe in constructive criticism. They also sent along a few hints of their own.

The upright Mr. Dunbar has a character-building tip for players of Sir-Tech's Wizardry: "When you develop a good party, start another one. Now use some of your good characters to help the new ones. No one ever said you couldn't help out a greenhorn."

Mr. Cambre shows a way to get something for (almost) nothing. "In (Electronic Arts') Skyfox when you get to the tactical display, right after choosing your level, press Control-G and you will be put into a Space Invaders-type game." It isn't as elaborate as Skyfox, of course, but it's free with the price of admission.

One reader, who may be well on his way to a successful career in the used-car industry, wants to cut a deal. "You asked for some tips . . . I've got many, but I'm only gonna give you a few each month. . . . If you mention who sent them to you . . ." This individual asked if I had ever booted the back side of Brøderbund's Karateka. Try it. And thanks to the unidentified person who sent in that tip.

OK, I give in. The preceding tip came to you courtesy of John Malatesta of Erie, Pennsylvania. Did we live up to our part of the bargain, John?

Finally, Joel W. Miller of Lodi, California, provides a complex way of generating wealthy characters in The Bard's Tale from Electronic Arts. You may want to take notes:

Create two character disks, each with one character on it, each character with a different name. Boot The Bard's Tale and insert your first character disk. Copy character 1 to disk 2. On character disk 2, pool all the gold to character 1 and save the character to disk 2. Then delete character 1 on disk 2. (Are you still with me?)

Reverse the process and copy character 2 onto disk 1. Pool the gold to character 1 and delete character 2. Keep doing this until you have more gold than you possibly need. It's time-consuming but very profitable.

I received many more contributions but not enough room for them all. Thanks to everybody who wrote in. Keep writing. Send all hints, Easter eggs, and you-know-what techniques (sorry, Steve and Donnie) to GamePort, *A+* magazine, 11 Davis Drive, Belmont, CA 94002.

SOMETHING FOR EVERYONE

Don't tell "That's Entertainment" it's short on variety. This month we cater to every taste, with reviews of Electronic Arts' Lords of Conquest, Mindscape's Indiana Jones in Revenge of the Ancients, Electric Dreams' Rocky Horror Show, and SubLogic's Jet flight simulator. +

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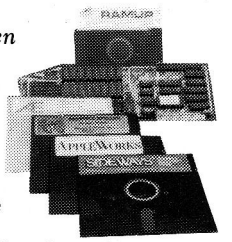

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CIRCLE 104 ON READER SERVICE CARD

Reviews

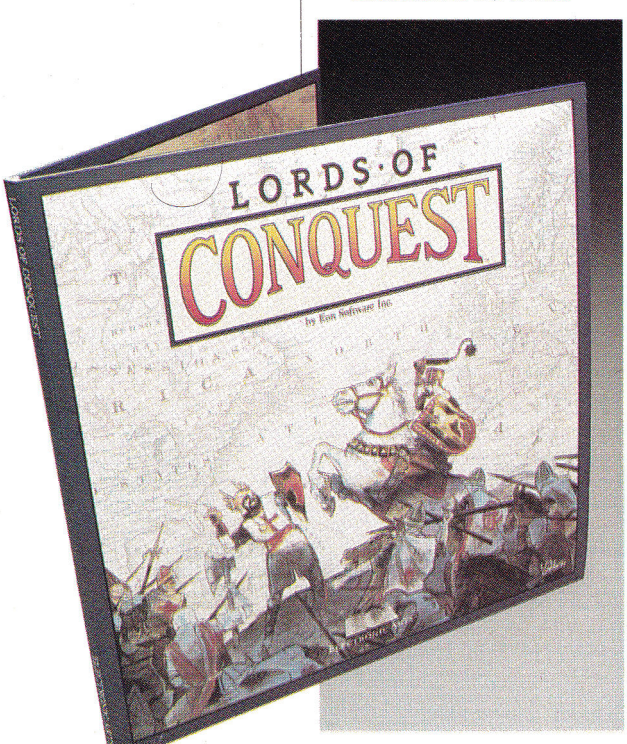
This month's games let you conquer the world, adventure as Indiana Jones, flee Frankenstein Place and its cast of ghastly inhabitants, or become a fighter pilot.

RISKY BUSINESS

Do you remember a board game called "Risk?"

It was published by Parker Brothers, and its charm was that it gave you a chance to conquer the world—if only in simulation. For me the main drawback was that solitaire play was completely out of the question. Even with two players, the usual result was a stalemate. You needed three or more players to make the game really interesting.

Electronic Arts has made Risk more than interesting by adapting and expanding it for Lords of Conquest.



Risk players will recognize the main elements of their game in Lords. They will also find that Lords is many times more complex and flexible—a real adult-level game. It offers many more scenarios—20 in all—and a higher level of challenge than Risk ever could.

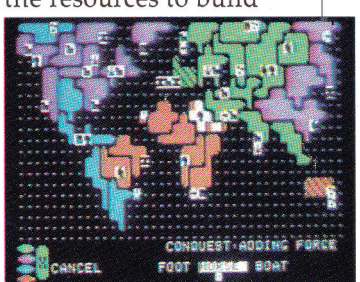
The object of the game is to gain control over the geographic area you've selected as the playfield by building a required number of cities and defending the territories they are in from attack.

Your playfield may be a region, a continent, or a whole world. The program disk contains 20 maps to choose from. You also have a sophisticated editor that allows you to create an unlimited number of original maps and save them.

You can adjust the difficulty to any of nine levels. At the easiest level, you start with big advantages in picking territories, making first attacks, and grabbing extra territories. The situation is completely reversed at the highest level, with your computer opponent holding all the choice territories. Expert play alone will suffice here.

The idea is to acquire territories that produce riches, including gold, iron, and coal mines, pasturelands (which produce herds of horses), and timberland. You can use your stockpiled resources to build cities, weapons, or boats to transport armies.

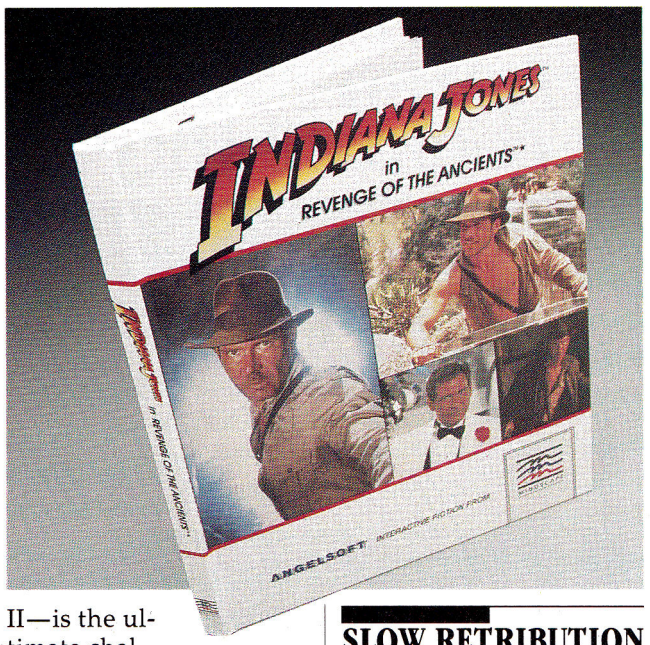
A quick and effective way of beating the other side is to march into his empire and attack territories that have cities or the resources to build



them. If you win, whatever is in the country is yours—even the cities themselves. Of course, you realize the computer will be trying to do the same thing to *you*.

One way of getting around the problem is to rope two or three other players into the deal and convince one of them to be your "ally." Two medium-sized powers working in concert equal one big bloc that is relatively immune to attack. Of course, when the other players succumb and only you and your "ally" are left, there will have to be a showdown.

Solitaire play—you, all alone, pitted against your cold, unfeeling Apple



II—is the ultimate challenge. Having many years of Risk-playing under my belt, I thought I could just pick Lords up at the middle levels of difficulty and beat up on it. Surprise, surprise. This game is so complex, subtle, and tough that I couldn't snatch a win in my first ten tries. My ego took a thrashing.

That thrashing, in fact, gave me the strongest recommendation I could make for Lords of Conquest. Lords will challenge you over and over again. The game offers superb opposition in the solitaire mode and all the flexibility and creative control you could want. Also, it fully embodies and richly enhances the play values of Risk. This one is a winner.

Brian J. Murphy

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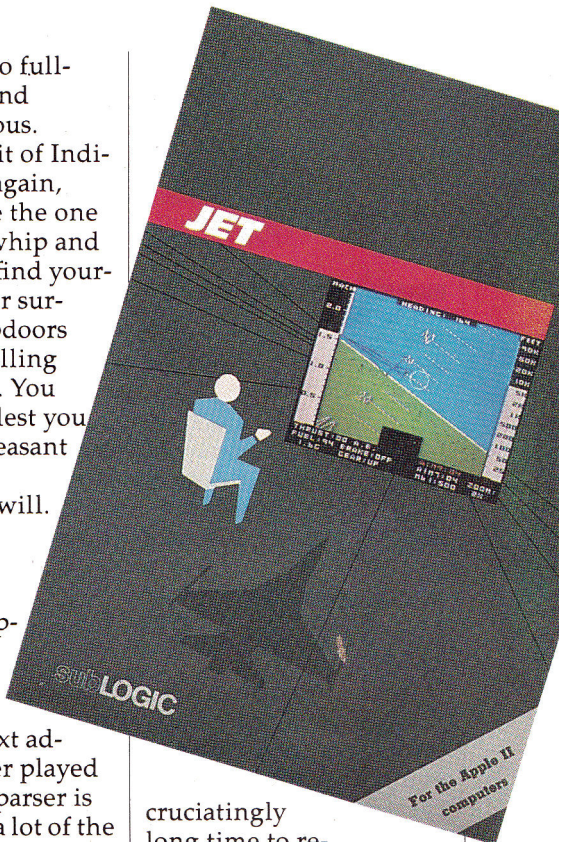
Sometimes the best of characters end up in the wrong places. Indiana Jones is no exception. A trained archeologist, international traveler, and procurer of ancient objects from other civilizations by profession, he has been sent by fate and his government to protect the free world. With considerable help from the forces of Industrial Light and Magic, he battles his way through two full-length movies and emerges victorious.

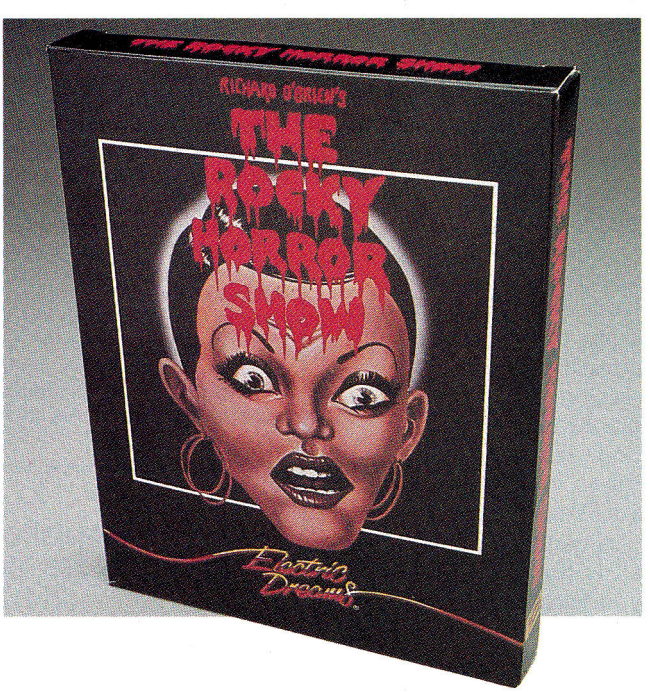
Now the spirit of Indiana Jones lives again, only now you're the one who holds the whip and revolver as you find yourself in a chamber surrounded by trapdoors that is quickly filling with poison gas. You must move fast lest you die a most unpleasant death.

And die you will. Frequently. Unpleasantly. Very slowly.

Slow is the operative word here. Revenge of the Ancients is the slowest text adventure I've ever played in my life. The parser is not very smart; a lot of the operations you must perform are redundant and ridiculous; and to make it all the more annoying, the program takes an excruciatingly long time to respond to your commands. When it does respond, you will probably find yourself in a potentially lethal situation. Odds are that you will die in a most grisly fashion.



As an experienced gamer, you probably won't mind that much—it happens all the time. Of course you remembered to save, but by this time it must have struck you a bit strange that on your two-disk-drive system, the program recognizes only the first drive. Or that when you wish to resume your position after getting clobbered, you have to go through the entire options list before being allowed to sit for a while waiting to get back to where you were. Only to



be killed again. So you can wait some more.

Make no mistake. This program is not an easy one to beat. The puzzles, mazes, tricks, and traps are cleverly devised but, alas, poorly executed. If Indiana Jones himself were playing Revenge of the Ancients, he probably would go in for shuffleboard halfway through the game.

Ken Goehner

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LET'S DO THE TIME WARP AGAIN

If you've never seen *The Rocky Horror Picture Show* on stage or in the movies, you probably have no special interest in this computer game imported from England. If you are one of the many who have made midnight showings of *The Rocky Horror Picture Show* into an underground cult event and know every line backward and forward, you are probably even now chanting, "I've got to keep control . . ."

Even if you're not an initiate, you can play Rocky Horror Show without really missing much. For those of you who are devoted RHPS fans, the computer game may or may not satisfy your demented hunger.

Rocky Horror Show, the game, is a fairly ordinary piece of arcade-like action. You control either Brad or Janet (your choice) through the

You must find all the pieces to the DeMedusa machine, a sinister device that holds your lover captive.

creepy mansion at Frankenstein Place. (In case you didn't know, your car has broken down, and you've just come in to use the phone, but you didn't count on meeting such a weird crew. As half of the All-American Couple, you find yourself wandering the mansion in a bemused attempt to comprehend your surroundings—at least that's the basic story line.)

As far as the game's concerned, you must find all the pieces to the DeMedusa machine, a sinister device that holds your lover (Brad or Janet—whichever one you're not playing) petrified and captive. The machine parts are scattered all over the mansion, and you can carry only one at a time. You need keys to open doors, and quick movement to avoid the many less-than-helpful denizens of the house. You have only 25 minutes (computer time) to complete the task, or else!

The cast of characters is scintillating, ranging from harmless to deadly. Some of the more mildly amusing people simply steal your clothes and deposit them at the front door, leaving you blushing in your skivvies. As an All-American Boy or Girl, you can't function at all without clothes, so you become helpless un-

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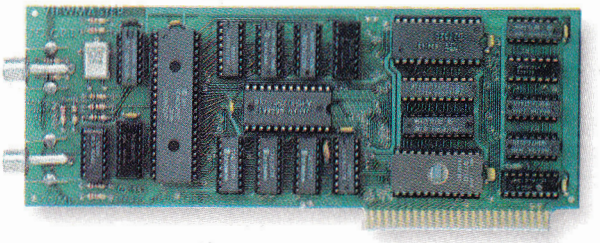

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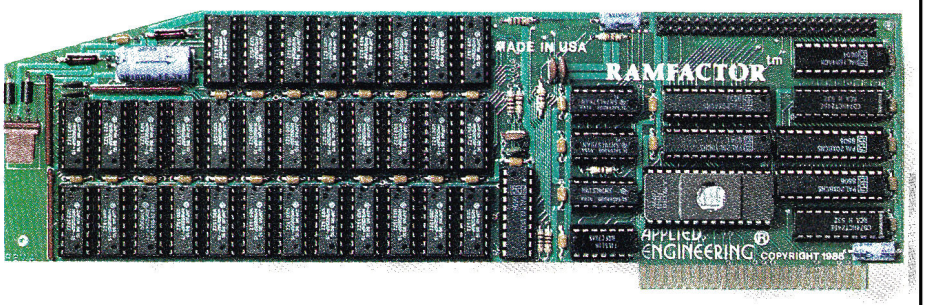

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All the leading software is already compatible with RamFactor. Programs like AppleWorks, Pinpoint, BPI, Managing Your Money, Dollars and Sense, SuperCalc 3A, PFS, MouseWrite, MouseDesk, MouseCalc, Sensible Speller, Applewriter IIe, Business Works, ReportWorks, Catalyst 3.0 and more. And RamFactor is fully ProDos, DOS 3.3, Pascal 1.3 and CP/M compatible. In fact, no other slot 1-7 memory card is more compatible with commercial software.

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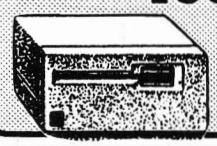

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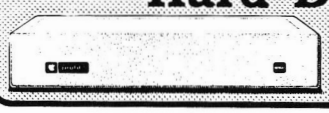

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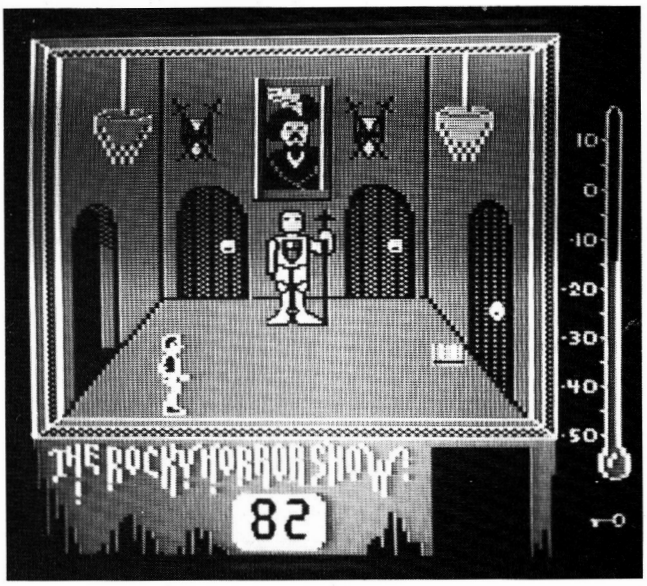

til you have once again donned your apparel.

Among the more deadly of your coinhabitants is Riff-Raff, the manic-depressive butler whose antimatter gun is pretty undiscriminating about its targets. Then there's Eddie, the motorcyclist. He begins the game in a deep freeze, but when the freezer temperature rises, so does Eddie. If you figure out how, you can refreeze Eddie.

You control your character with a joystick, and the controls are simple and responsive. Press the button to pick up a machine part. Press it again to put it into the machine. That's about all there is to control.

Some shortcuts and surprises lurk in the mansion's shadows. One significant shortcut is the elevator, which you can use to great advantage. Other surprises are best left unmentioned.

You can win Rocky Horror Show fairly easily, and therefore it may not be a game with tremendous staying appeal. On the other hand, it's fun to play, and beating it is not a sure thing. The graphics are not the most spectacular, but fairly typical Apple II graphics. In some ways, the game seems old-fashioned, but that is not necessarily a drawback.

Apparently it was immensely popular in England, so perhaps it has that elusive quality that makes a game special. I enjoyed it and can recommend it with several reservations: (1) Don't expect state-of-the-art game play or game mechanics; (2) expect to be able to map out and win the game fairly easily; (3) don't expect the game to be a great mental challenge; and (4) don't expect an absolutely faithful and convincing rendition of *The Rocky Horror Picture Show*. Finally, whatever you decide, remember, "It's just a jump to the left . . . ."

Rusel DeMaria

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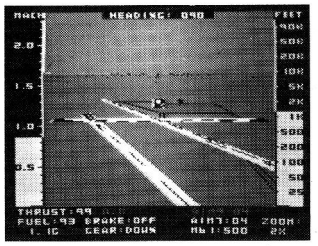
GETTING YOUR AERIAL THRILLS

There are two fighter planes that pilots around the world, on both sides of the Iron Curtain, would love to get their hands on. They are the U.S. Air Force's F-16 Fighting Falcon and the U.S. Navy's F-18 Hornet.

For those of us who must confine our high-performance flying to computer simulations (because of our poor conditioning, sluggish reflexes, nearsightedness, and inability to get a NATO government to invest $1 million in flight training), a program such as SubLogic's Jet is an event.



The graphics and animation of this simulation should be familiar to anyone who has experienced SubLogic's Flight Simulator II. The flying, however, is many times more satisfying and exciting than that of the earlier simulation—no small accomplishment for SubLogic.

Unexpectedly, flying is much easier with these hot jets than it is with the simulated civil craft of Flight Simulator. The logical reason is that modern jets are so complicated and the speeds at which they travel are so great that they require more control decisions per second than any human is able to make (even without having to think about things like tactics, locking weapons onto targets, and so forth). On the F-16 and F-18, a certain amount of the flying is done by a computer that keeps the craft in trim and that makes the thousand and one split-second decisions necessary to keep the plane under control. Without this help, pilots wouldn't stand a chance of staying in the sky.

So, faithfully simulating these factors, Jet offers a pair of fighters that are superbly simple—and exciting—to fly. The feeling of speed is sensational, especially when you have static reference points to judge against. After takeoff, when you stand the bird on its tail to gain altitude, try switching to the reverse view and watching the ground fall away like a stone. You can get another rush by taking your F-18 on a low, high-speed pass over the superstructure of your aircraft carrier. Wow!

Jet supplies fairly bland scenery to fly over, with the exception of your home airfield and

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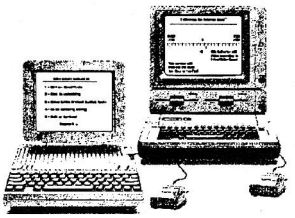

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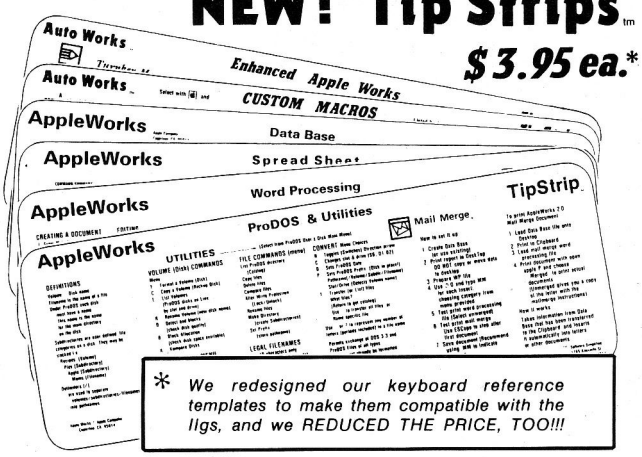

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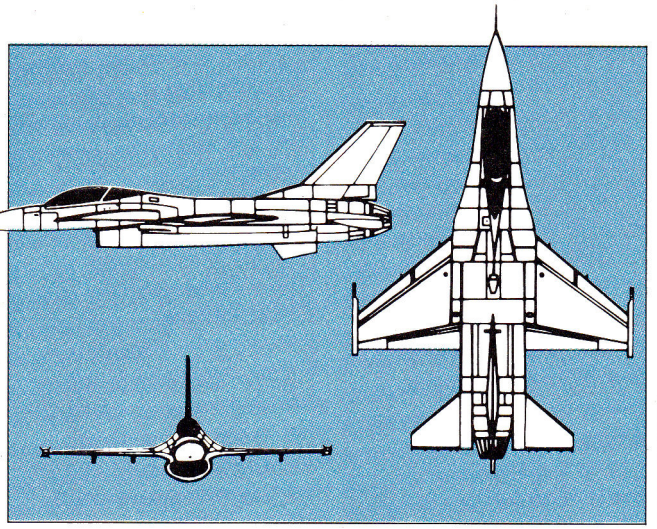
aircraft carrier. If you're more interested in the cockpit view than combat, you have recourse to any or all of the SubLogic scenery disks for Flight Simulator II.

It's nice to be able to change the scenery over which you're flying, but combat in Jet is a special thrill indeed. The action is fast and truly furious. Fortunately, like a real NATO fighter pilot, you are well equipped to do battle.



For bombing runs you have smart bombs and an air-to-ground missile, and you get a formidable array of resources for dog-fighting. Your air-to-air missiles are the short-range Sidewinder (virtual insurance of a hit at 5 miles or less) and the Sparrow, which hits with high accuracy at 25 miles. You may also choose to arm with an M-61 machine gun—good only for close-in attacks and your worst bet in air-to-air fighting.

Your combat assets include a heads-up range-finder, which puts a circle on the canopy with which you aim and determine target distance. You also have a radar display that locates enemy planes for you and detects incoming missiles.

In a fight, the flying qualities of your jets and the capabilities of your electronics and weapons systems all come together beautifully. Even at the lowest of the selectable levels of difficulty, the combat is thrilling—and winnable.

You will find yourself making incredibly tight turns at high speed, stalling, diving, climbing—whatever gets the bad guys off your back and you into position to fire. That split second in which the enemy appears in the aiming circle and you get off a missile is one of the most exciting moments you can find in any Apple II simulation.

Brian J. Murphy

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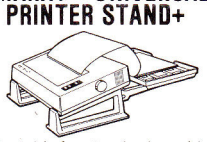

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BY MICHAEL WIESENBERG

THE ROOT OF ALL DIGITS

This month's puzzle brings you fun with squares and cubes

In my March column, I suggested that without a computer you could determine what number, n, had in the digits of its cube (n^3) and fourth power (n^4) all the digits 0 through 9, once each, and I'll show you in the next issue how to do it. In the meantime, you can also try to figure out what number—or might there be more than one?—m, has in the digits of its square (m^2) and cube (m^3) all the digits 0 through 9, once each. I think you need a computer for this one.

Send a complete program. Be sure to include sample output and running time. If you send a disk, please also enclose hard copy. Your program must be short, elegant, and self-documenting. The best solution wins a one-year subscription (or extension) to *A+* and a Certificate of Excellence in Programming and will be published here.

Please send all entries, which must be received by May 8, 1987, to Computer Calisthenics, Box 2329, Stanford, CA 94305. Please send entries by *regular* mail only. I do not receive in time any mail for which I must sign. All entries become the property of the author. The winner will be selected by the author, whose decision will be final. The winning program will be announced in the July 1987 issue of *A+*.

Answer to February's Puzzle

February's puzzle suggested that two positive rational numbers, besides 1 and 2, could be found whose cubes added up to 9. I knew this was a tough one, but I really thought someone would get it. No one did, though.



Actually, I made an error when I said, "This puzzle has a precise answer." Actually, it has an infinite number of answers, but what I was looking for was the *smallest*.

Both numbers are obviously fractions. Several entrants submitted answers such as: $(-17/7)^3 + (20/7)^3 = 9$. The instructions specified "two *positive* rational numbers," however. Others submitted programs that produced answers such as 1.65100011 and 1.65100011. Cubing those two and adding them together produces not 9 but (depending on the precision of your calculator, of course) 9.00059670102878. The correct answer is two numbers that, when cubed and added together, produce *precisely*, not approximately, 9. What I was looking for was two fractions of the form a/b and c/d.

This puzzle is actually an old one. The mathematician Fermat is credited with having found in 1657 the solutions

$$\frac{12436177339900948364 81}{60962838356761372974 49}$$

and

$$\frac{48726717171435233656 0}{60962838356761372974 49},$$

an amazing accomplishment without a computer. The famous English puzzlist Henry Ernest Dudeney published a smaller solution—the one with the smallest number of digits in numerators and denominators, in fact—in his *Canterbury Puzzles* in 1919. That answer is the one I was looking for.

Instead of just giving you the answer, let me give you a few hints,

ILLUSTRATION BY MARK FISHER

and you can try again. If anyone gets it, I will award two prizes and print the best answer. If no one gets it, I'll give my programmatic solution.

You can't solve this problem directly, because no common programming language on microcomputers holds enough precision for the answer. That is, you can't use the "brute force "method of generating numbers and seeing whether the cubes of each add to 9.

The solution I'm looking for has at least nine digits in numerators and denominators. The cube of such a number has at least 25 digits, and you can't make an accurate comparison of that with the cube of another number. If you know a couple of mathematical facts, however, you'll find that the nine digits of precision of your Apple are quite adequate.

First, notice that the denominators have to be the same.

Mathematicians have long stated that any number that is the difference of two cubes is also the sum of two cubes. So, if you have $A^3 + B^3 = 9$, and positive integers X, Y, and Z for which $X^3 - Y^3 = 9Z^3$, you get

$$A = \frac{X\,(X^3-2Y^3)}{Z\,(X^3 + Y^3)}$$

and

$$B = \frac{Y\,(2X^3-Y^3)}{Z\,(X^3 + Y^3)}$$

Now you can look for those pairs of integers, X and Y, for which $X^3 - Y^3$ is of the form $9Z^3$ for some integer Z. If X never exceeds 999, its cube never exceeds your Apple's accuracy. Also, if X^3 is greater than $2Y^3$, any solution has A and B positive. Don't check *all* possibilities for X, Y, and Z. That's 10^9 iterations. Find some reductions, and place bounds on your checking, or your program will be busy a mighty long time.

The BASIC program *I* have finds a solution in about 45 minutes, but I'm sure you can do better.

Correction

The program listings in the March 1987 column had some minor errors. The exclamation points do not belong in lines 50 and 80 of the first program, and the first keyword of line 150 in the second program should be IF. ✚

Michael Wiesenberg's book of new computer puzzles, The Puzzled Programmers, *will be published this summer by Microsoft Press.*

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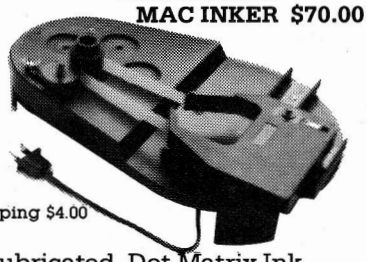

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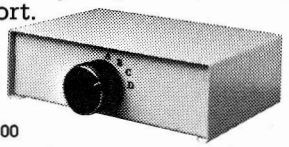

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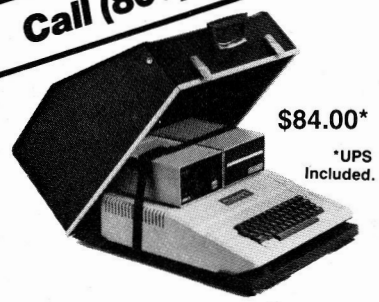

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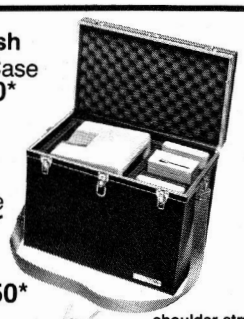

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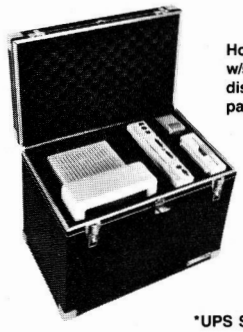

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TIPS AND TECHNIQUES

Readers share tips for the II

FLASHY LANGUAGES

When you are programming on the Apple II in BASIC, do you notice that your listings (like the listing below) are sometimes in Greek? Well, that problem occurs when you have a Flash command in the program or type it in in the Immediate mode and then type Control-Reset (the lazy way to get out of the Flash mode) without putting in a Normal command. No matter how many times you press Control-Reset, the listing is still in Greek, so you turn off the computer and hope that your computer hasn't gone to the big CPU in the sky. Anyway, to avoid reading Greek, have a Normal command in the program, or if you're reading Greek, just type NORMAL in the Immediate mode, and your listing will return to sanity. Note: The computer still understands the listing, and if you try to list a program line that you *know* is in the program, it appears on the screen.

Edward Jones
Millville, NJ

```
qp''  REM''THIS 'PROGRAM'LISTING'ISNgT'
      IN'GREEK
rp''  FLASH'
sp''  PRINT'bRUN'THIS'PROGRAM'AND'P
      RESS'CONTROLmRESETlAND'I'WILL'
      BE'IN'GREEKb

10    REM  THIS PROGRAM LISTING ISN'T
      IN GREEK
20    FLASH
30    PRINT "RUN THIS PROGRAM AND P
      RESS CONTROL-RESET, AND I WILL
      BE IN GREEK"
```

ENHANCED IIe?

You'll often see references to "enhanced" IIe's or the "new IIe ROM." If you're not sure which model you have, the boot-up message at the top of the screen helps date your Apple. The pre-IIe models reported "APPLE][" — "Apple][" means an older model IIe; "Apple II" means newer. When the Apple IIc boots up, it says, "Apple //c," but the following program shows that the old "Apple II" message is still hidden in ROM (but why?).

```
10 REM APPLE //c ONLY
20 ST=64265: EN=ST+7: GOSUB 50
30 ST=64771: EN=ST+8: GOSUB 50: END
50 FOR I=ST TO EN: PRINT CHR$(PEEK(I));
60 NEXT: PRINT: RETURN
```

Hmmm. Wonder if anyone at Apple ever considered making the Apple II Plus boot saying "Apple II Plus" and the IIe boot up saying "Apple IIe"—nah, too simple!

Adapted from Bert Kersey and Bill Sanders' *The Big Tip Book for the Apple II Series* (Bantam Books, 1986)

MOO CALL

Did you know that under DOS 3.3, typing CALL 985 will make your Apple moo like a cow? Sometimes once, sometimes twice, sometimes not at all.

Adapted from *The Big Tip Book for the Apple II Series*



IRREMOVABLE NAME

Here's a way to permanently stick your name onto your programs. First, type any line number along with your name in a REM statement (for example, 10 REM A+ Magazine). Then type:

POKE 2051,255:POKE2052,255.

Doing so makes the line number so large that it's hard to change. Now continue entering your program. You cannot load a program and then use this technique. To use it with a program you have already written, you must put your program into a text file, use the technique above, and then EXEC in your text-file program.

Troy Beckstrom
Bothell, WA

Please send your Apple II tips to A+, 11 Davis Drive, Belmont, CA 94002; ATTN: Tips and Techniques. We will pay $25 for each tip we publish, so be sure to include your name, address, and social security number.

P I P E

REST 'N ROLL FOOTRESTS

R and R Concepts has introduced three new models—Footloose, Smart, and Digitizer—in its Rest 'n Roll line of ergonomically designed, solid oak footrests. The Footloose model features a 20° tilt-adjustable platform with an inset swivel that mobilizes the feet to relieve static loading on the feet and legs. Smart features a tiltable platform, and Digitizer provides a foot massager. *(List Price: Footloose, $95; Smart, $85; Digitizer, $75)*

R and R Concepts
241 Conejo Road
Santa Barbara, CA 93103-1639
(800) 443-6020
(805) 966-0101

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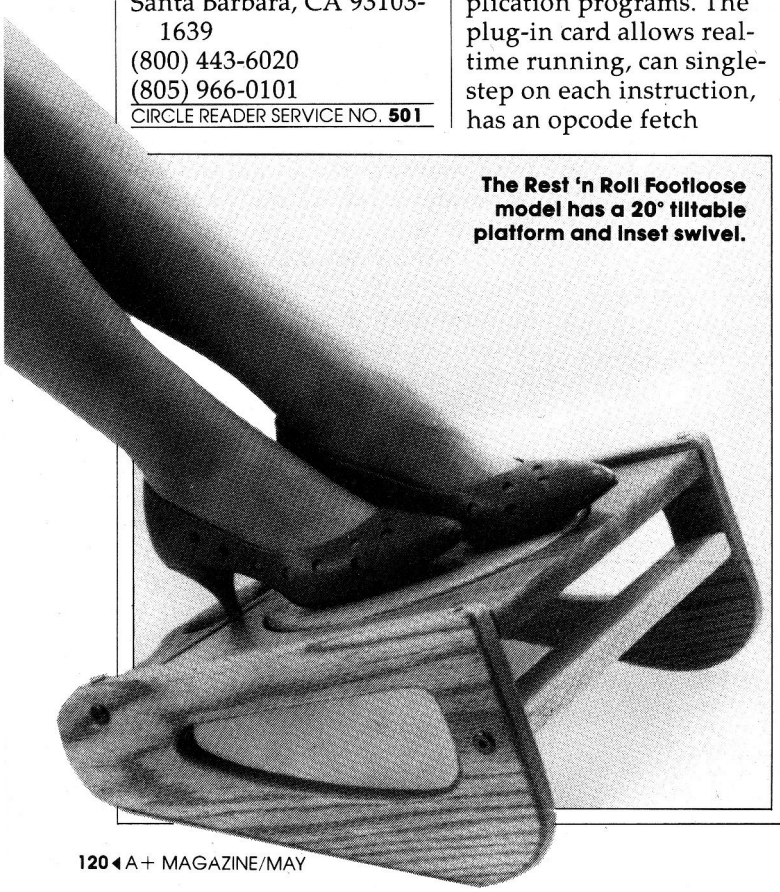
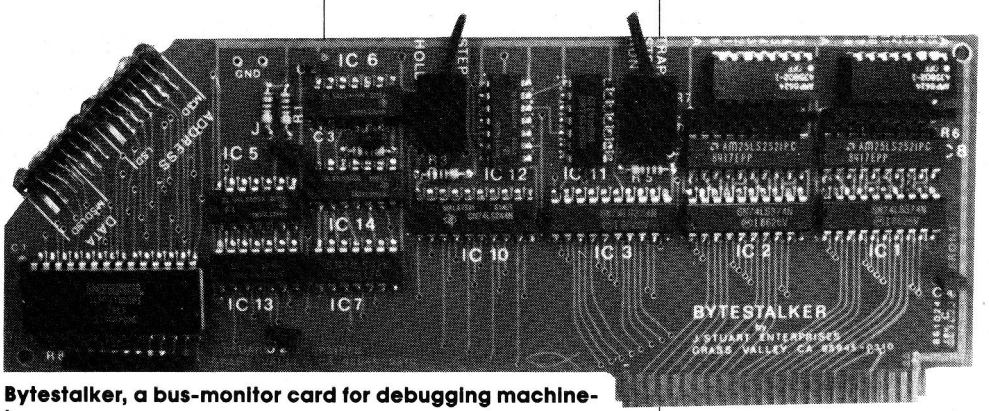


The Rest 'n Roll Footloose model has a 20° tiltable platform and inset swivel.



Bytestalker, a bus-monitor card for debugging machine-language programs

BYTESTALKER

Suitable for both professionals and novices, Bytestalker is an address/data-bus monitoring card that lets programmers debug and verify proper operation of machine-language application programs. The plug-in card allows real-time running, can single-step on each instruction, has an opcode fetch mode, and can trap on specific addresses. As it is hardware-based, the product is useful when extra memory space for debug programs is unavailable or when real-time loop execution is necessary. The system can diagnose interrupt-driven programs, and data and address displays are mounted on the edge of the board for easy viewing. *(List Price: $88.50)*

Requires: Apple II Plus or IIe

J. Stuart Enterprises
P.O. Box 310
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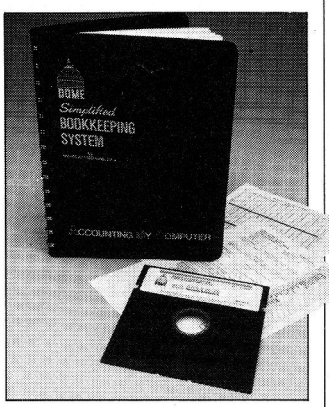
DOME ACCOUNTING BY COMPUTER

Designed for small-business use, Dome Accounting by Computer is based on the manual bookkeeping system that is distributed by Dome Publishing Company.

Like the manual system, the program is designed to contain a full year's worth of tax-related data. The software includes a pop-up calculator, perpetual calendar, and notepad as memory-resident desk accessories. The program also keeps a running cash balance. Users enter information on three simple screens—Expenses, Income, and Payroll—and can print a variety of reports. *(List Price: $39.95)*



Dome Accounting is designed to contain a full year's tax-related information.

Requires: Apple IIe or IIc, 64K RAM, one disk drive

Great American Software
P.O. Box 910
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LINE

WELTEC MODEMS

Weltec digital has introduced two low-cost, external modems. The modems are Bell 212 and 103 compatible, operate at 300/1200 bps, are asynchronous, and can operate in full- or half-duplex modes.

Model 1201 features tone and pulse dialing, auto-answer, call-progress monitoring, analog and digital loop-back test modes, the Hayes AT command set, automatic speed detection, and FCC class B computing-device compliance. Telephone connection is through an RJ11 jack, and computer connection is via a DB25 jack.

Model 1202 has all the features of Model 1201 plus indicator lights for power on, high speed, modem ready, terminal ready, off hook, send data, and receive data.
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Weltec digital, Inc.
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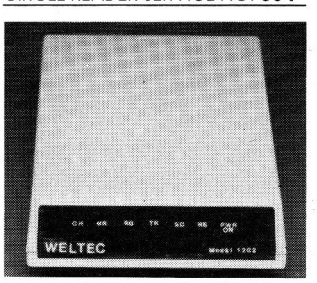

Weltec digital's Model 1202 modem



BuilderComp is a cost-estimating software package for builders.

BUILDERCOMP

A menu-driven cost-estimating software package for small- to medium-size building contractors, BuilderComp helps builders produce preliminary worksheets, bid proposals, estimate breakdowns, and budget analyses. Users can work with single-line items or with assemblies of several line items at once. In addition to estimating and budget tracking, the software has an on-line calculator and a notepad for storing special take-off quantities. It also offers two calculation modes —one for handling complex volume and area calculations and one offering 26 additional functions for special calculations. *(List Price: $895; information kit, free)*
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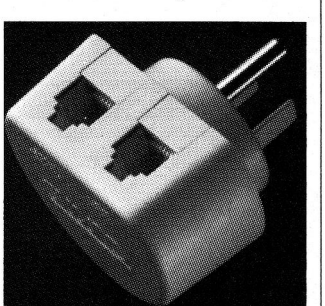

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TeachVision, a machine-vision system for robotics

Requires: Apple II Plus or IIe

Microbot, Inc.
453-H Ravendale Drive
Mountain View, CA
94043
(415) 968-8911
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SOFTWARE

FAMILY ROOTS

Version 3 of Family Roots is a versatile genealogical-research program. The program comes on one 3.5-inch or four 5¼-inch disks for ProDOS systems and on three disks for DOS 3.3 systems. The new version comes with improved documentation and can handle larger surname projects and family histories than can previous versions. Users can add nine fields to those supplied and can add text either with their own word processor or with Words, the program's built-in text editor. The program can search for and sort information in the database and automatically duplicates information in applicable files. Users can define their own header forms for reports, trace a

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Requires: Apple II Plus, IIe, or IIc; 48K RAM; DOS 3.3; VisiCalc
J.V. Technologies, Inc.
P.O. Box 563
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The program gives feedback at the end of each section and can retain records for teachers.

Disk 2, Find That Tune, consists of one aural/visual exercise with two levels of difficulty. The program displays three short excerpts from various works of classical, popular, and folk music on the screen and then plays an excerpt that may match one of the examples. Users must then identify the music played by matching it with an on-screen example. Again, the program stores student records. *(List Price: each disk, $39.95; set, $79.95).*
Requires: Apple II Plus, IIe, or IIc
Electronic Courseware Systems (ECS), Inc.
1210 Lancaster Drive
Champaign, IL 61821
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Requires: Apple IIe, IIc, or IIGS; 128K RAM; ProDOS or DOS 3.3; joystick or mouse

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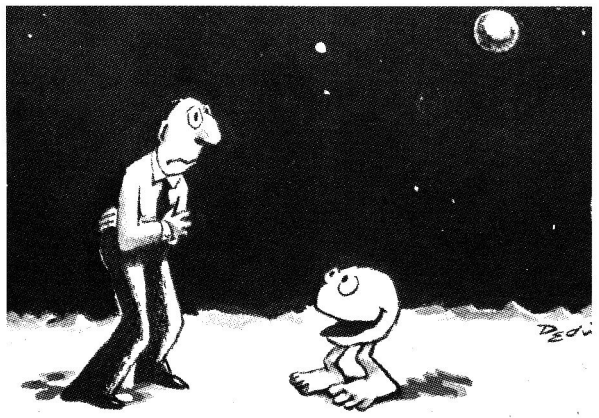

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STAR TREK: THE PROMETHEAN PROPHECY

Simon & Schuster has released The Promethean Prophecy, its second interactive-fiction fantasy game based on "Star Trek." The new game challenges players to unravel the mystery of a complex culture and discover an adequate food source before the crew of the *Enterprise* starves. The player assumes the role of Captain Kirk and has access to all the starship's resources and the support of the crew. The game features a parser that understands nearly 1000 words and can handle multiple sentences and objects. *(List Price: $39.95)*

Requires: Apple II Plus, IIe, or IIc; 64K RAM; one disk drive

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(212) 333-5800

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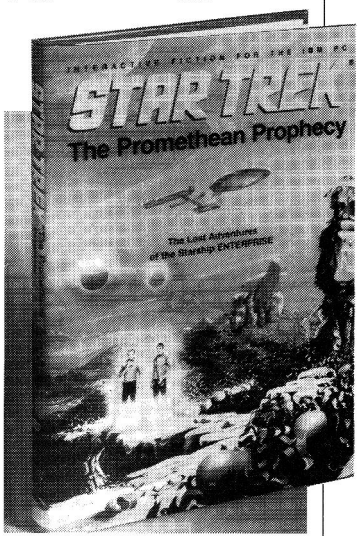
An easy-to-use, menu-driven program, the DGI Word Search Puzzle allows you to create custom word-search puzzles in any size from 15 × 15 to 20 × 40 characters. The program creates the puzzle from using 1 to 40 words that you enter. It also offers you the option of not printing an answer key and lets you change the puzzle's difficulty level by dictating in which combination of six directions words can appear. The program comes with the DGI Number Search Puzzle. *(List Price: $25)*



Star Trek: The Promethean Prophecy from Simon & Schuster

Requires: Apple II Plus, IIe, or IIc; 48K RAM; printer

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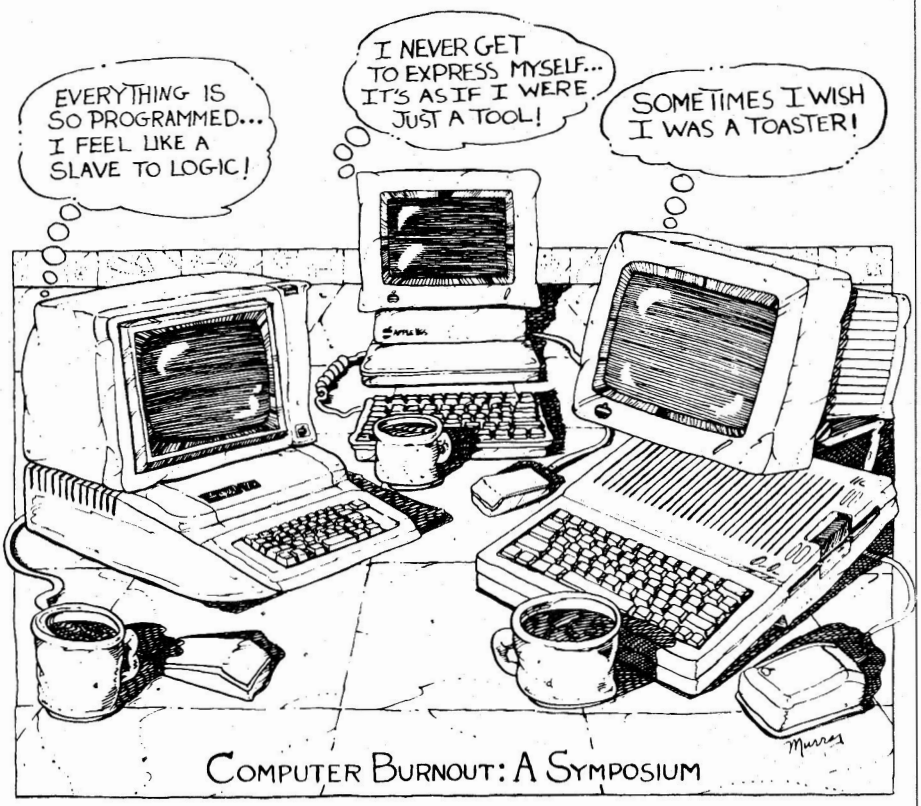

COMMUNICATING WITH THE HEARING-IMPAIRED

Q. *Is there any software or peripheral that will enable me to use an Apple II to communicate with a hearing-impaired person who owns a TDD (telecommunication device for the deaf)?*

Richard D. Lanser, Jr.
Morgantown, PA

A. The only Apple II modem I'm aware of that can accommodate the 45.5 TDD transmission rate and Baudot character encoding is the Novation Apple-Cat II. To operate the modem properly, you'll need Novation's Deaf-Ware II software program, which is an extra-cost option. You can contact Novation at 18664 Oxnard Street, Tarzana, CA 91356; (213) 996-5060.

DISK FORMATTING WITHIN ProDOS PROGRAMS

Q. *Is there any way to format a disk from inside a ProDOS-based program? I don't want to have to run a separate program such as Filer or System Utilities.*

Marc Slara
Steubenville, Ontario

A. You cannot easily format 5¼-inch disks from within a ProDOS program because the disk-controller ROM does not include a formatting subroutine. What you must do is either write your own subroutine (very difficult) or license one from Apple for $50 per year (easy). Formatting other types of disks, such as 800K disks, is easier because most use Apple's protocol-convertor specification, and one of the protocol-convertor commands is a format command. After formatting, however, you still have to write the ProDOS boot code to blocks 0 and 1 and then create an empty directory and track bit map in blocks 2 through 6. The boot code is on the ProDOS system disk (or any disk formatted with Filer). For the structure of a ProDOS directory and the track bit map, see my book *Apple ProDOS: Advanced Features for Programmers* (1985, Prentice Hall Press).

COLOR WORD PROCESSING

Q. *I'm looking for a word-processing program that takes advantage of the color-printing capability of my ImageWriter II. What do you suggest?*

Lee Ginsburgh
West Point, VA

A. The best word-processing program for printing text in color is MouseWrite from Roger Wagner Publishing (10761 Woodside Avenue, Suite E, Santee, CA 92071; [619] 562-3670). To assign a color to a block of text, you just highlight the block by dragging the mouse across it and then select the color from the Color menu. The possible colors are red, blue, yellow, orange, green, and purple.

MouseWrite also works with several other color printers: Apple Scribe, Epson JX80, Okimate 20, C. Itoh 8510 SCP, and the IDS Prism.

PROGRAM-SELECTOR CRASHES

Q. *I use the program-selector program you wrote for last August's A+ (page 26), and I like it very much. When I try to use it with the Apple II System Utilities, however, it crashes and says NO BUFFERS AVAILABLE. Why?*

Steve Salem
Bayside, NY

A. You're getting this error because there is not enough room in memory to load System Utilities when Applesoft is active. Applesoft can run only system programs that are less than about 30K in size. The solution is to leave Applesoft with the BYE command and then enter the prefix and pathname of the program. Alternatively, you can move up to a professional program selector such as Pinpoint Publishing's RunRun; it can deal with system programs of any size because it's written in assembly language. ✚

Please send your questions and problems to Rescue Squad, A+, 11 Davis Drive, Belmont, CA 94002.

ILLUSTRATION BY TOM MURRAY

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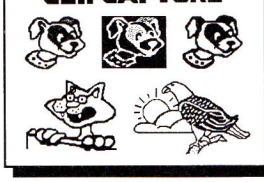

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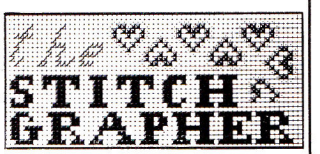

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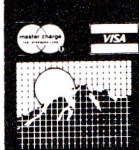

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109	Roger Coats	38
165	Sensible Software, Inc.	28
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280	SMT, Inc.	18
119	SnAPP Systems	80
265	Software Simplified	115
*	Spectral Graphics Software	12
207	StatSoft	94
188	Street Electronics Corp.	62
110	SubLOGIC Corp.	4
103	Sun Systems Remarketing	114
144	Third Wave Technology, Inc.	72
219	UPTIME	17
102	Versacad	82
115	Video Technology Computers, Inc.	1
159	Weekly Reader Family Software	106
123	Wenger Corp.	74
118	WordPerfect Corp.	14
120	WordPerfect Corp.	39
121	Zephyr Services	66
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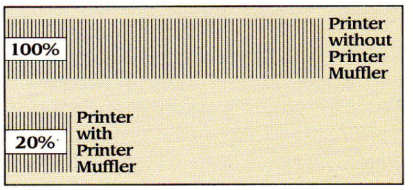

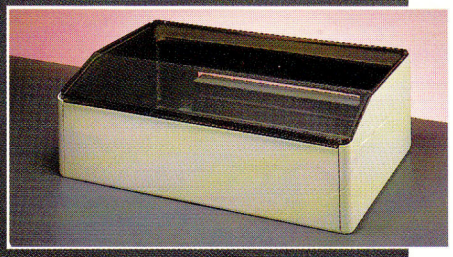

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The Printer Muffler 80, above, fits the standard ImageWriter and ImageWriter II, and the Printer Muffler 132, at left, fits wide-carriage printers.

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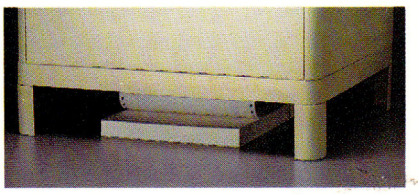

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