

Buyer's Guide to
Tax Software

inCider

The Apple II Journal

VCR/Apple Connection: *Hottest New Application*

How to Buy and Use
Tax Software

Build this
Joystick Adapter
for Under \$5

Our Readers Pick
their All-Time
Favorite Games

**Free
Programs Inside:**

- Match Point
- Paint Pot
- Lo-Res to Hi-Res
- Koala Pad Utility

January 1985, USA \$2.95
A CWC/I Publication





Finally, a Computer Keyboard Kids Can Use

A computer can help your child learn, but the keyboard often gets in the way. It's a jumble of keys that's confusing and hard for little fingers to operate. And it's not much fun.

Introducing Muppet Learning Keys™ from Koala Technologies™

It's the first computer keyboard made especially for young children. Unlike regular computer keyboards, all the letters and numbers are in order. So a child can find A-B-C and 1-2-3 without hunting all over the keyboard. And with Muppet Learning Keys software, learning letters and numbers becomes fun.

From the Experts

Muppet Learning Keys was created by education specialists to make learning exciting for your child. It's the first computer keyboard with Kermit, Miss Piggy and the whole Muppet gang right on it, ready to introduce your children to the magic of letters, numbers and colors.



© Henson Associates, Inc., 1984

Kid Stuff

Muppet Learning Keys has things that every child knows and loves:

- A paint box with eight touchable colors
- A blackboard with the ABC's in order
- A ruler with the numbers where they're supposed to be
- And keys the right size for small fingers

Press any key and something always happens. Press K and Kermit flies his

kites. Press 6 and six kites appear. Touch a button on the paint box and leave a colorful impression.

Muppet Learning Keys—for a child's hands, a child's mind and a child's heart. Give your child Muppet Learning Keys and make computer learning child's play.

Muppet Learning Keys. The Hands-on Keyboard for Kids.



For the Apple® IIe and IIc, Atari® and Commodore 64™ computers. In-Box software by Sunburst Communications. Muppet Learning Keys works with software that is designed or adapted for it.

Apple and Atari are registered trademarks of Apple Computers, Inc., and Atari, respectively. Commodore 64 is a trademark of Commodore Business Machines, Inc. Muppet Learning Keys, Muppet and character names are trademarks of Henson Associates, Inc.

© Copyright Koala Technologies, 1984. The symbol is a trademark of Sunburst Communications.

Circle 541 on Reader Service card.

 **Koala**
Technologies Corporation

REACH NEW HORIZONS with CH Products

MACH II and MACH III JOYSTICKS

The second generation MACH II and MACH III Joysticks incorporate a **new slide-switch spring disconnect** feature that **requires no stick deflection** and **new rotary trims** which are **four times more precise**.

Additional features include: "spring centering" or positive true-positioning" modes of operation, electrical trims for each axis, two fire buttons on the deck of the control and a stainless steel ball as the main pivot for added precision and durability. Our MACH III Joystick has an added fire button on the stick handle.

These highly accurate and reliable 360 degree microcomputer cursor controls used for games, business and graphics applications provide more features, greater durability, and longer life cycles. Plug in compatible with Apple II, IIE, IIC, IBM PC, PCjr and TRS-80 Color Computers.

MACH II \$44.95/MACH III \$54.95



MICRO-TRAK TRACKBALL

The MICRO-TRAK TRACKBALL is the ultimate 360 degree cursor control that is engineered with the latest state-of-the-art technology. The MICRO-TRAK is controlled by two custom designed microprocessors and is 100% digital for higher reliability. The unit plugs into the standard game I/O and is 100% software compatible. It has four switch selectable modes of operation and requires no additional hardware or software. Both the "Positioning Mode" and "Velocity Mode" have a choice of two sensitivity levels. In addition the "Velocity Mode" has an "Auto-Center" feature that returns the cursor to the selected center position to emulate a self-centering joystick. There is also a "Rapid Fire" feature and dual switches for either left or right handed operation. Available November 1984 for Apple II, IIE and IIC personal computers. \$99.95

Manufactured in U.S.A.

Apple II, IIE, IIC, IBM PC, PCjr and TRS-80 are registered trademarks of Apple Computer Inc., International Business Machines and Tandy Corp., respectively.

Effective 1/1/85-\$139.95



FORMERLY HAYES PRODUCTS

1558 Osage Street
San Marcos, California 92069
(619) 744-8546

OUR ARCADE GAMES WE BROUGHT



Bally Midway's Spy Hunter puts you in the driver's seat of the hottest machine on four wheels. You're after enemy spies. The situation is life and death. You'll need every weapon you've got - machine guns, and guided missiles, oil slicks and smoke screens. But the enemy is everywhere. On the road, in the water, even in the air. So you'll have to be more than fast to stay alive in Spy Hunter. You'll need brains and guts, too.

Do you have what it takes?



Bally Midway's Tapper would like to welcome you to the fastest game in the universe.

You're serving up drinks in some of the craziest places you've ever seen. And the service better be good, or else. You'll work your way through the wild Western Saloon to the Sports Bar. From there to the slam dancing Punk Bar and on into the Space Bar full of customers who are, literally, out of this world!

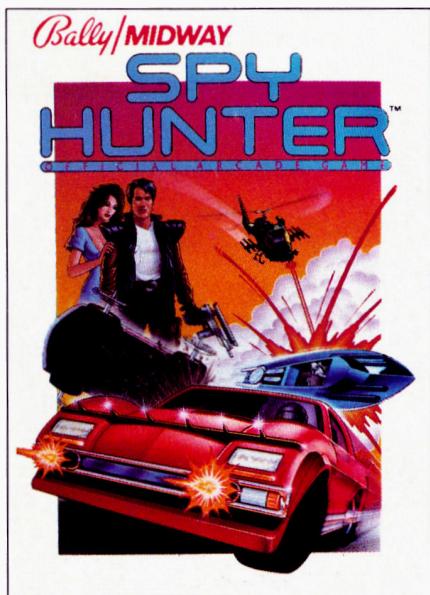
Are you fast enough to play Tapper? If you have to ask, you probably already know the answer.



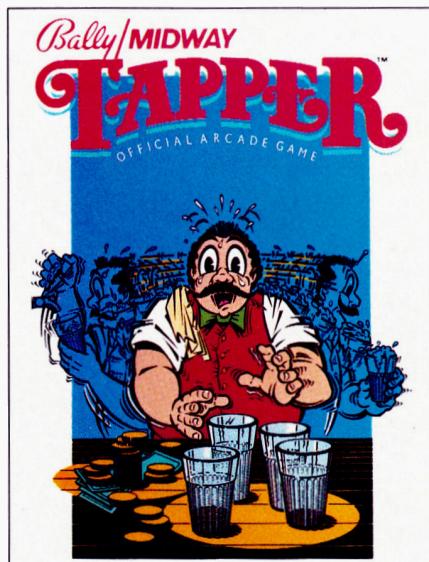
Bally Midway's Up 'N Down by Sega. In this game, a crash is no accident.

In fact, it's the whole object of the game. You'll race your baja bug over some of the worst roads south of any border. Leap dead ends, gaping canyons and oncoming traffic in a single bound. And if anyone gets in your way, crush 'em.

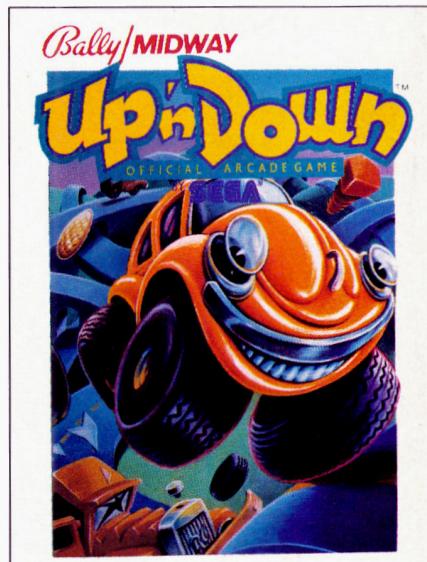
Crashing, bashing Up 'N Down. It's one smash hit that really is a smash.



The #1 Arcade Game of 1984.



Nominated as Most Innovative Coin-Op Game of 1984 by *Electronic Games* magazine.



#1 Arcade Hit, *Play Meter* Conversions Poll, 8/1/84.

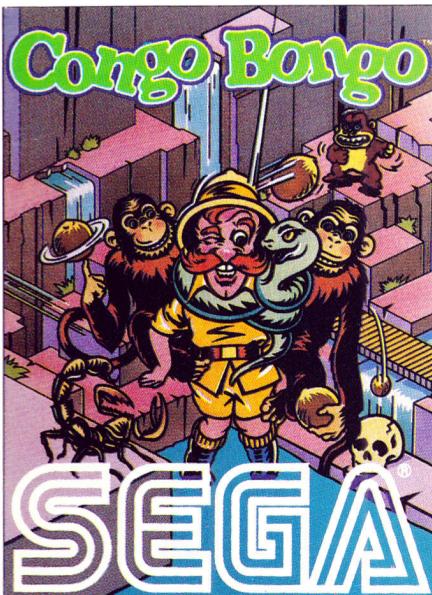
WE'RE SUCH BIG HITS, THEM HOME.



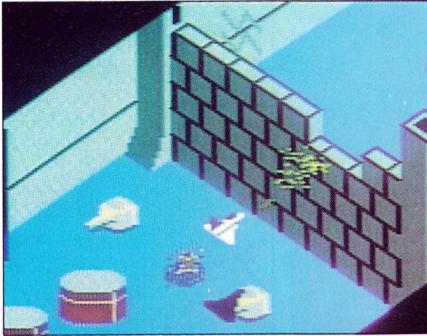
Sega's Congo Bongo rocked the home game world when it shot up to Number 3 on the Billboard chart this spring.

And now it's available for even more home systems. So check the chart and get ready for jungle action. You'll pursue the mighty ape Congo up Monkey Mountain and across the Mighty River. Do battle with dangerous jungle creatures. Ride hippos, dodge charging rhinos and try to avoid becoming a snack for a man-eating fish.

Congo Bongo. It's fast and it's fun. But be careful. It's a jungle in there.



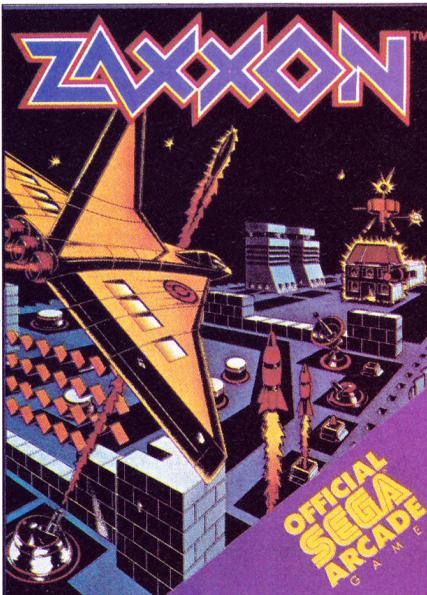
Arcade and Home Smash. Hit #3 on *Billboard* magazine's Top Video Games survey.



Sega's Zaxxon. If you haven't played Zaxxon, you must have been living on another planet for the past few years.

And now the ultimate space combat game is available for even more home systems. You'll pilot a space fighter through force fields and enemy fire on your way to do battle with the mighty Zaxxon robot. Countless others have gone before you in this Hall of Fame game. But this time your life is in your own hands.

Zaxxon killed them in the arcades. But compared to what it will do to you at home, that was child's play.



One of only ten games ever to make *Electronic Games*' Hall of Fame.

Circle 105 on Reader Service card.

	SPY HUNTER	TAPPER	UP 'N DOWN	CONGO BONGO	ZAXXON
Atari 2600 cartridge	✓ NEW	✓ NEW	✓ NEW	✓	✓
Atari 5200 cartridge				✓	✓ NEW
Atari Computers* cartridge	✓ NEW	✓ NEW	✓ NEW	✓	✓ NEW
Atari Computers† diskette	✓ NEW	✓ NEW	✓ NEW		✓
Colecovision & ADAM cartridge	✓ NEW	✓ NEW	✓ NEW	✓	✓
Commodore 64 cartridge	✓ NEW	✓ NEW	✓ NEW	✓	✓ NEW
Commodore 64 diskette	✓ NEW	✓ NEW	✓ NEW	✓	✓
Apple II, IIe, IIc diskette	✓ NEW	✓ NEW	✓ NEW	✓	✓
IBM PC diskette	✓ NEW	** NEW	✓ NEW	** NEW	** NEW

✓ Published by Sega Enterprises, Inc.

✓ Published by Datasoft, Inc. under license from Sega Enterprises, Inc.

✓ Published by Coleco Industries, Inc. under license from Sega Enterprises, Inc.

✓ Published by Synapse Software Corporation under license from Sega Enterprises, Inc.

*Atari 400, 800, 600XL, 800XL and 1200XL.
(Congo Bongo cartridge: 400, 800 and 800XL.)

†Atari 800, 600XL, 800XL and 1200XL.

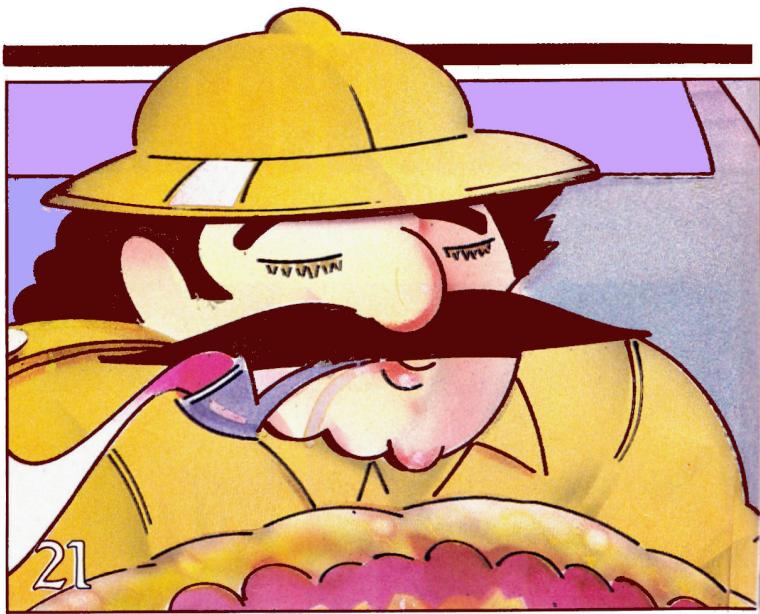
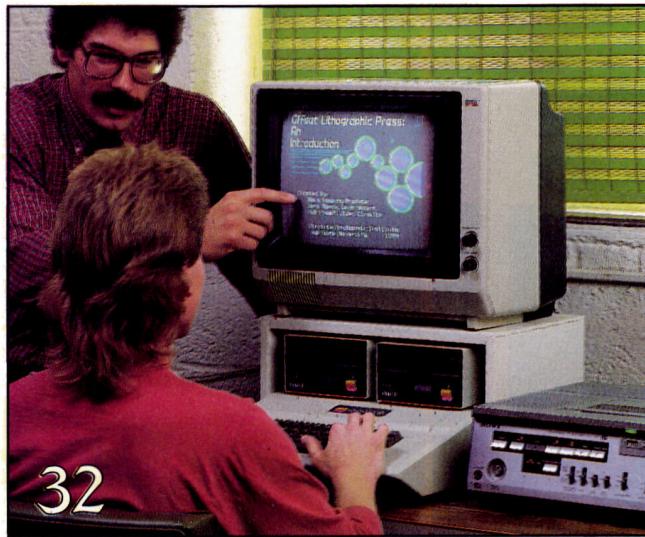
**Also available for IBM PCjr.

All new games are scheduled to be in your stores for Christmas. Check your local dealer.

©1984 Sega Enterprises, Inc.

Number of game levels varies on cartridges for Atari and Commodore systems. Atari, 2600, 5200, 400, 800, 600XL, 800XL, and 1200XL are trademarks of Atari Corporation. Commodore 64 is a trademark of Commodore Electronics, Inc. ColecoVision and ADAM are trademarks of Coleco Industries, Inc. Apple, II, IIe, and IIc are trademarks of Apple Computer, Inc. IBM, PC and PCjr are trademarks of International Business Machines Corp. UP 'N DOWN is a trademark of Sega Enterprises, Ltd., Japan. Videogame copyright © 1983 Sega Enterprises, Ltd. BALLY MIDWAY is a trademark of Bally Midway Mfg. Co. Package and program copyright © 1984 Sega Enterprises, Inc. TAPPER and SPY HUNTER are trademarks of Bally Midway Mfg. Co. Videogame copyright © 1983 Bally Midway Mfg. Co. All rights reserved. ZAXXON is a trademark of Sega Enterprises, Inc. Copyright © 1984, Sega Enterprises, Inc. CONGO BONGO is a trademark of Sega Enterprises, Inc. Copyright © 1983, Sega Enterprises, Inc.

inCider



ARTICLES

VCR and CRT: The Latest Media Marriage

by Mark Sanders

Interactive video—the union of two technologies—emerges as the latest in training methods.

32

Taxing Questions

by Gregory R. Glau

Move over, H&R Block. Computerized tax returns are now possible. Here's how.

41

Graphic Conversions: Lo-Res to Hi-Res

by Mark Steinborn

Free Listing!

Let lo-res graphics see the light of print.

49

A Handle on Joysticks

by Jeff Hurlburt

All joysticks are not alike. Check out how eight beckon the game jockey or the graphics Picasso.

57

A Crafty Joystick Adapter

by Tom Benford

Your //c and Kraft joystick can work together—for under \$5.

66

Tennis, Anyone?

by Barry Wilmeth

Free Listing!

No need to reserve court time with Match Point.

69

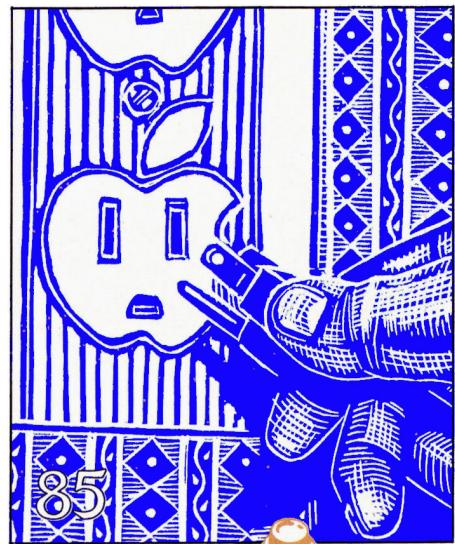
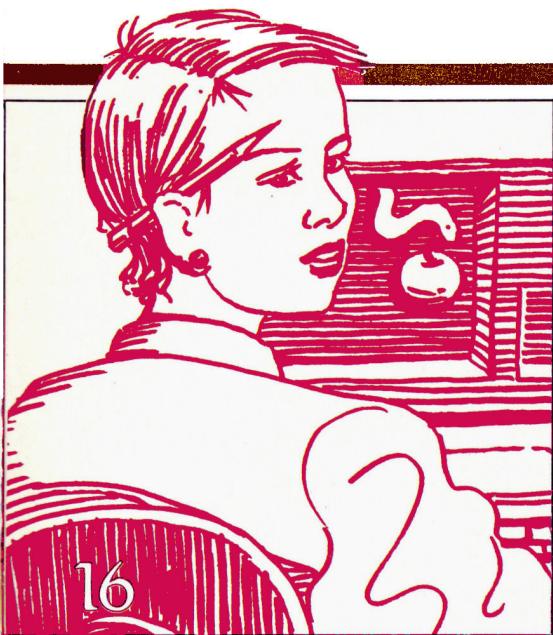
Basic Koala'fication

by Phil Makurat

Free Listing!

Picture-perfect graphics for BASIC programs.

71



DEPARTMENTS

Fermentations

What's Up Apple's Sleeve?

Letters

The Cider Press

Women and Computers; Household Surveillance; Comic Disks

Fudge It! *Free Listing!*

Mousing Around with CAD.PAINT

The Game Reserve

The Envelope, Please

Child's Play *Free Listing!*

Paint Pot

inCider's inSidious inSolubles

Caught Off Base; Disappearing DOS

The Glau Report

April 15th Without Tears

Ask inCider

Answers to your software and programming questions

O'Brien's Journal

Apple Ecology: Part I

The Applesoft Adviser

Basic BASIC Sorts

Hints 'n' Techniques

Applesoft Shortcuts

Correction

Software Reviews

The Graphics Department; Sweet Shoppe; OMNIS 2; How to Operate the Apple //e; Xyphus; FlashCalc; Story Maker; Pascal Utility Pack

6 Hardware Reviews 121

Voice Box III; Epson JX-80; McMill 68000

10 New Software 129

New Products 135

1984 inCider 140

19 Article Index

21 inCider (ISSN #0740-0101) is published monthly by CW Communications/Peterborough, Inc., 80 Pine Street, Peterborough, NH 03458. Phone: (603) 924-9471. Application to mail at second class postage rates is pending at Peterborough, NH, and additional mailing offices. Subscription rates in U.S. are \$24.97 for one year, \$38.00 for two years and \$53.00 for three years. In Canada and Mexico, \$27.97—one year only, U.S. funds drawn on a U.S. bank. Nationally distributed by International Circulation Distributors. Foreign subscriptions (surface mail), \$44.97—one year only, U.S. funds drawn on a U.S. bank. Foreign subscriptions (air mail), please inquire. All U.S. and Canadian subscription correspondence should be addressed to inCider, Subscription Department, P.O. Box 911, Farmingdale, NY 11737. Please include your address label with any correspondence.

79 Postmaster: Send address changes to inCider, Subscription Services, P.O. Box 911, Farmingdale, NY 11737. Entire contents copyright 1984 by CW Communications/Peterborough, Inc.

82 Correspondence should be addressed to inCider, Subscription Department, P.O. Box 911, Farmingdale, NY 11737. Please include your address label with any correspondence.

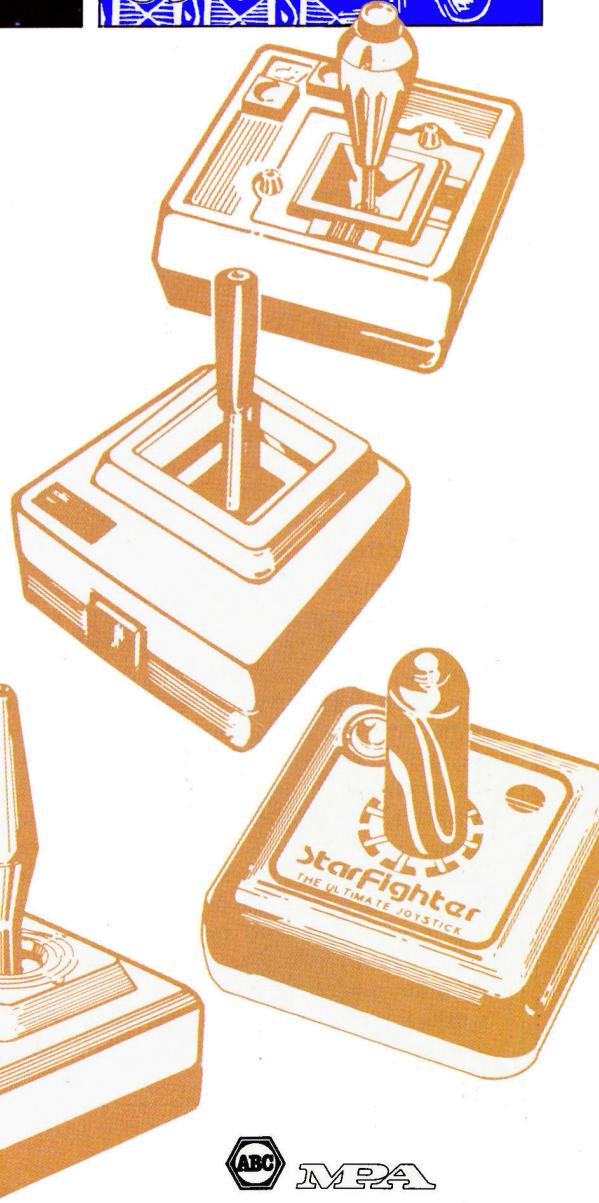
85 Postmaster: Send address changes to inCider, Subscription Services, P.O. Box 911, Farmingdale, NY 11737. Entire contents copyright 1984 by CW Communications/Peterborough, Inc.

88 Correspondence should be addressed to inCider, Subscription Department, P.O. Box 911, Farmingdale, NY 11737. Entire contents copyright 1984 by CW Communications/Peterborough, Inc.

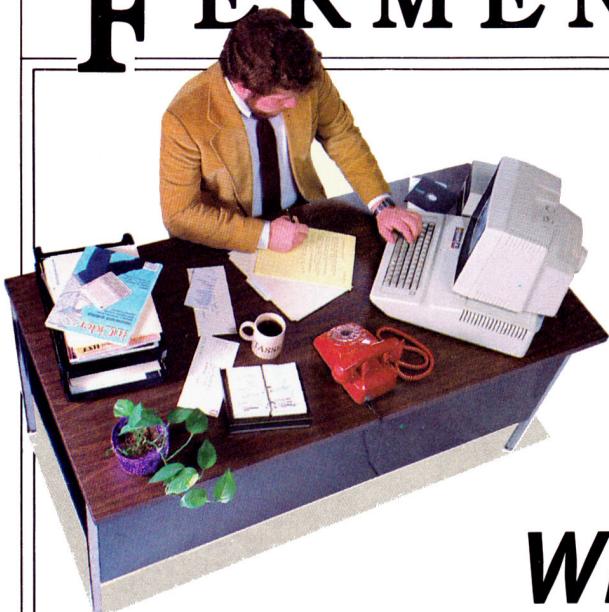
97

108

110



FERMENTATIONS



What's Up Apple's Sleeve?

It's a safe bet that Apple Computer will make one or more major moves this year, moves that will affect you directly. Of course, to a certain extent Apple can coast. Its reputation is solid; its products are excellent; its sales are strong. But market pressure will force it to take action, perhaps as early as March. Consider the following:

- Apple must innovate, either in technology or price. If not, it will retreat by default. A no-new-Apple 1985 would slow the momentum generated in 1983 by the //e and continued in 1984 by the Macintosh, the //c, and the Fat Mac. The fires would die down and the specter of an aging product line would rise from the coals.

Apple's probable response: Bundle attractive package deals that include software and peripherals. (Who could resist a //c or a //e with monitor, modem, printer, and Appleworks for, let's say, \$1500?) It could also release a brand new machine,

although such a move is unlikely, since it would siphon sales from existing products. More realistically, Apple will probably announce enhancements to the II line and the Macintosh. (Color for the Mac? A 16-bit //e?)

- Atari and Commodore will likely release Apple-compatible computers early in 1985. These rumored products (probably add-on operating systems) will be pegged well below current Apple II family sticker prices. If this happens, Apple will have no alternative but to reexamine its absence in the under-\$500 price category. Once middle Americans decide to buy micros—as hundreds of thousands will this year—they'll be very price-conscious. They'll also develop a sophistication about the practical aspects of the machines, which means they'll be turned on by the II's capabilities but perplexed by its price. At this point, an Atari or Commodore clone would be a very real alternative.

Even without this iffy scenario, at some point Apple will be forced into the mass market. To ease the transition, it must change its price structure and distribution network. To put it another way, eventually you'll be able to buy a //e or //c at Sears, Macy's, or K-Mart for \$500. True, this probably won't happen in 1985, but it's almost inevitable in 1986.

Apple's probable response: Wait it out, but if we lose too many opportunities, make the customer an offer he can't refuse.

Things can only get better for Apple II owners; the II is a top contender for industry standard and well on its way to becoming a true commodity. That's insurance against obsolescence and for better software at lower prices. It also means that when—not if—significant home market applications are developed, they'll be written for the Apple. And if you've dreamed about adding on a second system, it may be an affordable reality in the near future. ■

by Paul Quinn

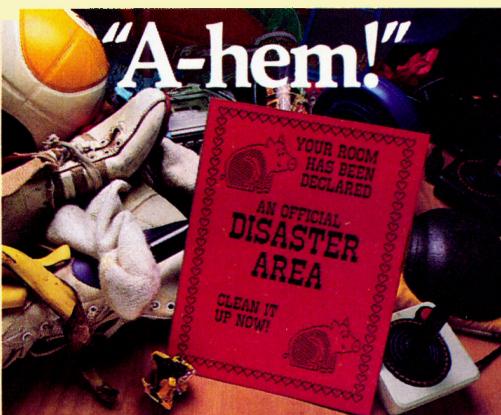
Express Yourself!

A few minutes and a few keystrokes. That's all it takes to turn your personal computer into a personal print shop.

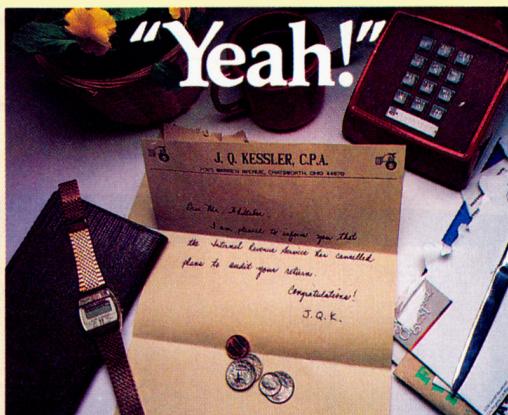
Everything you need is in the program: typefaces, border designs, background patterns, pictures, symbols and a starter kit of colored paper and matching envelopes. The Print Shop will also guide you along, step by step, even if you've never touched a computer before.

So think what you'd like to say, then put it in your own words with The Print Shop.

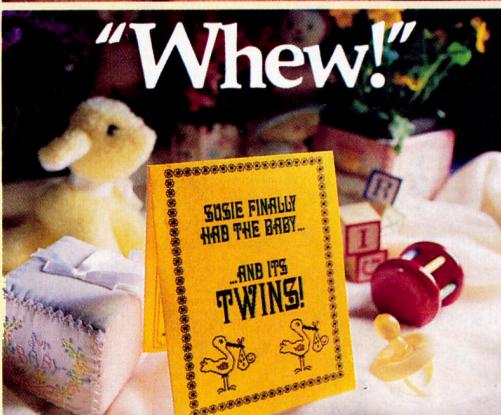
Make quite an impression with just five easy keystrokes.



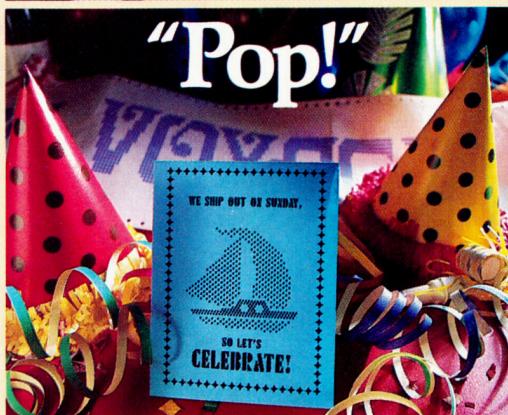
Everybody's creative with The Print Shop. You just can't help it!



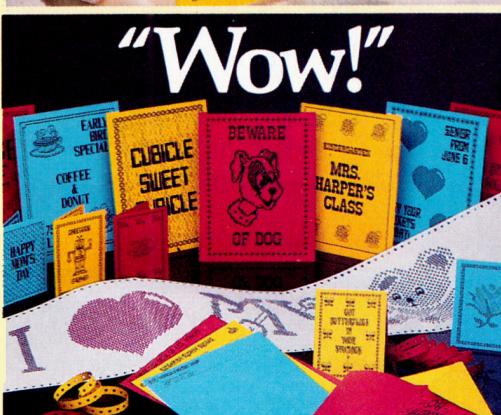
Your originality shines through, so good news becomes even better.



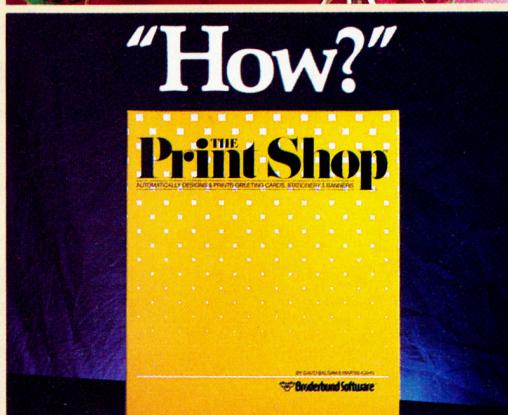
Dozens of pictures and symbols to suit every purpose and occasion.



Letterheads, logos, banners and signs. If you can imagine it, you can make it!

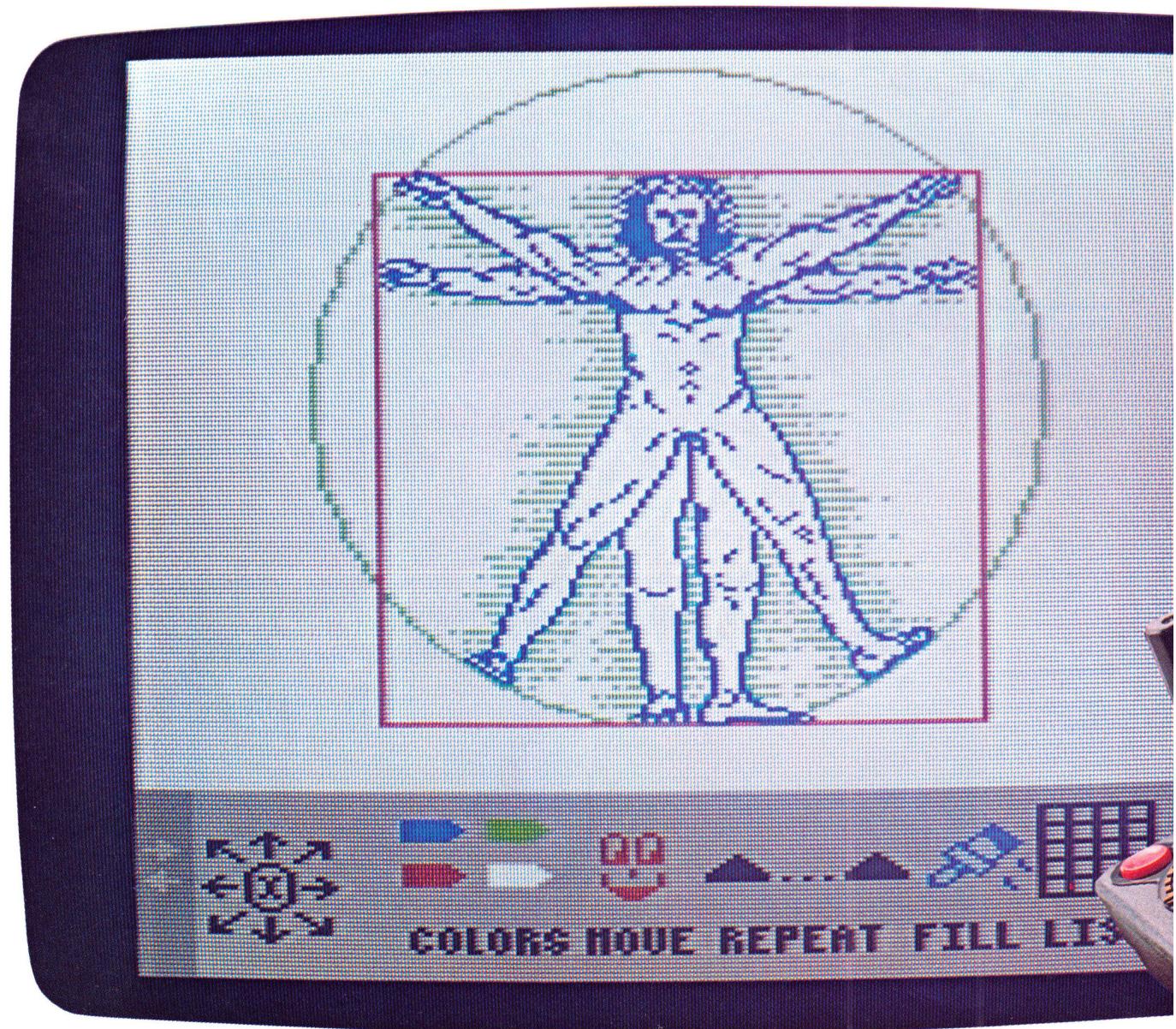


Keep your creativity flowing... put it in your own words with The Print Shop.



The Print Shop is available for the Apple, Commodore 64 and Atari home computers. Coming soon for the Macintosh and IBM PC. PCjr, Apple and Macintosh are trademarks of Apple Computer, Inc. Commodore 64 is a trademark of Commodore Electronics, Ltd. Atari is a trademark of Atari Corp. IBM-PC and PCjr are trademarks of International Business Machines, Inc. For more information about Brøderbund and our products, write to us at: 17 Paul Drive, San Rafael, California 94903 or call (415) 479-1170.

Computer program da Vinci, Shakespear, Al Capp would have loved



rams for kids that eare, Dickens and ve loved.

If they were starting out today, this is what they could start with. Pixelwerks.

THE OTHER WAY TO DRAW AND WRITE

Instead of a brush and canvas, a pen and paper, they'd create on a computer. Because Pixelwerks is the first medium that can keep up with their imaginations.

MR. PIXEL'S PROGRAMMING PAINT SET

With Mr. Pixel's Programming Paint Set, da Vinci (or any 8-year old) could do more than paint a picture. He could also enlarge it, repeat it, move it around, and change colors. Instantly.

And at the same time, he would be developing his programming skills. Painlessly.

SHOW DIRECTOR

On the other hand, Shakespeare would love to play around with Show Director.

He'd use it to create plots and think up one scene after another, and he'd get a big cast of characters, lots of backgrounds, props, and musical sound effects to act them out.

BANK STREET STORYBOOK

Dickens wouldn't be able to keep his hands off Bank Street StoryBook by George Brackett.

Not only could he write his own story, but he could also illustrate the scenes and characters he sees in his mind.

MR. PIXEL'S CARTOON KIT

Maybe Al Capp wouldn't be satisfied with cartoons that just sit on the page after he tried Mr. Pixel's Cartoon Kit. Because he could make his cartoons come to life by animating them. His characters could move around, and even react to each other.

Every kid has a touch of creative genius buried inside. The job of Pixelwerks is to bring it out, with more features, more options and more flexibility than other programs.

In short, we supply the tools. Kids supply the imagination.



Mandscape 

For more information, call 1-800-221-9884. In Illinois 1-800-942-7315.
Compatible with Apple, Commodore and IBM. Pixelwerks is published by Mandscape, Inc., 3444 Dundee Road, Northbrook, IL 60062.

inCider editorial offices
80 Pine Street
Peterborough, NH 03458
(603) 924-9471

PUBLISHER
David B. Schissler

EDITOR IN CHIEF
Paul C. Quinn

MANAGING EDITOR
Peg LePage

TECHNICAL EDITOR
Robert M. Ryan

SENIOR EDITOR
Susan Gubernat

REVIEW/NEW PRODUCTS EDITOR
Kerry J. Lanz

EDUCATION EDITOR
Joan Witham

NEWS EDITOR
Cynthia K. Carr

COPY EDITORS
Melody Bedell
Robin Florence

PROOFREADER
Peter Bjornsen

WEST COAST EDITOR
James Forbes
(415) 328-3470

ADVERTISING

SALES MANAGER/NORTHEAST
SALES REPRESENTATIVE
Paul Boule
(800) 441-4403
(603) 924-7138

SOUTHEAST AND CENTRAL SALES
REPRESENTATIVE
Barbara Alvarez
(800) 441-4403

NORTHWEST SALES
REPRESENTATIVE
Donna Pomponi
1060 Marsh Road
Menlo Park, CA 94025
(415) 328-3470

SOUTHWEST SALES
REPRESENTATIVE
Charles Durham
2082 South East Bristol Street
Santa Ana, CA 92707
(714) 756-1984

DESIGN

ART DIRECTOR
Holly Fuethe

PRODUCTION SUPERVISOR
Phyllis Pittet

PRODUCTION ASSISTANT
Cindy Bouche

AD/GRAFICS PRODUCTION
Fiona Davies

PRODUCTION

PRODUCTION MANAGER
Joyce Pillarella

MANUFACTURING CONSULTANT
Susan Gross

TYPESETTING MANAGER
Dennis Christensen

DARKROOM MANAGER
Nathaniel Haynes

FILM PREPARATION MANAGER
Robert M. Villeneuve

Submissions: We're always looking for first-class manuscripts at inCider. We'll consider publication of any material for the Apple. Guidelines for budding authors are available—just address an envelope to yourself and include it with your request. Mail manuscripts, queries, or requests for writers' guides to: inCider Editorial Offices, 80 Pine Street, Peterborough, NH 03458.

LETTERS

Too Close to COPY

I recently purchased AppleWorks for my //c and have found it to be an excellent program as described in *inCider* (July 1984, page 80). However, there is an irritating idiosyncrasy of which //c owners should be aware.

According to the instructions, I copied the AppleWorks Startup disk without trouble and attempted to copy the AppleWorks Program disk. After the majority of the program disk was copied, an I/O error appeared on the //c monitor. After multiple attempts and tactics with different blank disks, I moved the monitor and stand approximately 5 inches from the keyboard, and the program disk was copied with ease!

I can only speculate about the problem, but evidently the proximity of the //c monitor to the built-in disk drive was causing RF interference.

Ken Eades, M.D.
800 8th Avenue, Suite 106
Fort Worth, TX 76104

Thanks for passing along the advice, Ken. We haven't had any problem with AppleWorks, but it's pretty safe to say that printer interference was the culprit. Remember, you should keep the disk drives away from the monitor and keyboard to avoid problems.

—eds.

Ripping Mad

I understand that the wishes of certain advertisers need to be addressed to maintain accounts, but I'm not addressing this particular annoyance. Rather, I'm angry by the self-promotion tear-out cards that make your magazine difficult to use as a reference publication as well as hard to read.

Today, I was trying to find an article concerning a new product. I was unable to scan the articles quickly because of the reply cards

inserted within the magazine. I started ripping out the cards only to find that some of these could not be easily removed without damaging the pages. Most of these annoying cards were self-promotion for the magazine. This seems to be a waste of resources and needless duplication of effort, since I had already purchased the magazine and there were the handy, free information reader service/subscription cards on the last page which didn't interfere with my effort to find the article.

I don't think you should subject your readers to this unnecessary inconvenience just to promote your own publications more than four times in one issue. Most likely, I won't be renewing my subscription after wasting time in the office trying to locate an article because of this self-serving tripe.

Robert N. Clarkson
401 North Hoback Street
Helena, MT 59601

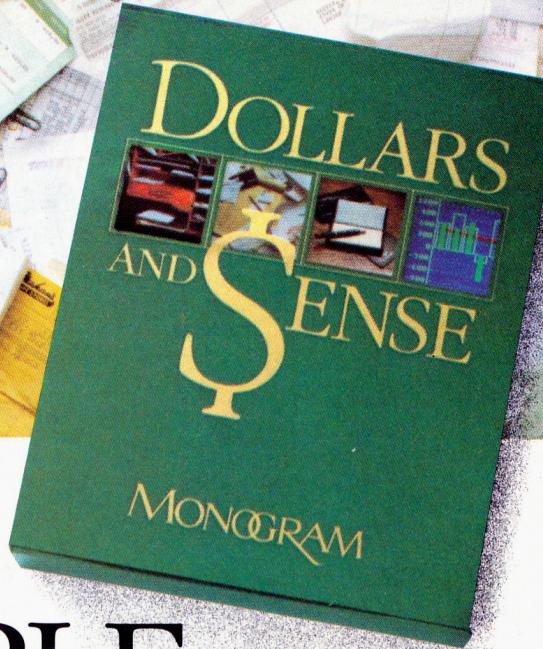
Sorry you feel that way, Robert. If it's any consolation, we don't care much for the way those cards are bound in the magazine, either. Even editors don't fully comprehend the psychology behind magazine development, but it's a documented fact that although readers find these cards annoying, they're the first ones to cry foul when they're missing. A little advice—try skimming the table of contents next time.

—eds.

The Pirate Rationale

William Wright's open letter to software pirates (September 1984, page 13) compelled me to write. Like many others, I copy software strictly for my own use. I wouldn't sell a copy of a copyrighted disk, but think little of copying a friend's or letting a friend copy one of mine.

Ninety-nine percent of the disks I copy I wouldn't have purchased in the first place. Usually, I copy "luxury" disks, such as games, that I



HOW TO UNSCRAMBLE YOUR NEST EGG.

It doesn't take a computer to tell you that money can't buy you happiness.

But there is a piece of best-selling personal computer software that can make you a lot happier about your money.

And you're looking at it.

Making sense of your dollars.

Dollars and Sense™ saves you money by organizing your money. By giving you the clearest picture you've ever had of your financial behavior.

It defines budgets along any lines you like. Monthly or annually, fixed or variable. On up to 120 accounts.

It can write checks, make transactions automatically, even remind you to pay your bills.

And as time goes by, it tells you precisely how you're doing. With a complete set of reports and full-color graphs* that come up on screen or print out on paper. At the touch of a key.

And all you have to do is spend a few effortless minutes each week



Macintosh™ version
in stores now.

telling your personal computer** what came in and what went out.

Many happy returns.

You can use Dollars and Sense around the house or around the office.

And around April 15 you'll be glad you did. Because a few simple keystrokes will provide you with all the information you need to settle up with Uncle Sam.

Since your tax liability tomorrow is affected by the decisions you make today, Monogram will soon be introducing a new program, called FORECAST.™

With Dollars and Sense and FORECAST, you'll be able to estimate your taxes for up to five years. Or look at this year and ask "what if?" up to five different ways.

To keep Uncle Sam from raining on your parade.

MONOGRAM

Circle 173 on Reader Service card.

8295 South La Cienega Blvd., Inglewood, CA 90301 (213) 215-0529

*Color monitor required. Graph printing may not be available on Apple® II series.

**Available for Apple IIe, IIc and Macintosh. Also available for IBM® PC, PC XT, PCjr and compatibles, the TI Professional and other popular personal computers.

VICE PRESIDENT/GENERAL MANAGER

Debra Wetherbee

VICE PRESIDENT/FINANCE

Roger Murphy

ASSISTANT GENERAL MANAGER

Matt Smith

ASSISTANT TO VP/FINANCE

Dominique Smith

MARKETING MANAGER

Pamela Esty

DIRECTOR OF CIRCULATION

William P. Howard

ASSISTANT CIRCULATION MANAGER

Frank S. Smith

DIRECT & NEWSSTAND SALES MANAGER

Raimo Wirein

(800) 343-0728

DIRECTOR OF CREDIT SALES, AND COLLECTION

William M. Boyer

DIRECTOR OF PUBLIC RELATIONS

James Leonard

FOUNDER

Wayne Green

InCider magazine is published monthly by CW Communications/Peterborough, Inc. Entire contents copyright 1984 CW Communications/Peterborough, Inc. No part of this publication may be reprinted, or reproduced by any means, without prior written permission from the publisher. All programs are published for personal use only. All rights reserved.

InCider is a member of the CW Communications/Inc. group, the world's largest publisher of computer-related information. The group publishes 53 computer publications in 24 major countries. Nine million people read one or more of the group's publications each month. Members of the group include: Argentina's Computerworld/Argentina; Asia's *The Asian Computerworld*; Australia's *Computerworld Australia*, *Australian Micro Computerworld*, *Australian PC World*, and *Directories*; Brazil's *DataNews* and *MicroMundo*; China's *China Computerworld*; Denmark's *Computerworld/Danmark* and *MicroVerden*; Finland's *Mikro*; France's *Le Monde Informatique*, *Golden* (Apple), and *OPC* (IBM); Germany's *Computerwoche*, *Microcomputerwelt*, *PC Welt*, *Software Markt*, *CW Edition/Seminar*, *Computer Business*, and *Commodore Magazine*; Italy's *Computerworld Italia*; Japan's *Computerworld Japan* and *Perso ComWorld*; Mexico's *Computerworld/Mexico* and *CompuMundo*; Netherlands' *CW Benelux* and *Micro/Info*; Norway's *Computerworld Norge* and *MikroData*; Saudi Arabia's *Saudi Computerworld*; Spain's *Computerworld/Espana* and *MicroSistemas*; Sweden's *ComputerSweden*, *MikroDatorn*, *Min Hemdator*, and *Svenska PC World*; the UK's *Computer Management* and *Computer Business Europe*; the U.S.' *Computerworld*, *HOT CoCo*, *InCider*, *InfoWorld*, *MacWorld*, *Micro Marketworld*, *PC World*, *RUN*, *73 Magazine*, and *80 Micro*.

Problems with Advertisers: Send a description of the problem and your current address to *InCider*, Route 101 and Elm Street, Peterborough, NH 03458, attn. Rita Rivard, Customer Service Manager. If urgent, call (800) 441-4403.

Problems with Subscriptions: Send a description of the problem and your current and/or most recent address to: *InCider*, Subscription Department, P.O. Box 911, Farmingdale, NY 11737.

Change of Address: Send an old label or a copy of your old address and new address to: *InCider*, P.O. Box 911, Farmingdale, NY 11737. Please give eight weeks' advance notice.

Microfilm: This publication is available in microform from University Microfilms International. United States address: 300 North Zeeb Road, Dept. P.R., Ann Arbor, MI 48106. Foreign address: 18 Bedford Row, Dept. P.R., London, WC1R4EJ, England.

Dealers: Contact Ginnie Boudreau, Bulk Sales Manager, *InCider*, Route 101 and Elm Street, Peterborough, NH 03458. Call (800) 343-0728.

Back Issues: Send \$3.50, plus \$1.00 postage, for each copy to *InCider*, Back Issues Dept., Route 101 and Elm Street, Peterborough, NH 03458. For ten or more copies postage is a blanket \$7.50. To order by telephone using VISA, MasterCard or American Express call (800) 258-5473 from outside New Hampshire, or 924-9471, ext. 136, within New Hampshire.

LETTERS

could quite easily live without. I'm a student on an extremely limited budget, and I'm not about to pay \$50 or more for a little entertainment. I can get along without *Night Mission Pinball* if I have to. Since I wouldn't have purchased the disk in the first place, the publisher wouldn't have made any money from the sale. Nobody loses. (Actually, the publisher may even make a little cash off this kind of copying. If I like a program, I may want to buy other programs from the same publisher. I hesitate to mention this, because I'm sure that on the large scale, software companies make very little to no money on this type of advertising.)

I consider software to be in the same category as other copyrighted mass-market products. Take a record album, for example. If the library has an album you enjoy, would you think twice about recording a cassette tape of the album? This is piracy; the record jacket's copyright labels have warnings against "unauthorized duplication." I highly doubt that your stereo has been authorized by the record company.

Books also fall into this category. I'm sure you've photocopied a page out of a book—strictly for your own reference, of course. Still, the book is copyrighted and "no part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopy, recording or otherwise without the prior written permission of the publisher."

"But that's not the same!" I hear you cry. "That's just minor. No one cares about copying records or books, unless you're trying to make a profit from it!" Exactly.

I'm not trying to profit from my illegal disks, either. I just want to discover *Frobozz*, just like you want to listen to Mozart without paying the library's rental fee.

Please go easy on us, Mr. Wright.

Most "pirates" aren't trying to cheat companies out of their hard-earned money. We realize they have the right to make a buck. But then, I see no reason not to copy a program when I'm not going to deprive the manufacturer of anything.

Name withheld

Your reply reiterates what piracy advocates have been saying for years. But no matter how the case is defended, rationalized, or condoned, piracy is illegal.

We agree with William Wright that software piracy has received general acceptance in schools, homes, and businesses. The copyright laws exist to protect not only the publisher's rights, but the consumer's as well. As Mr. Wright said, software piracy will "doom us forever to the curse of sophisticated and costly protection schemes."

And the dilemma over whether to copy or not to copy—there is none. You know the penalties. The choice is yours.

—eds.

A Few Kind Words

This is a somewhat belated, but nonetheless sincere, thank you to a member of your fine editorial staff in going out of the way to help a confused computer beginner.

A little while back, I was confused by what I thought was conflicting information about modems in your magazine, so I wrote to you about it.

Instead of the usual perfunctory response in a letters column, or no response at all, I received a handwritten (that's right, in cursive) response from Bob Ryan, your technical editor. This was a real first in my experience, and a most impressive act. Not only that, but Mr. Ryan's advice was explicit, convincing, and useful.

Mark H. Conner
Rt. 7, Box 310

Morgantown, WV 26505

Apple[®]
II+ and *IIe* owners:
Don't go to the
computer store
when you need more
computer storage.

Go to them

BUY THE SIDER:™ 10 MEGABYTES OF FIRST CLASS MASS STORAGE AT A BULK RATE PRICE.

You need more storage for your Apple II+ or IIe than a floppy drive can deliver. And you're about to head

down to the local computer store to take a look at a hard disk file. Thinking hard disk, however, means facing some hard facts: It's going to be expensive, and you've heard that the state-of-the-Winchester-art isn't all it could be—especially in terms of reliability.

You and your Apple have a real need: If you're going to compute, you've got to store. But that doesn't mean hiking down to the computer store. Not any longer.

Here's the alternative. First Class Peripherals. *We have the finest, easiest-to-install 10-megabyte Winchester hard disk subsystem in the industry today, bar none. And we have it, direct through the mail to you, for the best price. Period.*

The Sider: Absolutely First Class, Inside And Out.

On the outside, The Sider is a compact, smart-looking complement to your Apple. And inside, that quality look is matched by true quality components.

There's the half-height 10-megabyte Winchester drive, for a start, with field-proven reliability.

expansion capability, and offering direct boot from the hard disk. There's the best-selling intelligent controller in the business, with automatic data error detection and correction, internal diagnostics, optimal transfer rate between host and disk, and greater and faster system throughput with less software overhead. There's the steady power supply for day-in, day-out trustworthiness. And all components have been matched, tested and tested again, and designed into a "bookend" casing that doesn't even need a cooling fan.

Want to talk more tech? We could tell you about menu-driven installation, backup and restore utilities, flexible partitioning, FCC Class B approval, a wide range of operating system support and lots more. Suffice it to say that The Sider is a first class engineering achievement as well as a handsome, hard-working sidekick for whatever you and your computer need doing.

From Hotline To Swapline: A First Class Commitment To Support.

Our name is our commitment. We're offering a first class, one-year warranty on The Sider. No hassle. Full documentation. A toll-free hotline to answer any technical or service question you may have. Best of all, if there's any problem—repeat, any—that relates to the manufactured quality of The Sider, send it back and we'll replace it. Fast.

Here's Another First Class Idea: Order Now. 1-(800)-538-1307.

The Sider is going to sell like crazy. It's the right product. And—take a look at the first paragraph again—at the right price. No one else is going to make an offer like this for a long time to come. So act now. Just fill in the order form or call our toll-free number. Harness the power of your Apple to the price/performance of The Sider. Now there's a team for you!



allodox.

O f Course I Want A First Class Peripheral Like The Sider.

Please send me _____ Sider(s) at \$695.00 each. The package will include a half-height 10-megabyte hard disk drive, Apple Interface Adaptor Board, cable, complete software utility and documentation.

I have an Apple II+ IIe .

Check/money order for total of \$_____ is enclosed.

Charge to my Visa/MasterCard #_____

Expiration Date:_____

Signature:_____

Name _____

Address _____

City _____ State _____ Zip _____

Telephone (_____) _____

First Class Peripherals

2158 Avenue C
P.O. Box 6187
Bethlehem, PA 18001
1-800-538-1307

*Allow 4-6 weeks for delivery. All freight charges have been included.

*California, Nevada and Pennsylvania residents add appropriate sales tax

FIRST CLASS
PERIPHERALS

2158 Avenue C
P.O. Box 6187
Bethlehem, PA 18001
1-800-538-1307

Circle 508 on Reader Service card



Super Comics on Disk

Destined to defend the world from the forces of evil, super hero Orion joins the likes of Superman, Flash Gordon, and Captain Marvel. But you don't have to rush down to the corner drug store to catch up on this new titan's exploits. Apple users who are comic strip fans can simply slip in a disk for the latest serial adventure.

Orion the Sky Hunter is the first DATAMAX Disk Comics release from Viking Data Based Technologies, Inc.

"This is the first one that we know of for a comic on disk," states Bill Kelly of Viking. "It's something we wanted to do and we'll see how the public reacts."

Mario Neves, senior illustrator, handled Orion's design. He used an Apple to delineate Orion's escapades in hi-res graphics. Although the story panels are set up in comic book style, the backgrounds are simple;

Neves says too much detail would meld the pictures.

"I'm pleased with the drawings. The computer presents them fairly well," Neves says.

Kelly and Neves anticipate the bimonthly comic disk will become a collector's item. "We feel like we're setting down a milestone," Neves notes.

"Let's face it. We'd all like to create our own comic hero and this is the way to do it," Kelly adds.

The double-sided comic disks operate only on the Apple II line and cost \$9.95.

Mail Call

Neither rain nor sleet nor dark of night can stop the Big Red Apple Club. Established in March 1982, the group first provided Apple computer enthusiasts in the rural areas of Norfolk, Nebraska, with computer club news. Their means of communication—the mail. By the end of the first year, the club had 200 members.

Today, there are more than 3500 members. California tops the membership roster with 500. President John Wrenholz also conducts club business for members in 40 foreign countries.

Club members communicate via a modem-less disk network—a "bulletin board system" on disk. Members don't need a modem and, therefore, avoid high phone bills. The disk includes articles, messages, and pub-

lic domain programs.

Among its perquisites is the club's public domain software catalog, featuring 300 different titles including programs in business, education, games, graphics, and utilities. Free to members, the catalog is available to others for \$2.50.

Those interested in a club membership should write to Wrenholz at 1105 South 13th Street, Suite 103, Norfolk, NE 68701, or call (402) 379-4680.

Within Public Domain

Do you believe a small investment can yield high returns? Check out the Oklahoma Educational Computer Users Program. For a \$35 first-year membership fee, free public domain software is among the many rewards. Members can copy these disks, but must return them within three days.

Other membership benefits include complimentary magazines, a trial subscription to *The Computing Teacher*, grant opportunities, contests, and notice of computer-related events.

Soon, members will be able to borrow from the OECUP "lending library" programs under copyright. On a weekly basis, people will sign out software to test at home before investing in a package that may not be right for them. Members must agree not to copy these non-public domain disks.

Write to Richard V. Andree, Mathematics Department, University of Oklahoma, Norman, OK 73019, if you're interested in joining.



edited by Cynthia K. Carr



For Women Only

"You've come a long way, baby," and Marcia Freedman plans to help women go even farther through the Women's Computer Literacy Project. Formed in 1982 by Deborah Brecher, Freedman, and Jill Lippet, the organization offers introductory computer classes to women.

The classes were designed as an outreach to women concerned about the computer boom.

"Everybody's jobs are being affected by computers," Freedman says, but in the past machines and mathematics have been a man's territory—not a woman's. Now women are finding this educational and cultural gap a career hindrance. The Women's Computer Literacy Project helps women develop computer skills, satisfy their curiosity, and address their computerphobia.

Of those in the work force, Freedman says 52 percent suffer from computerphobia, and women are especially affected. That's why the organiza-

tion stresses a hands-on learning experience.

More than 2000 women have completed the one-to two-day classes. "We have a cross section of ages, ethnic backgrounds, and work. Most of them are between ages 30 and 55, and are often professional women."

Class size is restricted to 12 students per instructor to ensure the organization's intention that nobody fail. The course covers terminology, programming, operating systems, data-base management, and word processing. Continuous classes are conducted in San Francisco and New York, where the project maintains offices. The group also brings its program to other cities during the year.

Find out about class schedules, scholarships, and group discounts by contacting the organization at 1195 Valencia Street, San Francisco, CA 94110, (415) 647-1404.

What's going on in your corner of the Apple world? Spread the word through The Cider Press, inCider, 80 Pine Street, Peterborough, NH 03458.

Household Guardian

You can never have too much security. Just ask Joe Goetz. He designed the security system for the House of the Future, a futuristic solar home built by the Frank Lloyd Wright Foundation in Phoenix, Arizona. The glimmering copper house "thinks" for itself, thanks to the Apple //e Goetz installed to monitor security, internal temperature, outside visitors, windows, doors, lights, fire zones, and more.

Goetz was drawn into the House of the Future project by Don McIlraith, now his partner in the Chess Electric Company. Before Goetz's //e took over the show, the old system comprised five computers and, according to Goetz, would break down every few days.

"In some computer homes, the computer is the brain," Goetz says, "and the four worst words in the world are 'The computer went down.' This was the case in the House of the Future. [With the new system] the Apple is the brain, but you, the home-

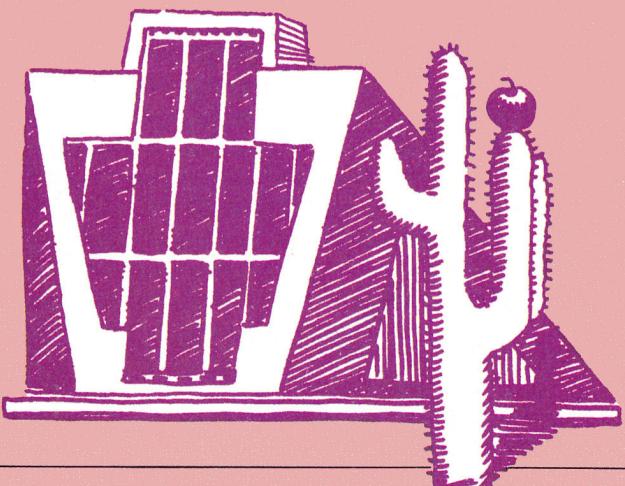
owner, are still in full control. You can override it at any time."

Goetz says his security system differs only slightly from a conventional burglar alarm. Yet, what burglar alarm can sense visitors approaching your property, telephone the fire or police department in an emergency, or activate lights in certain hallways during a power blackout?

While the old system cost \$300,000, Goetz's system costs \$8000 including installation and backup. Goetz says the first system's custom-made equipment and programs weren't practical for everyday use. He uses hardware and software anyone could purchase at a store or through mail order.

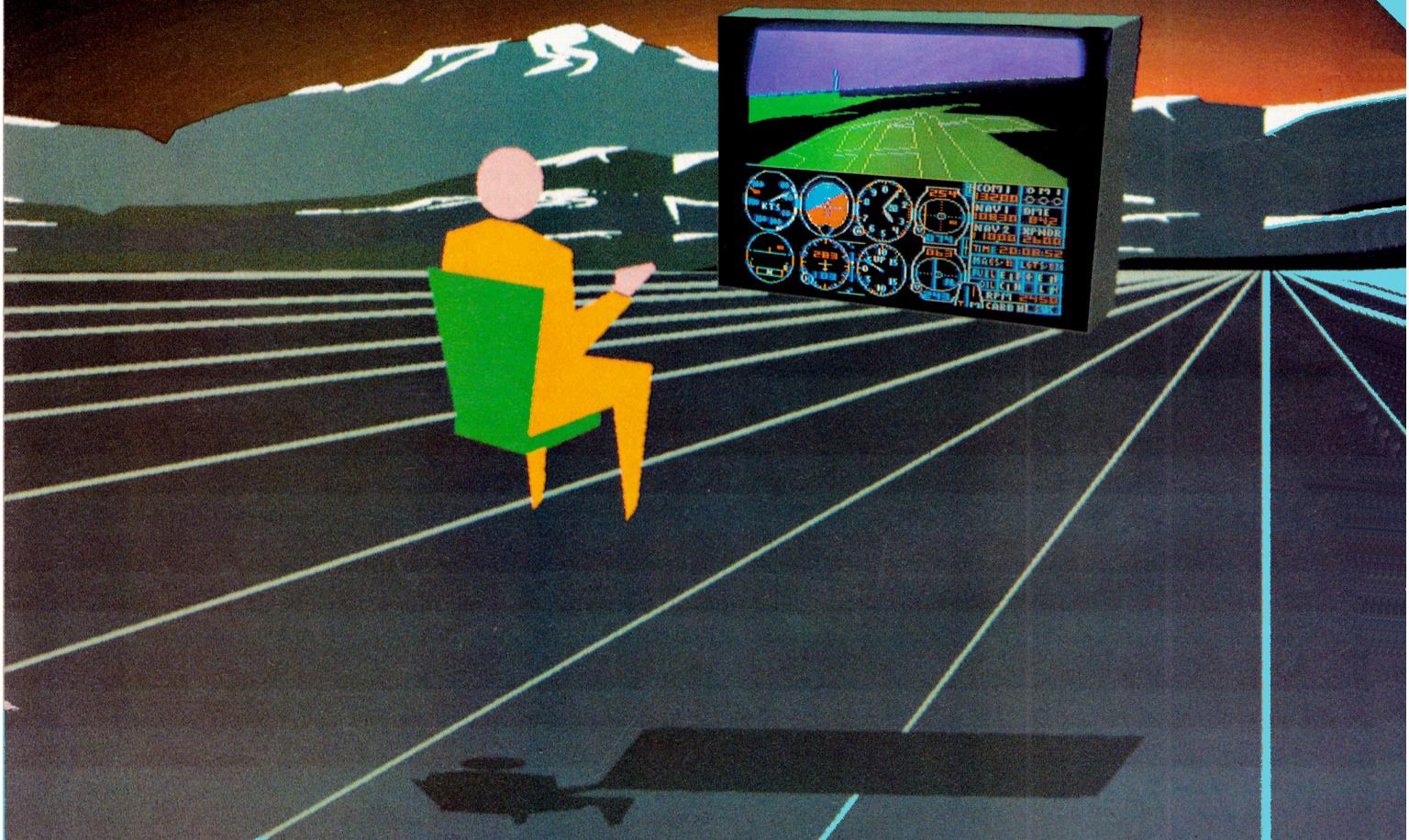
You might think Goetz's system would require more than one //e. Not so. A disk drive, monitor, peripheral card, Thunder clock (real-time clock), and two programs (one for security and one for appliances) round out the inventory list.

Goetz emphasizes the need to keep the security system simple so anyone can use it. And with his commitment to program the system to do almost anything a customer requires, he remarks, "Thank goodness it doesn't eat."



Flight Simulator II

For Apple II+,
Apple IIe, & Apple IIc



Put yourself in the pilot's seat of a Piper 181 Cherokee Archer for an awe-inspiring flight over realistic scenery from New York to Los Angeles. High speed color-filled 3D graphics will give you a beautiful panoramic view as you practice takeoffs, landings, and aerobatics. Complete documentation will get you airborne quickly even if you've never flown before. When you think you're ready, you can play the World War I Ace aerial battle game. Flight Simulator II features include ■ animated color 3D graphics ■ day, dusk, and night flying modes ■ over 80 airports in four scenery areas: New York, Chicago, Los Angeles, Seattle, with additional scenery areas available ■ user-variable weather, from clear blue skies to grey cloudy conditions ■ complete flight instrumentation ■ VOR, ILS, ADF, and DME radio equipped ■ navigation facilities and course plotting ■ World War I Ace aerial battle game ■ complete information manual and flight handbook.

See your dealer . . .

or write or call for more information. For direct orders enclose \$49.95 plus \$2.00 for shipping and specify UPS or first class mail delivery. American Express, Diner's Club, MasterCard, and Visa accepted.

Order Line: 800 / 637-4983

subLOGIC
Corporation
713 Edgebrook Drive
Champaign IL 61820
(217) 359-8482 Telex: 206995
Circle 156 on Reader Service card.

Mousing Around with CAD.PAINT

Having spent a couple of years now, developing Apple CAD (computer-aided-design) software, I've come to realize that the choice of peripheral manipulation device—mouse, paddle, joystick, chalkboard, graphics tablet, "pad"—can mean the difference between awkwardness and convenience in using a program. For instance, in "painting" applications graphics tablets are best, chalkboards, pads, and mice are alright, and joysticks are shaky but viable. However, the average user is lost with a game paddle.

On the other hand, for pointing, as in selecting an icon or using the Micro-Illustrator, mice excel. A joystick is definitely too shaky here, a paddle is too confusing, and the pads are too bulky to fit well on many desk tops (Koala is least bulky).

When you need to create straight, perpendicular lines, such as those in a

flowchart or electrical schematic, the game paddle is the device of choice. In fact, it's designed with this purpose in mind. A chalkboard is second-best (because of its grid), a mouse is fair, a pad is poor, and a joystick works miserably.

Now, while it is true that some manipulation devices are inherently poor at some tasks, the situation can at times be improved through programming. For instance, you'll find that the AppleMouse version of my CAD.PAINT "painting" program, in **Listing 1**, has a "snap-line" option that automatically makes nearly horizon-

A new mouse version of the author's "painting" program reveals some handy programming hints.



by Don Fudge

THE STATISTICS SERIES

FLEXIBLE • ACCURATE
EASY-TO-USE

Human Systems Dynamics programs are used by leading universities and medical centers. Any program that doesn't suit your needs can be returned within 10 days for full refund. Designed for use with Apple II 48K, 1 or 2 Disk Drives, 3.3 DOS, ROM Applesoft.

NEW

REGRESS II

\$150

Complete Multiple Regression Series
Stepwise, Simultaneous Solutions
Forward, Backward Solutions
Auto Power Polynomial Solutions
Data Smoothing, Transformations
Correlation and Covariance Matrices
Residuals Analysis, Partial Correlation
Research Data Base Management
Count, Search, Sort, Review/Edit
Add, Delete, Merge Files
Curve Fit, Hi-Res X-Y Plot

STATS PLUS

\$200

Complete General Statistics Package
Research Data Base Management
Count, Search, Sort, Review/Edit
Add, Delete, Merge Files
Compute Data Fields, Create Subfiles
Produce Hi-Res Bargraphs, Plots
1-5 Way Crosstabulation
Descriptive Statistics for All Fields
Chi-Square, Fisher Exact, Signed Ranks
Mann-Whitney, Kruskal-Wallis, Rank Sum
Friedman Anova by Ranks
10 Data Transformations
Frequency Distribution
Correlation Matrix, 2 Way Anova
r, Rho, Tau, Partial Correlation
3 Variable Regression, 3 t-Tests

ANOVA II

\$150

Complete Analysis of Variance Package
Analysis of Covariance, Randomized Designs
Repeated Measures, Split Plot Designs
1 to 5 Factors, 2 to 36 Levels Per Factor
Equal N or Unequal N, Anova Table
Descriptive Statistics, Marginal Means
Cell Sums of Squares, Data File Creation
Data Review/Edit, Data Transformations
File Combinations, All Interactions Tested
High Resolution Mean Plots, Bargraphs



HUMAN SYSTEMS DYNAMICS

To Order—Call (213) 993-8536
or Write

HUMAN SYSTEMS DYNAMICS
9010 Reseda Blvd. Suite 222
Northridge, CA 91324



Dealer Inquiries Invited



F U D G E I T !



tal mouse-drawn lines truly horizontal, nearly vertical lines truly vertical, and wavy lines truly straight. All that's needed is a control-F. And drawing continues from the end of the corrected line—not from where the old line left off.

Mouse Programming

This brings us to the whole issue of programming for the AppleMouse and the problems involved. The first problem has to do with peripheral cards and slots. The //c mouse, of course, needs no peripheral card, even though it functions as if it were in slot 4. The

//e mouse, however, does need one, and it can occupy any slot except 0. Well, how do you "talk" to the correct slot?

Take a look at lines 11 and 12 in **Listing 1**. They check for a mouse in slots 1 through 7 and set PS equal to the slot in which it is found. If one isn't found, a message directs you to check the mouse installation. The reason the algorithm in these lines works is that with a mouse in a peripheral slot, \$20 goes into \$CNOC and \$D6 into \$CNFB, where N is the slot number containing the mouse card.

Continued on p. 100

Figure. Program lines excerpted from the original paddle version of CAD.PAINT for comparison with the mouse version.

```

91 X$ = 1.094 * PDL (0):Y$ = .749 * PDL (1): XDRAW 2 AT X$,Y$:
    FOR QW = 1 TO 50: NEXT : XDRAW 2 AT X$,Y$:
100 PX$ = 1.094 * PDL (0):PY$ = .749 * PDL (1): XDRAW 2 AT PX$,
    ,PY$: FOR QW = 1 TO 50: NEXT : XDRAW 2 AT PX$,PY$:
1010 X$ = 1.094 * PDL (0):Y$ = .749 * PDL (1)
1025 IF PEEK (- 16287) > 127 THEN XDRAW D AT X$,Y$: GOSUB 10
    40: GOTO 1010
9320 OY$ = Y$:OX$ = X$: HCOLOR= HC: RETURN
30030 P0 = 1.094 * PDL (0):P1 = .749 * PDL (1)

```

Listing 1. The mouse version of CAD.PAINT. The screened lines are the ones that differ from the paddle version of CAD.PAINT.

```

0  POKE - 16302,0: REM CAD.PAINT
1  ONERR GOTO 63990
2  HC = 3: ROT= 0: SCALE= 1:C = 3: HCOLOR= 3: POKE 230,32: CALL 6
    2450:S = 1
3  GZ = 1: GOSUB 9800
4  GOTO 10
5  VTAB 1: PRINT D$"IN#0": PRINT D$"PR#PS: PRINT CHR$ (0): PRINT
    D$"PR#0": RETURN
6  VTAB 1: PRINT D$"PR#PS: PRINT CHR$ (1): PRINT D$"PR#0": PRINT
    D$"IN#PS: RETURN
7  VTAB 1: PRINT D$"IN#0": PRINT D$"PR#0": RETURN
8  VTAB 1: PRINT D$"IN#PS: RETURN
9  VTAB 1: PRINT D$"IN#PS: RETURN
10 D$ = CHR$ (4): PRINT D$"BLOADPAINT": POKE 232,0: POKE 233,8
11 Z = 0: FOR Q = 49420 TO 50956 STEP 256:Z = Z + 1: IF PEEK (Q
    ) = 32 AND PEEK (Q + 239) = 214 THEN PS = Z:Q = 50956: GOTO
    15

```

Listing continued.



The Envelope, Please

Happy New Year! I have a wonderful New Year's Eve party planned. The base lodge will really rock tonight! I've got a bin full of Old Rhino and mixers, chip 'n dip, pizza, hot oven grinders, a hot tray full of sausage and peppers, and several magnums of champagne (Rhino Vieux 1982).

But I've been so busy tabulating the vote in the Great Warden Shiftky Game Poll that I forgot to mail invitations. I suppose I can eat and drink all this stuff myself. Oh well, to heck with the diet! Let's pop the cork on the first magnum, slice the pizza (nothing tastes better than pizza and champagne), and get on with the poll!

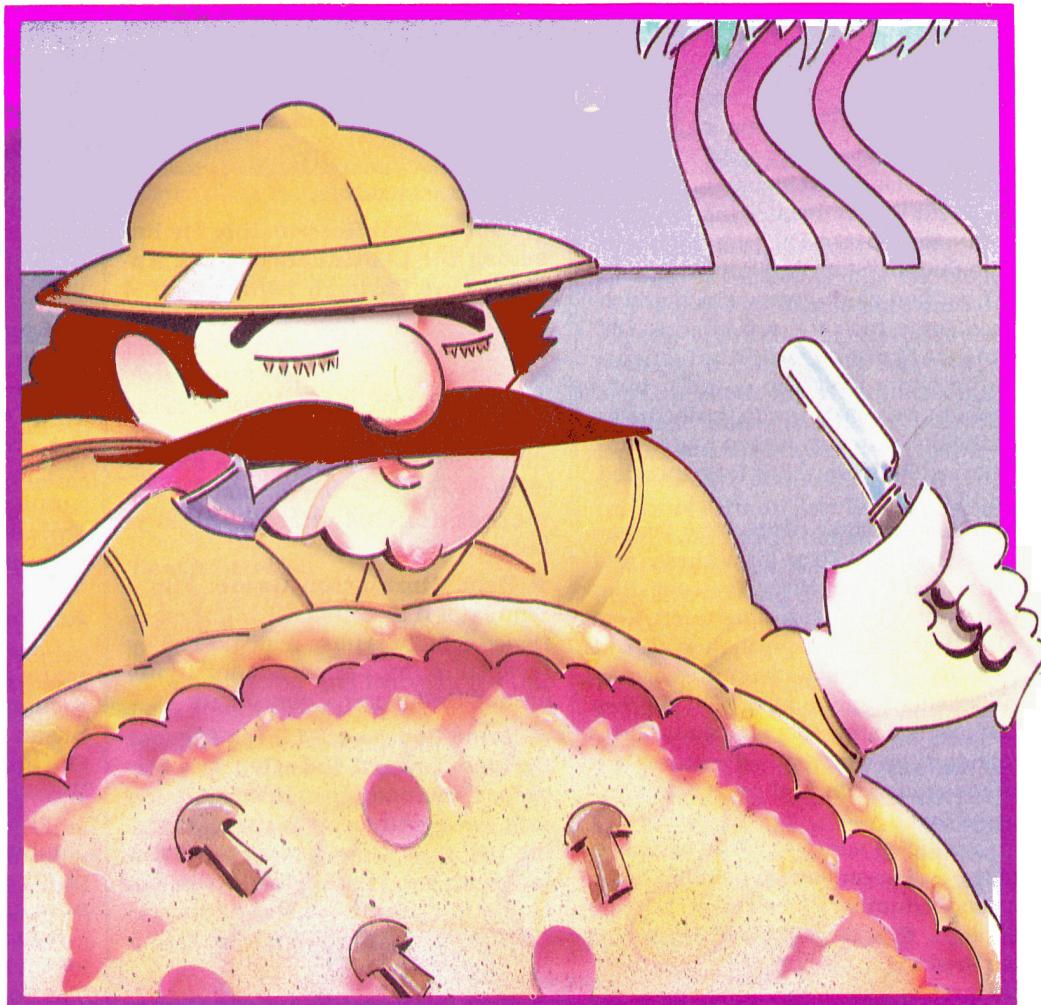
Way back in July, I asked you to write me with your choices for all-time favorite games in three categories: arcade, strategy/fantasy, and adventure. Well, you did.

I learned a few things from this ex-

ercise, and, in particular, that strategists prefer fantasy/role-playing games to war games. War games hardly got a mention.

The top three games, as you picked 'em, are Wizardry, Exodus, and Castle Wolfenstein. A close runner-up in fourth place was Ultima I, followed by Legacy of Llylgamyn, Flight Simulator II, and Knight of Diamonds. Only two war games—Fighter Command and North Atlantic '86—got any votes at all.

The Shiftky readers' poll and other gamey topics



with Warden Shiftky

I hope that the last few columns have made you war-game conscious. In the meantime, I'll be on the lookout for the kinds of fantasy/role-playing games that interest you.

Spotting trends in the arcade games was a little harder. All the games picked in the poll were toughies. The general lesson seems to be that the more sophisticated and colorful the program, the more advanced the challenge, the better you like it.

It was a close race for first place between two great games, and here's how it turned out: One-on-One, Choplifter, and Hard Hat Mack. Runners-up included Raster Blaster (no longer in print), followed by Dig Dug, Night Mission Pinball, Star Blazer, and Repton.

I bet you can't guess which adventure game took the top honors. Oh? You CAN guess which adventure game came first? So could I, but I thought we'd go through the formality of the poll anyway, just to make sure. The results were: Zork I, Suspended, and Transylvania.

Following right behind the leaders were Zork III, Zork II, Witness, and Sherwood Forest. Note, if you will, that of this lot only two are illustrated. Note also that Infocom publishes all but two. Infocom's text adventures use sophisticated syntax, offer high degrees of challenge and escapism, and are the standard by which all adventures are measured. This poll merely reconfirms that.

Can I level with you? The response to the poll wasn't overwhelming. I got a goodly number of responses, but not enough, in my opinion, to draw any earth-shattering conclusions about the preferences of all Apple users. All the same, I have a better idea of what you like. That will help me make the Game Reserve more interesting to you in 1985.

Achievement Awards for '84

Now, my picks and pans for the year past. These are games (and other computer achievements) that deserve either applause or brickbats.

• **Most Beautifully Packaged Game:** Chivalry from Weekly Reader Software. It comes in a bookcase box, contains a marvelous game board (which is totally unnecessary), and is utterly gorgeous. Richard Heft

sponsible for the art (more on his work later in this column).

• **Most Obvious Attempt to Exploit the Olympics:** Summer Games by Epyx. A great game, this appeared just as the Los Angeles Olympics were ending. Its release could have been timed better.

• **Smartest Idea Four Years Too Late:** Atari's decision to make its popular arcade games available for Apple computers. Who knows? If Atari had done that four years ago, maybe Jack Tramiel would have bought Apple last summer, instead of Atari.

• **Factor Most Responsible for Ensuring the Continuance of the Apple II Line Through 1985:** The IBM PCjr's "chiclet" keyboard. This sub-standard component was the most crucial of several design features responsible for the tepid response to the PCjr, thus keeping the door open for the successful introduction of the Apple //c. Only after the //c had hit the market did IBM change the keyboard.

• **Best Simulation Game:** Flight Simulator II by SubLOGIC. The experience of flight is ultra-realistic. I enjoy it, despite my preference for flying around Bridgeport, Connecticut.

• **Game Company Making Biggest Strides Toward Industry Leadership:** Electronic Arts. It was a tough pick, because Infocom is always bringing out great new games. Nevertheless, with great packages like One-on-One and Pinball Construction Set, Electronic Arts is the fastest-rising company in the field.

• **Most Interactive Arcade Game:** Pinball Construction Set by Bill Budge, published by Electronic Arts. It's one of the best examples of the newest wrinkle in arcade software: the user-modifiable game.

• **Most Addictive Game:** Atarisoft's Dig Dug. This game could easily start a new career for me, if I can convince inCider to pay me for playing games instead of reviewing them.

• **Most Challenging Game:** One-on-One from Electronic Arts. What I'll never understand, though, is how anyone was able to bit-map Larry Bird and Dr. J. right down to the last slam-dunk and double fake.

• **Worst Adult Game to Let Your Child Play:** Bilestoad by Datamost. You'll understand why I picked this game when the first arm is severed, spreading a puddle of blood all over your monitor.

• **Best Adult Game to Let Your Child Play:** The Coveted Mirror from Penguin Software. Adventure games teach kids to think creatively. Play them with your children.

• **Apple's Worst Idea:** Nonstandard (that is, round) serial ports for the Apple //c. If you don't want the Apple printer or modem, then you must have a cable built for around \$50 at your local computer store. No one can figure out the pin layout for my Okidata 82A, either.

• Apple's Best Ideas:

1. The Apple II Forever Festival reaffirming the company's commitment to the Apple II family of computers.
2. Lowering the price of the Apple //e.
3. The Apple //c. Double hi-res, 80 columns, upper/lowercase, QWERTY/Dvorak keyboard, and built-in drive make it a good value.

Run for It

I have to confess an almost automatic tendency to praise anything Richard Heft, Steve Worthington, Susan Dubicki, and their company, Optimum Resource, produce for Weekly Reader Family Software. Maybe I'm just a sucker for superb graphics, challenging games, and simplicity of design. We all have our weaknesses.

Run for It (by Heft and Worthington), a maze and levels game, resembles Donkey Kong, Miner 2049er, and Beer Run. But Run for It is a much more entertaining game than the others, with far better graphics and animation than most arcade software.

The game's hero, Orbit, a talented little robot (see **Photo 1**), can run, jump prodigiously high, scrunch down, and shoot bursts of laser energy. Believe me, he'll need all those talents to complete the game because he must ascend an 18-level maze with 54 rooms.

A display at the upper right of the screen shows the number of energy canisters left for Orbit to consume. At zero, the game is over. The consumption rate is rapid, but energy canisters



Photo 1. Orbit in the opening room from *Run for It*.

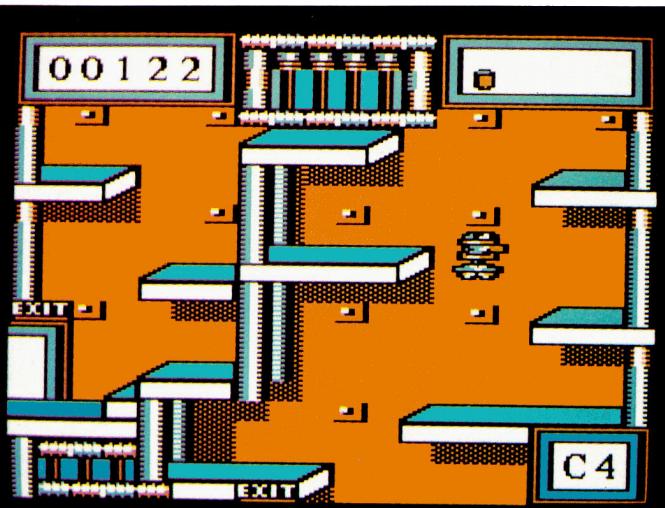


Photo 2. Orbit the robot does an amazing bounce.

are scattered throughout the maze. Just jump Orbit onto them to renew his fuel supply.

The catch is that more than a few of the capsules are guarded by little anti-robot energy drainers. Contact with one drains Orbit a full canister's worth of power. Some of the drainers fly in an unvarying pattern, so you can avoid touching them by carefully timing Orbit's jumps or scrunches. You'll also find that a few drainers block your way from one room of the maze to the next. They must be shot down so Orbit can pass. Still other energy drainers chase your robot. It takes considerable skill (and practice) to shoot them down in time.

The many energy canisters in nearly inaccessible locations require deft work with the joystick when Orbit jumps. You can twist and maneuver your robot in "midair" to land on the desired platform (see **Photo 2**). If you miss, don't worry. A long fall won't damage the sturdy little robot.

But what a big maze. It's small consolation that you don't have to visit all 54 rooms to complete the trip to the top. Still, you'll probably wind up exploring all of them just to find your way around. The color poster included with the game shows all the rooms, but not the drainers or energy canisters; for those, you'll have to send Orbit "in person."

I've spent long hours here at the base lodge trying to advance further than level G (the maze begins at level A and ends at level R) only to run out of fuel or be hit by drainers at the last gasp. It's fun getting even that far, though. The maze is beautifully designed and drawn, with three-dimen-

sional effects. The robot simulation is characterized by smooth animation. Orbit's bouncing when he/she/it lands on a platform adds an offbeat element of realism.

Run for It is relentlessly addictive. It seems easy, but you can never beat it. The prospect of victory, so tantalizingly near and yet so far, will keep you glued to your computer.

Beach Landing

Only a little less addictive and colorful is another offering from Weekly Reader, **Beach Landing**. An arcade game by Hefter and Dubicki, it simulates landing troops on a World War II beachhead (see **Photo 3**). In this game you pilot a landing craft that picks up troops from two navy ships at the top of the screen and ferries them, under fire, to the beachhead at the bottom.

Trouble begins just a few pixels

south of the ships, where enemy artillery fire is splashing into the water. One of those shells will put your landing craft out of commission before you even get near the beach. As you draw near the shore, the program zooms in on the section of beach you're assaulting (**Photo 4**) to reveal floating mines, underwater obstructions, and the tracks of cannon fire. All of these can deactivate your landing craft. With a total of nine beaches in the game, and only five landing craft, you can ill afford to lose a single one.

As you get closer to the beach, and further into the gafe, the defenses get tougher and denser. Even at the simplest beach (Able 1) it's a real chore to bring the landing craft through the maze of mines. Then you discharge the troops. (Make sure not to drown them far away from the beach.) Avoid grounding on the beach or hitting an



Photo 3. Title screen from Weekly Reader's *Beach Landing*.



Photo 4. Troop carrier returns after securing the beach.

obstruction, and then get the craft back to the troopship for more soldiers.

As soon as you capture a sufficient stretch of beach with the required number of troops (signified by an American flag) you receive an extra landing craft and go on to the next beach. Beaches require more and more troops as you progress. You need only three flags on the first beach, but on the fifth beach you need six, and by the ninth beach it takes eight. It's not impossible to land that many troops, just very, very difficult.

I've been an admirer of these Weekly Reader games and educational programs since they first came out. They have a coherent sense of style, largely because of Hefters' graphics. The educational programs are designed with great care. The games are entertaining and playable for kids while, at the same time, challenging for adults. They are packaged handsomely and durably, supported by clearly written manuals and other materials.

This approach represents more than just good business sense. I get the clear impression that the people who put these products together really care about us. It's a good attitude, one that more software makers should emulate.

Player of the Century

Now we turn from great ideas (like Weekly Reader's games) to bad ones (like my Player of the Month). A few months back I suggested that readers with incredibly high arcade-game

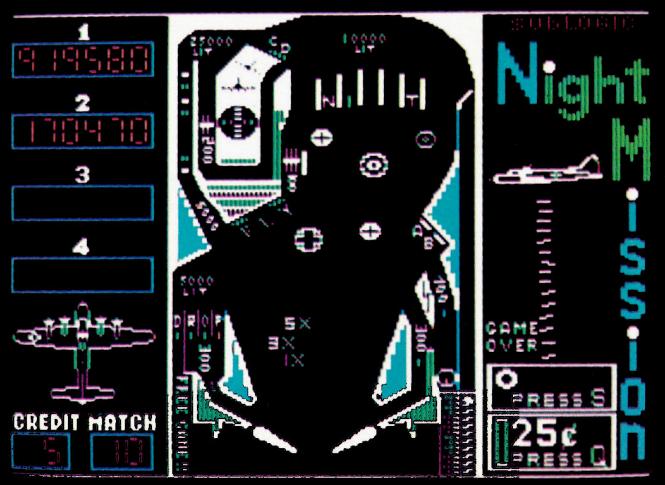


Photo 5. Winning high score from Nels Anderson.

scores could send in their scores, with some sort of proof, and I would select from the responses a Player of the Month.

As it turned out I got a grand total of one reply. One reply! It sure gets lonely out here on the Game Reserve.

The respondent was Nels Anderson of Framingham, Massachusetts, who racked up 919,580 points on Night Mission Pinball (see Photo 5). Nice shootin', Nels!

Since Nels was the only respondent, I'm not only naming him "Player of the Month," but "Player of the Century." I'm also sending him MicroLab's Boulder Dash as a prize. Now don't you wish you'd sent in your score?

Someday, I hope to resume the competition, with more prizes. Until that time, aloha! ■

Send your New Year's wishes to the Warden at inCider, 80 Pine Street, Peterborough, NH 03458.

Product Information

Run for It
Beach Landing
Weekly Reader
Family Software
245 Long Hill Road
Middletown, CT 06457
Any 48K Apple II, joystick optional.
\$39.95 each

Readers' Choices

Strategy/Fantasy Games

1. Wizardry: Proving Grounds... (Sir-Tech Software)
2. Exodus: Ultima III (Origin Systems)
3. Castle Wolfenstein (Muse Software)

Arcade Games

1. One-on-One (Electronic Arts)
2. Choplifter (Broderbund Software)
3. Hard Hat Mack (Electronic Arts)

Adventure Games

1. Zork I (Infocom)
2. Suspended (Infocom)
3. Transylvania (Penguin Software)

WE CUT'EM.



Prices on Apple II, Apple IIe, and Apple II+ HARD DISK SYSTEMS.

We've sold thousands of these super reliable hard disk systems over the last 12 months.

Now, the price is right.

The MegaBank 10:
a complete 10-megabyte stand-alone hard disk system

ONLY
\$995

You'll be up and running in minutes. With MegaBank, you simply add the included adapter board to your Apple or Apple-compatible chassis, plug in the hard disk unit, and turn it on. Everything you need is included.

We have 10 to 40 megabyte disk systems for your IBM PC-compatibles, as well. Prices range from \$795 to \$1,995. Call for details.

And every MegaBank product is fully supported by our "no-risk" customer service network. We're standing by with a User's 800 Line to provide answers to technical questions or to give you helpful hints.

Every MegaBank system is warranted for a full 90 days.

Finally, if you aren't satisfied — for any reason — just return your order to us within 30 days. On the day we receive it, a full refund check will be on its way to you. When we say "no-risk," we mean it.

**TO ORDER OR FOR MORE INFORMATION,
CALL 800-551-7666.**

In Illinois, 312-951-0616.

We accept Visa, MasterCard and American Express, and we'll ship within 48 hours of receiving your credit card order or check. You save sales tax, too, except within the state of Illinois.

There is an additional charge of \$33 per item ordered for shipping, handling, and insurance.

Mercury **MegaBank** **Corp.**

Specifications:

MegaBank drives are 9 1/2" wide by 5 1/2" high by 14 1/2" deep

Runs on your Apple II, Apple IIe, Apple II+, or Apple-compatible with DOS 3.3, ProDOS, CPM and Pascal.

Average access time as low as 43M Sec with a 5.0M. Bits/Sec. transfer rate.

IBM® and **Apple**® compatible

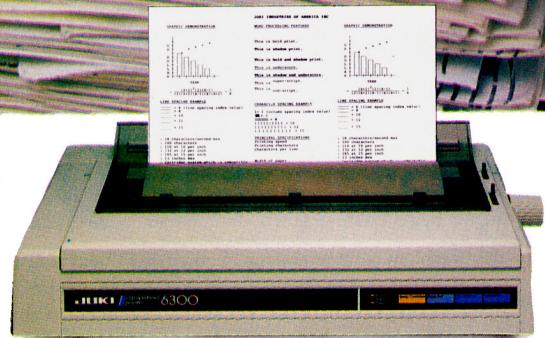
Mercury MegaBank Corporation
311 West Superior Street, Dept. 416
Chicago, IL 60610

Circle 102 on Reader Service card.



CAN THE JUKI® 6300 REALLY PRINT OVER 500 LETTERS IN 8 HOURS? STAND BACK AND WATCH!

Busy offices, take note: Our new letter-quality printer zips along at **40 characters per second** and sells for **only \$995**. Its 13" print line will handle your spreadsheets and every imaginable kind of correspondence—plus graphics! Quiet, too—less than 60 dbA. And the 3K buffer memory (expandable to 15K) lets you use your computer for other purposes while the JUKI is printing. Compatible with most computers. (You can even get an optional tractor feed and cut-sheet feeder for it!) Now you know why JUKI printers are humming in offices all over the world!



JUKI®

The worker.

JUKI INDUSTRIES OF AMERICA, INC.

NATIONAL HEADQUARTERS:

DA DIVISION

299 Market St., Saddle Brook, NJ 07662
(201) 368-3666

WEST COAST:

CALIFORNIA DIVISION

3555 Lomita Blvd., Torrance, CA 90505
(213) 325-3093

THE FIRST FAMILY OF PRODUCTIVITY FROM CREATIVE SOFTWARE

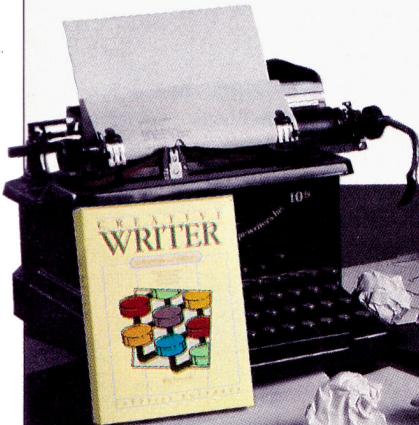
*The best costs only \$49.95,
why pay more?*

Creative Writer™, Creative Filer™, and Creative Calc™ – three low-cost, yet powerful personal productivity programs designed to give you the most for your software dollar.

HASSLE-FREE WORD PROCESSING.

Creative Writer is a word processor you can start using in just 15 minutes. Now anything you do with your typewriter, you'll do better and faster with Creative Writer. It lets you concentrate on the words, not the processing.

Arrange and rearrange words or paragraphs at the touch of a key. Compose, edit, save, retrieve and print documents almost effortlessly. \$49.95.



CREATIVE WRITER

- Preview entire document
- Search and replace
- Headers and footers
- Help screens
- Move text

CREATIVE FILER

- Unrestricted format
- Change format after creation
- Report writer included
- Automatic alphabetizing

CREATIVE CALC

- Adjustable column width
- 12 digit accuracy
- Menu of commands
- Mix text and numeric data
- Within cell editing
- Flexibility of design

EACH PROGRAM IS FULL-FEATURED WITH INTEGRATED CAPABILITIES. COMMODORE 64™, IBM PC™ PCjr™, AND APPLE™ VERSIONS AVAILABLE.

PUT YOUR FILING CABINET ON DISK.

Now there's Creative Filer – the simplest way to organize and access all your files.

You can set up and maintain virtually any file with Creative Filer – all on a computer disk and automatically filed in alphabetical order for instant access. \$49.95.

A SPREADSHEET PROGRAM THAT REALLY ADDS UP.

Creative Calc automates any mathematical process.

It lets you ask the "what if" questions of financial analysis more easily than any other spreadsheet program in its class. \$49.95.

*VERBATIM MINIDISK
TEN-PACK OFFER
IN EVERY BOX.

ALL THREE PROGRAMS ARE INTEGRATED FOR MORE COMPUTING POWER

Creative Filer and Creative Calc work together with Creative Writer, allowing you to customize documents combining text, data, and numeric tables.

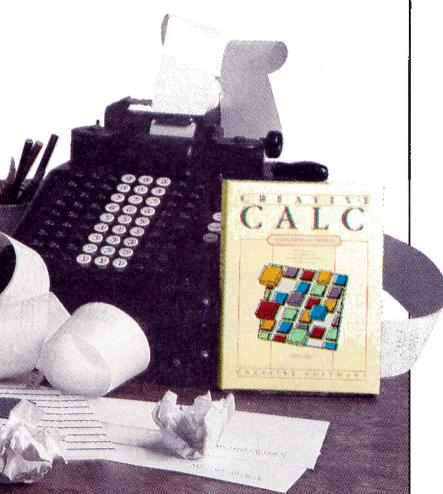
Now you can get the power of expensive productivity programs at a very economical price.

CALL AND ORDER TODAY!

Use your Visa, MasterCard or personal check. Toll Free 1-800-331-7990 (outside Calif.) or 1-800-448-1001 (in Calif.).

MONEY BACK GUARANTEE. If not completely satisfied, return within 10 days for full refund.

*Limited time only.



C R E A T I V E S O F T W A R E

230 East Caribbean Drive, Sunnyvale, CA 94089 ©1984 Creative Software

Circle 151 on Reader Service card.

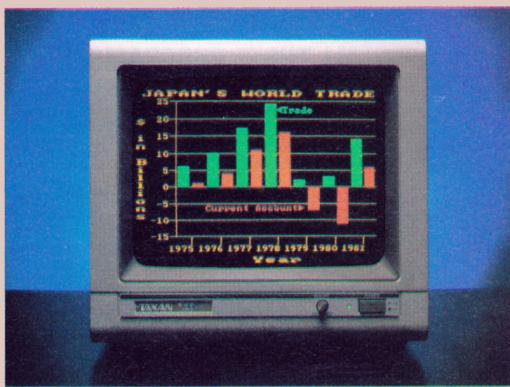
TAXAN

We Make Your Apple Shine

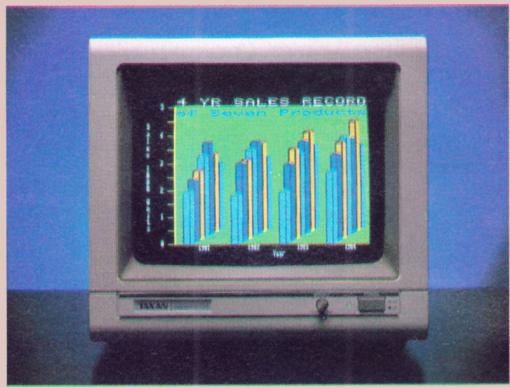
At TAXAN we keep it simple. Our Apple line of Monitors combines many of the great features of our IBM line. Super High-Res and High-Res capabilities allow for the

Being #1 is an education. Picking the right Monitor for your Apple takes an educated guess, too!

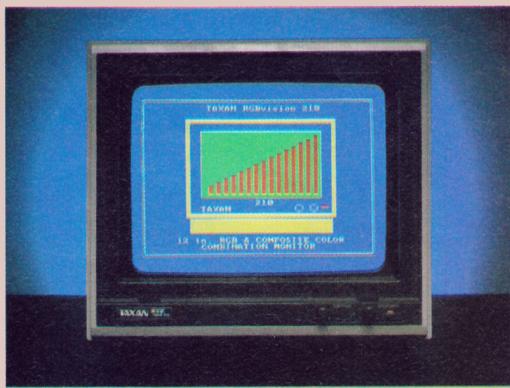
finest in business graphics. Video games look better, too! And your children will love you for choosing TAXAN instead of Brand X.



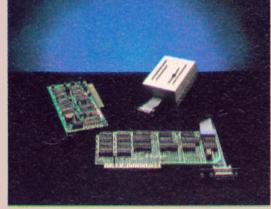
MODEL 420 12 inch Super High-Res RGB Color Monitor. Fully compatible with Apple, IBM and most other personal computers. 640x262 line resolution. Unlimited colors available through analog video circuit. Black face, non-glare tube.



MODEL 410 12 inch High-Res RGB Color Monitor. Fully compatible with Apple, IBM and most other personal computers. 510x262 line resolution. Unlimited colors available through analog video circuit.



MODEL 210 12 inch Medium-Res RGB and Composite monitor with audio. Composite Mode: Standard NTSC Signal. Compatible with Apple and most personal and home computers. Removable screen filter. Built-in Audio and VCR input. RGB Mode: Compatible with Apple II+ and Ile computers with interface card (Option). 380x262 line resolution.



410-08 RGB interface card for the Apple II, II+, Ile and Franklin Ace 1000 and 1200 Rev. A only.

410-15 RGB Module for Apple Ile.

410-80 80 Column and RGB interface card Compatible with Apple Ile. Third color cursor for text editing.

410-8064 Same as 410-80 with additional 64K Ram memory and 6 color double High-Res graphics. Text is color changeable.



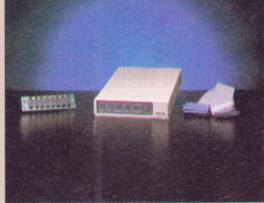
MODEL 500 PRINTER BUFFER

Centronics compatible parallel interface with 64K memory expandable to 256K. Four function modes include: Manual, Double, Free and Command. Compatible with most printers.

OPTIONS—

Model 599-01 64K Extra Memory Add-on

Model 599-02 Extra parallel Cable



So, get an education. See TAXAN today!
The Smart Choice.

18005 Courtney Ct. City of Industry, CA 91748 **(818) 810-1291**

© 1985 TAXAN Corporation

*Apple is a registered trademark of Apple Computer, Inc.

*IBM is a registered trademark of International Business Machines, Inc.

Circle 515 on Reader Service card



Paint Pot

Tired of tempera spills on the rug? With Paint Pot, young artists can paint on the computer screen instead, using a joystick or paddles. My program includes four colors, three brush sizes, and an erase feature.

To type Paint Pot into your Apple, type NEW and hit the return key to clear the computer. Then type and save the **Program listing**. Check for and correct typos, then resave the program.

The data in lines 550-570 contains the shape table and is POKE'd into memory by line 90. Notice that line 100 checks the shape table for errors and warns you if it finds a typo.

Painting on the Screen

To paint on the screen, type RUN PAINTPOT and hit the return key. The drawing area is the full graphics screen. The cursor shows where the paintbrush is poised, ready for contact with the canvas (screen). To move the cursor, just move your joystick or paddles. To lower the brush to canvas, press paddle button zero.

The blob at the lower left of the screen indicates color and brush size.



To change brushes, press the space bar until you see the size you need. To change color, press button one on your joystick or paddles until your color choice appears.

Erasing

Two of the colors are black. This won't make sense until you remember how Apples draw colors on the screen. Violet and blue dots appear at even values of X; green and red dots appear at odd values. So we need two kinds of black—odd black and even black—to cover the two kinds of colors. To erase a red spot, select the first black and try painting over the red. If the red doesn't disappear, or if it changes to another color, then try the other black. A few minutes' experimentation will illus-

Don't cry over spilled paint. Now children can draw and fill in colors on the computer screen.

by Michael A. Seeds



Program listing. Paint Pot.

```

10 REM *** PAINT POT ***
20 REM *** BY ***
30 REM *** MIKE SEEDS ***
40 REM
50 REM
60 REM LOAD SHAPE TABLE
70 HOME : PRINT TAB(15)"PAINT POT": SCALE= 1: ROT= 0
80 EP = .30:BR = 2:XS = 0:XL = 50:YL = 50:CL = 3:SU = 0
90 FOR J = 1 TO 33: READ HX: POKE 16383 + J,HX:SU = SU + H
  X: NEXT J
100 IF SU < > 1812 THEN TEXT : HOME : PRINT "TYPO IN DAT
  A LINES": END
110 REM
120 REM DRAW SCREEN
130 POKE 232,0: POKE 233,64: HGR : POKE - 16302,0
140 HCOLOR= 3: HPL 0,0 TO 279,0 TO 279,191 TO 0,191 TO 0
  ,0
150 GOSUB 320
160 HCOLOR= CL: XDRAW 1 AT XL,YL: REM DRAW
170 REM
180 REM
190 REM MAIN LOOP
200 X = 279 * PDL (0) / 256:X = EP * XL + (1 - EP) * X:X =
  2 * INT (X / 2) + XS
210 XDRAW 1 AT XL,YL: REM ERASE
220 Y = 191 * PDL (1) / 256:Y = EP * YL + (1 - EP) * Y
230 IF PEEK (- 16287) > 127 THEN DRAW BR AT X,Y: REM P
  AINT
240 XDRAW 1 AT X,Y: REM DRAW
250 XL = X:YL = Y
260 IF PEEK (- 16286) > 127 THEN GOSUB 320
270 IF PEEK (- 16384) = 155 THEN XDRAW 1 AT X,Y: POKE -
  16368,0: END
280 IF PEEK (- 16384) > 127 THEN GOSUB 430
290 GOTO 200
300 REM
310 REM
320 REM CHANGE COLOR
330 IF CL = 0 AND XS = 0 THEN XS = 1: GOTO 400
340 IF CL = 0 THEN CL = 3:XS = 1: GOTO 400
350 IF CL = 3 THEN 380
360 IF XS = 0 THEN CL = 0: GOTO 400
370 XS = 0: GOTO 400
380 IF XS = 1 THEN XS = 0: GOTO 400
390 XS = 1:CL = 7: GOTO 400
400 GOSUB 480: RETURN
410 REM
420 REM
430 REM CHANGE BRUSH SIZE
440 BR = BR + 1: IF BR > 4 THEN BR = 2
450 GOSUB 480: RETURN
460 REM
470 REM
480 REM DRAW BLOB
490 HCOLOR= 0: DRAW 2 AT 7,185: DRAW 2 AT 6,185: HCOLOR= C
  L
500 DRAW BR AT 6 + XS,185
510 POKE - 16368,0: RETURN
520 REM
530 REM
540 REM SHAPE DATA
550 DATA 4,0,10,0,20,0,28,0,31,0,36,149
560 DATA 173,219,246,24,8,56,7,0,36,108,54,110
570 DATA 36,36,0,255,108,54,0,4,0

```

CHILD'S PLAY

trate erasing with two blacks.

Don't expect a small child to create *realistic* pictures of houses and boats. The joystick isn't an ideal graphics tool, and it's difficult to control the paintbrush with great precision. The strange behavior of colors on the Apple graphics screen also makes it difficult to create realistic masterpieces. But do encourage your children to create abstracts in glowing colors.

Saving Pictures

When your little artist finishes a masterpiece, you can save it to admire later. First, cycle through the colors to black to make the blob in the lower left corner invisible. Then press the escape key to erase the cursor and display the graphics screen. To see the text screen, type TEXT and hit the return key. (To switch back to the graphics screen without erasing it, type POKE - 16304,0:POKE - 16302,0). To save the screen, type BSAVE PICTURE1,A\$2000,L\$2000. If you save more than one picture on a disk, give each one a different name.

Displaying Pictures

To show the best selections to visitors, just type VTAB 22:HGR. Then type BLOAD PICTURE1. (Use your own file names to select the picture you want.) These commands appear below the hi-res picture so you can see what you type. When the picture is loaded completely, type POKE - 16302,0, and the bottom of the picture will replace those four lines of text.

If you have a graphics printer utility such as Zoom Grafix, Printographer, or a printer card with a graphics screen dump such as the Dumpling GX, you can print the graphics screen. You'd need a color printer for the whole effect, but your little artist might like to color a black and white printout with crayons or with paint—being careful not to stipple the white shag. ■

Address correspondence to Michael Seeds at Franklin and Marshall College, P.O. Box 3003, Lancaster, PA 17604.

What made over 100,000 Apple II owners fall in love with System Saver?

It's the most versatile, most convenient, most useful peripheral ever made for the Apple.®

System Saver® filters out damaging AC line noise and power surges.

70-90% of all microcomputer malfunctions can be traced to power line problems.* Problems your System Saver guards against.

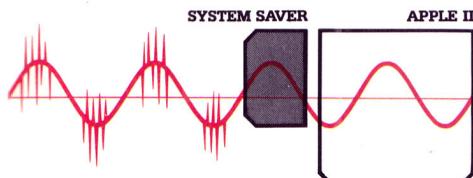
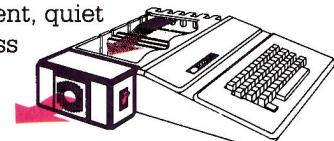
Power line noise can often be interpreted as data. This confuses your computer and produces system errors. Power surges and spikes can cause severe damage to your Apple's delicate circuitry and lead to costly servicing.

System Saver clips surges and spikes at a 130 Volts RMS/175 Volts dc level. A PI type filter attenuates common and transverse mode noise by a minimum of 30 dB from 600 kHz to 20 mHz with a maximum attenuation of 50 dB. You end up with an Apple that's more accurate, more efficient and more reliable.

System Saver lets your Apple keep its cool.

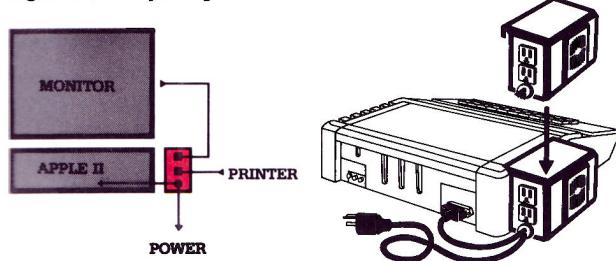
Today's advanced peripheral cards generate heat. In addition, the cards block any natural air flow through the Apple IIe creating high temperature conditions that shorten the life of the Apple and peripheral cards.

System Saver's efficient, quiet fan draws fresh air across the mother board, over the power supply and out the side ventilation slots. It leaves your Apple cool, calm and running at top speed.



System Saver makes your Apple more convenient to use.

No more reaching around to the back of your Apple to turn it on. No more fumbling for outlets and cords to plug in your monitor and printer. System Saver organizes all your power needs.



It functions as a multi-outlet power strip with two switched outlets. Plus System Saver offers the ultimate convenience; a front mounted power switch for fingertip control of your entire system.

So if you want to keep damaging heat, line noise and power surges out of your system for good, pick up the only peripheral that's in use every second your computer is in use. The System Saver. You'll soon come to think of it as the piece Apple forgot.

Compatible with Apple stand



\$89.95 at Apple dealers everywhere.



251 Park Avenue South, New York, NY 10010
(212) 475-5200 Telex: 467383 KML NY

Circle 86 on Reader Service card.

System Saver is a registered trademark of Kensington Microware Ltd. © 1984 Kensington Microware Ltd. System Saver is patent pending.

VCR and CRT: The Latest Media Marriage

by Mark Sanders

Imagine a television program you, the viewer, not only can stop and start up again at will, but whose very progress is determined by how you respond to it. Then imagine that such a medium can be individualized enough to be used as a training film for hundreds of students, each of whom works at a different pace and approaches a subject with varying experience and skills. Now you can begin to appreciate my excitement when, looking for a way to implement microcomputer technology in my college classroom, I stumbled upon interactive video—with full-color, computer-generated graphics and text screens all coordinated by a microprocessor.

With my Apple II Plus, I can call these fireworks up on my color monitor and choreograph them in any configuration. Students can manipulate the show from the keyboard, so each student can see a "different" scene. From an educator's perspective, the potential seemed limitless.

What iced it was the cost. While I found videodiscs require a Michael Jackson bankroll to produce, interactive videotape represents an affordable alternative. For \$600, I purchased an interface card so my videotape player could talk to my Apple. (Editor's note: Companies distributing interactive video hardware/software for videotape systems are listed at the end of



Photo. Title page generated by a Koala Pad for the offset press program.

this article.) With course-authoring software costing another \$400, I created question and information pages (see the **Table**) and controlled video scenes and computer-generated graphics. One thousand dollars was a bargain, since it gave me the opportunity to work with an exciting instructional tool.

Hardware Requirements

At the heart of my system is an Apple II Plus (or //e), one disk drive, and a color monitor with audio capability.

The computer is interfaced to a Sony SLO-325 Beta I videotape recorder with an interface card and cable. The videotape recorder must have a port at the back that accepts the cable from the interface card. This type of port is available on the more expensive "industrial" videotape recorders from Sony, JVC, and Panasonic (\$1300 and up).

The less expensive "consumer" videotape decks don't have this port, but with interactive video's rapid growth, manufacturers are certain to include the port on less expensive models in

Interactive video joins the best of two technologies into one training package ideal for employers and educators.

the near future. A printer, indispensable during software development, gives students and teacher the option to print student results.

From among the many boards that interface a microcomputer and videotape recorder, I selected the BCD card because it was the least expensive board with absolute frame addressability: The software developer can identify the start and stop points of a video scene to the nearest video frame. (Videotape operates at 30 frames per



Macroprint™ PLUS

"The most versatile Hi-Res / Lo-Res graphics & text interface card."

Four Boards in One!

Not only do you get the more powerful MACROPRINT mode (with many new features such as screen editing) but MACROPRINT PLUS also emulates commands (switch-selectable) of Pkaso™, Grappler™, Apple Parallel™ and Apple Dumpling™ boards.

Zooms Up To 15 Times Size!

Simple commands allow zooming with the same or different scale factors in either direction (vert/hor) for part or all of Hi-Res page; inversion, rotation, change of margins, side-by-side dumps and much more.

MACROPRINT PLUS interfaces to popular makes of Centronics compatible printers (switch-selectable) e.g. Apple Dot Matrix, Epson, C-Itoh, NEC, Gemini and Okidata. Use the same commands for all printer types when in MACROPRINT™ mode!

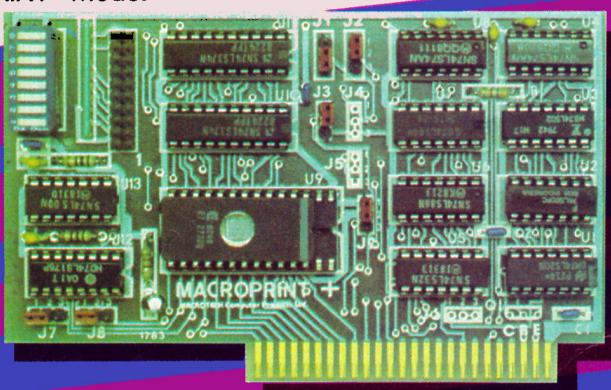
**Designed especially for
Apple II/II+/III,
Franklin Ace™ & other
Apple compatibles.**

Built-in Expansion Capability!

MACROTECH's unique design makes it the first printer interface card that can accommodate a larger EPROM (i.e. up to 256K program chip!) as made available. This means that new utilities/features can be added as later options such as our famous MACRODISK™ and SPEEDISK™ memory utilities.

Suggested Retail price US\$179. For more information contact your dealer or MACROTECH. Dealer and distributor inquiries most welcome.

Macroprint Plus, Macrodisk and Speedisk are TM's of Macrotech Computer Products Ltd., Pkaso TM of Interactive Structures Inc., Grappler TM of Orange Micro Inc., Apple Dumpling TM of Microtek Inc., Apple II/II+/III, Apple Parallel TM's of Apple Computer Inc., Franklin Ace TM of Franklin Computer Corporation.



Macrotech
COMPUTER PRODUCTS LTD.

Innovative Enhancement Technology

1370 Marine Drive, North Vancouver, Canada V7P 1T4 (604) 984-9305

second, ensuring accuracy to within 1/30 second.) Less accurate addressability could make a video scene start earlier or later than desired. Further, completing the BCD Associates' system, the course-authoring software eliminates hardware and software incompatibility problems.

Individualized Instruction On Videotape

With the help of the Learning Resources Center at my university, I designed and produced an interactive video instructional program to introduce students to the principles and operation of the offset press. The interactive video system is set up in the laboratory so students can use the instructional program whenever they're ready for it. The program takes 45 to 75 minutes. The time varies because no two students see, hear, and do exactly the same thing while working through the program.

When a student is ready for instruction on the offset press, he or she gets a short workbook and heads for the Apple II Plus in the lab. The first page of the book shows how to load the proper videotape into the videotape player, turn on the color monitor, and boot the Offset Press Lesson disk.

The student receives all further directions from the computer monitor. Uppops a full-color title page I designed with Koala Pad (see the **Photo**). After five seconds, the computer loads the offset press program. Next, it checks that the student inserted the correct videotape. If the student loaded the wrong tape, the computer indicates the error and waits until the student loads the correct one. Then, the Apple asks for the student's name, identification number, and date. This information, along with the student's lesson responses, is placed in a disk file that documents the student's progress.

From the beginning, the student is in control. The menu options include program introduction and unit instruction. If the student completes part of a lesson or wants to review one section, he or she may skip to option 4, for example, which describes the dampening unit of the offset press. The methodology behind interactive video assumes that each person interacts with the material differently and will therefore move through the program differently.

In my program, option 1 starts the student "at the beginning." A text page

appears and describes what the student is about to see: video segments followed by questions. "Enjoy the ride," it says as the videotape automatically fast-forwards to the first video scene in only a few seconds. What happens next is, for most students, a startling experience: Full-color video appears on the monitor. There I am, talking about the basic principle of offset lithography: oil and water don't mix.

It's important to note that I've never done this particular demonstration in the classroom. For the video production, I took the time to set up a "Mr. Wizard" demonstration of the process using props and tricks that I couldn't have pulled off in front of 20 students.

With interactive video, you can use virtually any other medium along with the video. In this case, a workbook lets the student write in notes to use as a study guide away from the computer or as an aid when operating the offset press. As soon as the video segment is over, a message refers the student to Figure 1 in the workbook. Then the student is asked a multiple choice question about Figure 1 in the workbook. The computer indicates if the student keyed in the correct answer; then the response is recorded on disk and a second question is presented. If the student answers the first question incorrectly, the computer automatically branches to remediation.

Play It Again, Sam

Remedials may be in the form of text screens, computer graphics, video segments, and even workbook references. Video remedial segments are among the most interesting options—as anyone who's ever seen Dragon's Lair in a video arcade can attest. With video segments, the instructional designer has several options. The easiest is simply to branch back to the exact scene the student just viewed. Yet a long scene would contain more information than the question tested.

A more appropriate option is to show the student a shorter portion of the video segment that addresses the content in question. This is relatively easy, because the video already exists. All you have to do is identify the portion of the video you want to display as the remedial. From the student's perspective it's also gratifying because the video remedial is short and sweet (some are only a few seconds long).

A third video remedial option, and perhaps the most sound, is to show an entirely new video scene. If the stu-

Macromem-3

64-128K Memory Board

Adds 64 to 128K to your Apple II/II+/Ile™ MACROMEM-3 is used automatically by programs like MAGICALC™ spreadsheet for extra file space and speed! MACROMEM-3 also operates as a 16K language card in an Apple II/II+ when installed in slot 0 for Pascal and other programs. MACROMEM-3 uses no cable!

Accompanying Software includes these powerful utility programs:

1. MACRODISK™ -Disk Emulation

Enables the board to emulate a disk drive for high speed access in either DOS 3.3, Pascal, or CP/M.

2. SPEEDISK™ -Disk Access/Backup

No more need to load and save files to/from memory board as with RAM-Disk programs. With SPEEDISK, disk access speed nears that of RAM board access time plus all new data is automatically backed up on disk!

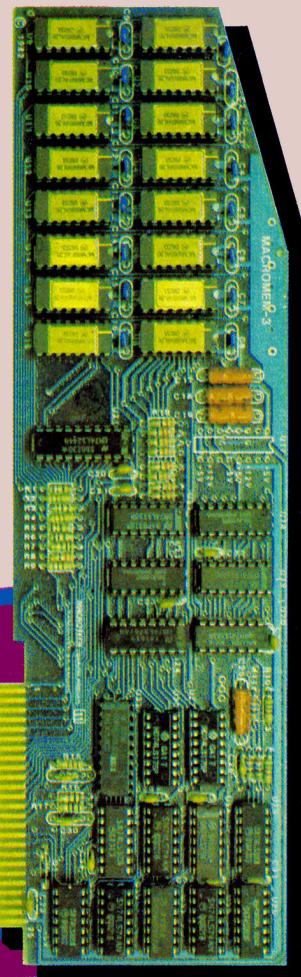
3. MACROSPEED™ -Disk Duplication

Use the memory board to speed up disk duplication dramatically!

MACROTECH Computer Products Ltd. also offers DISKULATOR™ (64-512K) for those requiring more than 128K. For smaller requirements, MACROMEM-1 (16K) and MACROMEM-2 (32K) are also available. Contact your dealer or MACROTECH for more information.

Dealer and distributor inquiries most welcome.

Macromem, Macrodisk, Speedisk, Macrospeed, and Diskulator are TM's of Macrotech Computer Products Ltd. Apple II/II+/Ile are TM's of Apple Computer Inc. Magicalc is a TM of Artsci Inc.



Macrotech

COMPUTER PRODUCTS LTD.

Innovative Enhancement Technology

1370 Marine Drive, North Vancouver, Canada V7P 1T4 (604) 984-9305

High-Tech Training Ground

On the average, Americans spend almost one third of their lives staring at television sets. It's a given that the medium influences marketing trends, styles, behavior, and even learning methods. Educators, recognizing television's universality for some time now, have incorporated the medium into their lesson plans. The process, however, extends past not only the traditional classroom but also tradi-

tional methods. Today, people are clamoring for *interactive video*, a technology that combines video with microcomputers for training purposes.

"People believe TV because it's so much of their lives now," says Diane Howard, president of BCD Associates, a company involved in interactive video production.

Television's "credibility" makes it a particularly useful learning tool in many contexts. Seat a factory worker in front of the computer, and she can learn all about on-the-job safety; a marketing staff can

review point-of-purchase sales; a beginning pilot can receive flight training. Businesses welcome interactive video because it cuts down on training expenses. No longer does a company have to absorb the costs of sending personnel to out-of-town seminars or hiring outside instructors. The training can be conducted in-house.

Applications run the gamut from employee orientation to flight simulation. Advocates say the method is more effective than watching a linear videotape or an on-screen lesson. The reason: branching.

The branching format lets the viewer go through the lesson at his or her own pace and then answer questions. The program won't continue until the viewer answers the questions correctly. If the viewer misses a question, the program reviews the corresponding segment and repeats the question.

BCD Associates reports more than five times as many interactive video clients than it had two years ago. Howard says users are "thrilled" with the technology. "We've allowed programmers to create their own programs," Howard says, "and they can be as creative as they want."

The applications are limitless, considering what you can add to the system. One company added voice recognition because a trainee's fingers were too big for the keyboard. Instead of keying in answers, he responded orally. Special-needs instructors welcome interactive video into their classrooms. A school for the blind in Florida uses it to teach signing to instructors.

Howard cites a Pioneer Electronic's study delineating interactive video's superiority over traditional learning methods. According to Howard, the study reveals that interactive video students have less standard deviation and three times the retention of their counterparts.

But training isn't the only application. The process carries into day-to-day business. Take a real estate company, for example. Instead of driving clients to look at each house, an agent can show a prospective buyer the actual houses—from foundation to closet space—on the computer monitor. Other interactive video production areas cover data storage and retrieval, archiving, and nurses' training. □ —C.C.

Circle 163 on Reader Service card.

**FREE!
SHIPPING**

YOUR APPLE NEEDS WORK FORCE II. ^{T.M.}

6 ultra-friendly menu driven programs on 1 disk.

- 1. THE LOAN ANALYZER:** Compute loan and mortgage amortizations, balloon payments, total interest paid, daily percentage rates, present value of capital leases, and periodic payment amounts. Find an unknown term or the amount which can be financed. Print or display amortizations starting or stopping at any period.
- 2. THE LINE WRITER:** A line-at-a-time correctable typewriter. Great for addressing envelopes and other small word processing jobs.
- 3. THE BALANCING ACT:** Checkbook balancing is made easy with this once a month checkbook balancing program. Easy to use menus allow entries to be added or changed. Group totals, amount of error, and all entries can be printed or displayed.
- 4. THE CALCULATOR:** Turns your Apple into a four function printing calculator with memory and percent.
- 5. THE SAVINGS ANALYZER:** Compute the future value of savings, IRA's, and investments in moments with The Savings Analyzer.
- 6. THE WAGE ANALYZER:** Analyze your income by the hour, time & 1/2, weekly, bi-weekly, semi-monthly and annually. Calculate increases or decreases by amount or percent. Printout provides a great way to present pay raises to employees.

"I found the programs a joy of ease, completely understandable and with a price that is hard to resist. Most families with an Apple (II, II+, Ile, IIC, III) should make this part of their personal library. It could be a valuable, indispensable tool at your (and my) level of finance."

B.R. Cursor
The San Francisco Independent
July 4th, 1984

Compatible with Apple IIC, Ile, II+, II and III (in emulation mode).

"Borrowing money is no problem with the loan analysis section to guide you. Work Force II is easy to understand and operate. It's an honest value..."

Gregg Glau
InCider
June 1984

Call Now Toll Free
orders only! 24 hours

1-800-221-9280 ext. 979

ALL ORDERS SHIPPED IMMEDIATELY

Please send me WORK FORCE II at \$34.95.
 check or money order. VISA MC AE COD (add \$4.00 for COD)
Arizona residents add 6% Sales Tax. Overseas add \$5.00.

Card # _____

Signature _____ Valid From _____ to _____

Name _____ Phone _____

Address _____

City/State/Zip _____

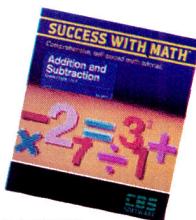
Core Concepts

P.O. Box 24157 Tempe, AZ 85282
Product Information (602) 968-3756
DEALER INQUIRIES INVITED



TAKE ANY 2 FOR \$4.95 EACH

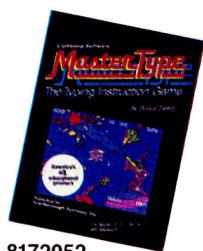
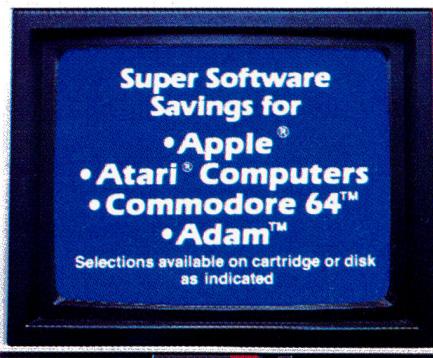
when you join the Columbia Software Club and agree to buy 4 selections at regular Club prices in the next 2 years



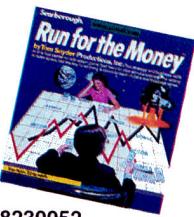
0040022
Addition/Subtraction
0041012
Multiplication/Division
Both available for
C-64, Atari H.C.
and Apple: disk.



8035022
Zaxxon
Adam, C-64: cart;
Atari H.C.: disk
and cart; Apple: disk.



8172052
Master Type
C-64, Atari H.C.;
disk and cart;
Apple: disk.



8230052
Run For The Money
C-64, Atari H.C.
and Apple: disk.



8122062
Pitfall II
Adam, Atari H.C.;
cart; C-64;
disk and cart.



8100022
Choplifter!
C-64, Atari H.C.;
disk and cart;
Apple: disk.



0044082
Murder By
The Dozen
C-64, Apple: disk.



8123052
Bruce Lee
C-64, Atari H.C.
and Apple: disk.



8216032
Seastalker
C-64, Atari H.C.
and Apple: disk.



8101012
Lode Runner
C-64, Atari H.C.;
disk and cart;
Apple: disk.



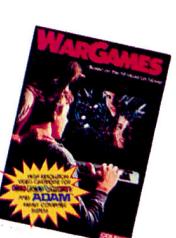
8090042
River Raid
C-64: disk and cart;
Atari H.C., Adam: cart.
Apple: disk.



8105072
Zork II
Atari H.C. and
Apple: disk.



8150012
Summer Games
C-64, Atari H.C.
and Apple: disk.



8149052
WarGames
Adam: cart.



8102002
Temple of Apshai
C-64, Atari H.C.
and Apple: disk.



8215042
Beach-Head
C-64, Atari H.C.;
disk.



8103092
Pitstop
C-64, Atari H.C.;
cart.
8229082
Pitstop II
C-64, Atari H.C.
and Apple: disk.

Here's a great selection of sensational software for every member of the family—at super savings! You've seen these software selections in stores anywhere from \$19.95 and up—yet, now, you can have any two for the fantastic low price of only \$4.95 each! That's our way of introducing you to the Columbia Software Club—a brand-new service that delivers the best software for Atari Home Computers, Apple® Commodore 64™, and Adam™ systems. **How the Club works:** about every 6 weeks (up to 9 times a year) you will receive the Columbia Software Club Magazine. In it you'll find out about an exciting variety of the newest software available: simple shoot-em-up adventures, more challenging strategy software, learning software to help the entire family acquire new skills—how to type, master basic math, budget your finances, and much more.

In addition, each issue of the magazine announces the "Pick-Hit Selection"—an outstanding software selection specifically for your system. If you want only this Selection, you need do nothing—it will be sent to you automatically. If you want one of the alternate selections—or nothing at all—just tell us so on the response

card always provided, and mail it by the date indicated. You'll always have ten days to make your decision. If you ever receive a selection without having had ten days to decide, you may return it at our expense.

The selections you order will be mailed and billed at regular Club prices—which currently begin at \$24.95 and are less than list prices! (A shipping/handling charge and applicable sales tax is added.) Remember, you don't have to buy a selection every time you hear from us—your only membership obligation is to purchase four selections, at regular Club prices, in the coming two years. And you may cancel membership at any time after doing so. If you decide to continue, you'll be eligible for our generous money-saving bonus plan.

10-Day Free Trial: we'll send you complete details of the Club's operation with your introductory selections. If you are not satisfied for any reason whatsoever, just return everything within 10 days for a full refund and you will have no further obligation. So act now!

All applications subject to review, and the Columbia Software Club reserves the right to reject any application or cancel any membership.

ATARI® is a registered trademark of Atari, Inc.—APPLE® is a registered trademark of Apple Computer, Inc.—ADAM™ is a trademark of Coleco Industries, Inc.—COMMODORE 64™ is a trademark of Commodore Electronics, Ltd.—BRUCE LEE™ is a trademark of Linda Lee—ZAXXON™ is a trademark of Sega Enterprises, Inc.

COLUMBIA SOFTWARE CLUB, Dept 2RP
3000 North 35th Street, Terre Haute, Indiana 47811

102

Please accept my application under the terms outlined in this advertisement—and send me the 2 selections indicated below, for which I am enclosing check or money order for \$9.90 (that's \$4.95 for each selection). I agree to buy 4 more selections at regular Club prices in the next 2 years.

Write in numbers
of the 2 selections

Send my selections for the following system (check one system only):

ATARI® HOME COMPUTERS 2 APPLE® 3
 COMMODORE 64™ 4 ADAM™ 5 (cartridges only)

If you have selected Atari Home Computer or Commodore 64 software—be sure to check the type of format you prefer (check one format only):

CARTRIDGE A DISK H

Name _____ (please print) First Name _____ Initial _____ Last Name _____
Address _____ Apt. _____

City/State _____ Zip _____
Do you have a telephone? (check one) Yes No

Parent's Signature
if under 18:

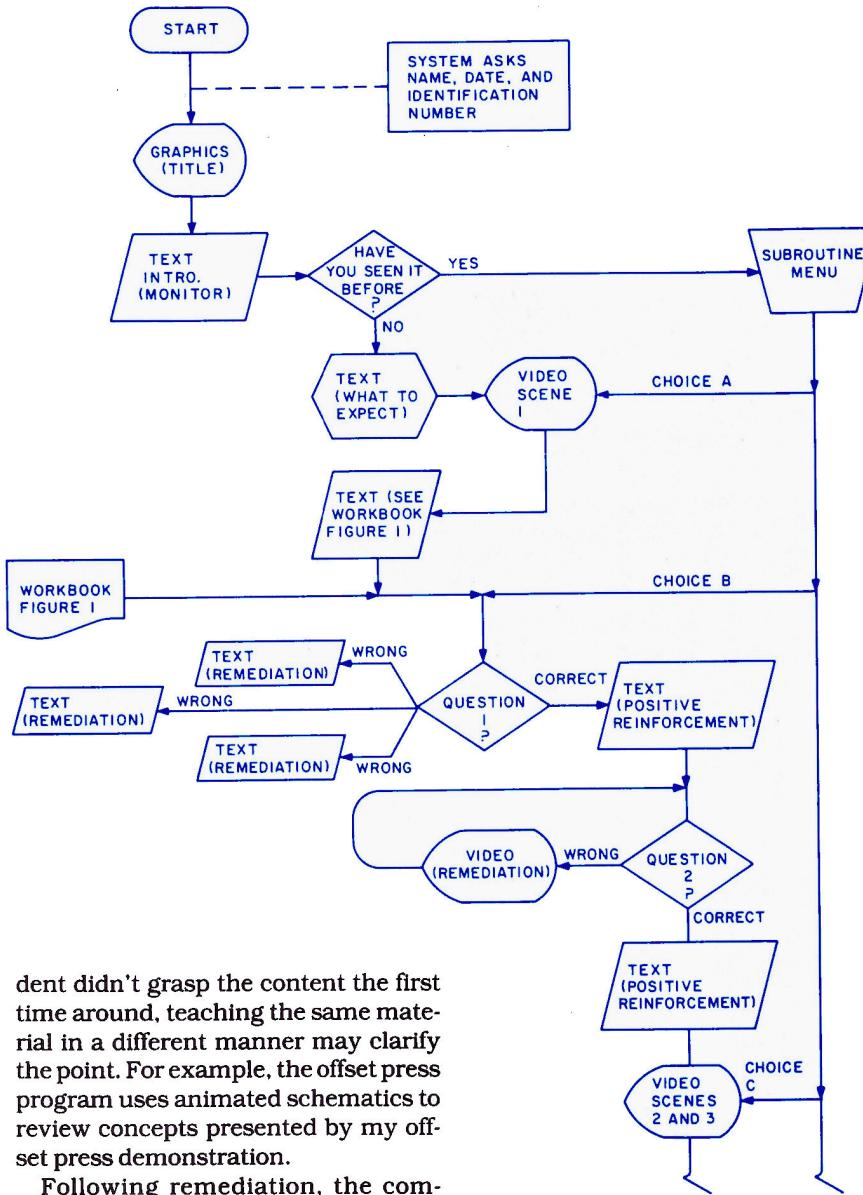
Offer not available: APO, FPO, Alaska, Canada, Hawaii, Puerto Rico
WANT THIS CHARGED TO YOUR CREDIT CARD? Fill in information below, we'll charge the \$9.90 and future shipments to your credit card—and credit your account with any returns.

American Express VISA MasterCard _____
Interbank No. _____

Credit Card No. in full _____ Expiration date _____
Signature _____

103

Figure. Flowchart for the interactive video program on the offset lithographic press.



dent didn't grasp the content the first time around, teaching the same material in a different manner may clarify the point. For example, the offset press program uses animated schematics to review concepts presented by my offset press demonstration.

Following remediation, the computer repeats the question or asks an analogous query. If the student misses the question again, the program presents another remedial (either a new or a different one). Some educators succumb to frustration or impatience when a student asks the same question over and over; the computer doesn't. Students can continually miss a question, and the interactive video system will guide them through remedial segments until they get it right.

With the offset press program, the students can't advance through the lesson until they correctly respond to the questions segment. So when a student completes the program, you're certain he or she answered the questions correctly. During a live lecture, I may ask the class a few questions, but I have no way of knowing if everyone understands what I'm teaching. With interactive video, students master the

material at their own pace.

At any point during the lesson, the student may stop the video by pressing the space bar. He or she then has four options: start the video scene at the beginning; resume the video from the point it was interrupted; skip the remainder of the video scene (which brings him to the questions segment); or quit. This feature allows the student to review a scene, get a drink of water, answer a question from a fellow student—and return to the program without missing a thing.

At the end of four of the seven units in the lesson, students must name the offset press parts labeled in the workbook. The monitor displays the correct answers so that they can check their work. When a student completes the lesson, or opts to quit, the computer tallies the percentage of correctly-

Table. Page options in BCD Associates' The Instructor course-authoring software.

Filename	Description
Information pages	Text page of one or two five-line paragraphs that provide information during the lesson.
Question pages	Multiple choice questions with four responses.
Keyword pages	Questions requiring student to type in correct answer.
Menu pages	Menus with up to nine items and one-line title.
Graphics page	Contains the name of a graphics file. When the program calls for this page, it searches the catalog and displays the graphics, which may be programmed or digitized.
Random page	The computer randomly chooses one of four possible branches. It simulates real life where there is more than one result from a given input.
Audio page	Plays only the audio and displays the last video that appeared on the screen.
Tape record	Activates a video camera to record during the actual lesson (for example, to record student performance for instructor's evaluation).

answered questions, records all responses, and bids farewell. The student may also request a performance printout.

Software Requirements

I used "The Instructor," BCD Associates' course-authoring software, to develop the final courseware. The instructional developer performs two basic functions using this course-authoring software. First, you log the start and stop points with a subroutine, Logger II. You must write a special frame code on channel 2 of the videotape using the Logger II program. Then, you simply view the videotape and press the space bar at the "in" point and again at the "out" point of each desired video scene to record the frame number of each scene's start and stop points. This data file is writ-

ten to your disk and can be edited as needed.

The second, more elaborate task involves writing the lesson file comprising material like that found in the **Table**. The accomplished programmer can write this part of the program in BASIC to gain the flexibility of options not provided by the BCD software. Of course, the trade-off requires more time spent developing this portion of the program. Other course-authoring programs and languages can help you develop interactive video courseware. (For example, see "Super-PILOT: Between Student and Teacher," inCider, September 1984, p. 57).

Designing the lesson portion is an involved task. Not only must you write questions and answers, produce graphics, and write information pages, but while writing these pages, you have to make branching decisions. You must provide four plausible choices for mul-

iple choice questions. And for each choice, you need to decide which video scene and page the program should branch to next. You must think in several dimensions simultaneously to develop this instructional material; it's helpful to work closely with flowcharts. (See the **Figure**.)

Once you write the data file (logged start and stop points for the video scenes) and the lesson file, you can add them to a BCD files catalog. From the time the student boots the prepared lesson disk, everything is automatically accessed.

Video Production

Producing the video is the most time-consuming element in developing interactive video courseware. Quality video production requires substantial planning and technical expertise as well as adequate facilities. Fortunately, many schools and colleges boast good video facilities that are available to those who want to develop interactive video courseware.

For this program, we spent a day

taping in the graphics communications laboratory. We spent another two days in the studio, taping animated video schematic diagrams, supers (words overlaid on the video scenes), and the introductory video demonstration. Another two days were devoted to editing the tape to its final Beta version.

Clearly, video production isn't for everyone. But there is an alternative. I taught interactive video courseware development to a group of 12 graphic communications students. I used an existing videotape and showed my students how to use the interactive video hardware and software to retroactively convert conventional linear videotape into interactive video.

Put interactive video to work for you. See what a little imagination can do to change a staid classroom or workplace into a vibrant educational setting. ■

Mark Sanders is an assistant professor at the Virginia Polytechnic Institute and State University, Division of Vocational and Technical Education, Blacksburg, VA 24061.

Interactive Video: Tape Versus Disk

Interactive videotape and interactive videodisc, though similar mediums, present important distinctions. Among its advantages, videodisc allows random access of each of the 54,000 video frames on a disk, thus providing a "worst case" search time of just a few seconds. With videotape, you must advance or reverse the tape to access scenes. This can produce a "worst case" search time of a couple of minutes—a problem careful editing minimizes.

Videodisc also offers still-frame capability: each of the 54,000 frames may be frozen, like slides. To stop videotaped action, you must tape a still image for as long as you want it frozen, a process that eats up tape rather quickly. Further, videodiscs, virtually indestructible, are more durable than the comparatively fragile tapes.

On the cost scale, you can spend several thousand dollars for your first videodisc—or about \$8 for your first videotape. In the long run, videodiscs are less expensive since making copies is analogous to producing vinyl audio recordings from a master. Interestingly, though, videodiscs are made from videotapes. Since the program is developed with videotape, you lose little by breaking into the technology with tape. □

Product Information

Allen Communication

140 Lakeside Plaza II
5225 Wiley Post Way
Salt Lake City, UT 84116
(801) 537-7800

Audio Visual

Effective Communications
105 5621 11th Street NE
Calgary, Alberta
Canada D2E 6Z7
(403) 275-5118

BCD Associates

5809 SW 5th Street
Suite 101
Oklahoma City, OK 73128
(405) 948-1293

Bell and Howell

Visual Communications Group
Marketing Services Department
7100 McCormick Road
Chicago, IL 60645
(800) 323-4338

Cavri Systems

26 Trumbull Street
New Haven, CT 06511
(203) 562-4979

General Technical

4101 North St. Joseph Avenue
Evansville, IN 47712
(812) 423-4200

Gyrr Products/Odetics

1515 South Manchester
Anaheim, CA 92802
(714) 772-1000

Instructional Industries

343 New Carner Road
Albany, NY 12205
(518) 869-5581

Omega Group

2 Commerce Park Square
23200 Chagrin Boulevard
Cleveland, OH 44122
(216) 461-7005

Panasonic

Audio Visual Systems Division
1 Panasonic Way
Secaucus, NJ 07094
(201) 348-7000

Producers' Interactive Publishing

3250 Wilshire Boulevard
Suite 900
Los Angeles, CA 90010
(213) 383-0334

Sony Corporation of America

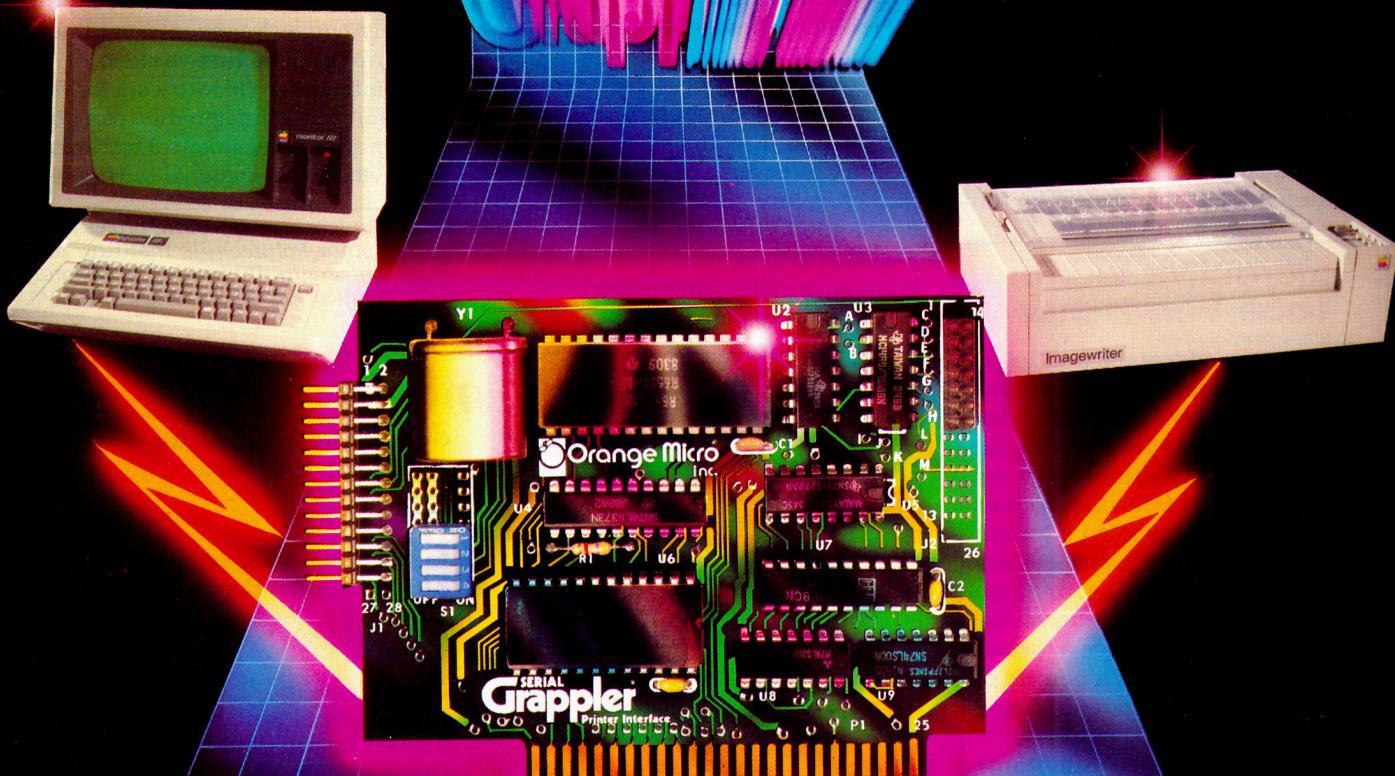
9 West 57th Street
New York, NY 10019
(212) 371-5800

Whitney Educational Services

1777 Borel Place
Suite 416
San Mateo, CA 94402

ANNOUNCING THE NEW STANDARD FOR APPLE® IIE'S AND IMAGEWRITERS

SERIAL **Grappler®** Printer Interface



#1 AND COMMITTED TO STAY THERE

Orange Micro's Grappler® products have set the standard for Apple interfaces throughout the world. With over 170,000 units sold, Grapplers are in use with printers from all the major manufacturers.

The new Serial Grappler gives you this same quality and innovation for Apple's versatile Imagewriter, or any Imagewriter compatible printer. When you buy computer equipment compatibility is critical, and the Serial Grappler offers the best of both worlds. It's fully Apple compatible, so your software will run without a hitch. But there's more. It's also Grappler + compatible, so all the programs written to use the industry standard Grappler features will run on the Serial Grappler the same way. With the Serial Grappler, your system will work the way you want it to.

With the Serial Grappler you won't need complicated software to print your text or graphics. A few simple keystrokes is all it takes.

In all, the Serial Grappler has over 25 built-in commands for graphic and text screen dumps and text formatting. These include a Ile 80 column text dump as well as exclusive support for Apple's Double Hi-Res Graphics. The Serial Grappler comes complete with an FCC approved printer cable and friendly, thorough documentation. Its superior quality is backed by a full 1 year warranty. What more could you ask from a printer interface?



Orange Micro®
inc.

1400 N. Lakeview Ave., Anaheim, CA 92807
(714) 779-2772 TELEX: 183511CSMA

Apple is a registered trademark of Apple, Inc.
Imagewriter is a trademark of Apple, Inc.

EXCLUSIVE BUFFERPAK™ UPGRADE OPTION

Orange Micro has set the industry standard again with the Bufferpak, the world's first expansion module for an Apple interface. The Bufferpak plugs directly onto the Serial Grappler, adding a printer buffer with up to 20 text pages of memory. No extra cables, no extra slots used, no extra power supplies, no tricky installations. Just plug it on. Adding the power of buffering has never been so easy.

The Bufferpak comes standard at 16K, and is upgradable to 32K or 64K of memory. In no time you'll be experiencing the time saving benefits of buffering.

Grappler products are available through Apple dealers and computer stores throughout the world. For more information, visit your Orange Micro dealer today.

© Orange Micro, Inc., 1984



Taxing Questions

by Gregory R. Glau

You're going to file early this year. Wasn't that one of the resolutions you made when you bought an Apple? But before you buy a tax package, ask yourself two questions: How much do I really know about taxes? And what exactly do I want this program to do?

As with most software, you can pick up a tax package and learn how to operate it. But with tax systems, knowing how to use the program is only half the battle. The other half involves tax laws, rules, procedures, and forms to wade through. The type of program depends on the functions you need: tax planning, data storage, sorting through data to concentrate on preparing tax forms, and so on.

Examining Your Motives

Who does your taxes now? If you do them yourself, are you familiar with ever-changing IRS rules to take all legitimate deductions? Do you want a program that simply calculates your taxes based on lump-sum information you enter? Or do you need itemizing to detail your income and deductions?



The right software package can help you cope with 1984 tax pressures.

Must the system print the required forms per government specifications, so you can just sign your name and send them to the IRS? Do you already know which IRS schedules and forms your tax situation requires? Or should the software "know" what information you need to track and ask for data automatically?

The software selection process, then, concerns both what you know and how involved you want to be. The situation is aggravated by the fact that we use our tax program only once a year and tend to forget how to run the darn thing by next tax season.

Tax programs come in a variety of shapes and prices, but generally perform one of two main functions. *Tax planning systems* let you enter your projected income and deductions and display or print your projected tax liability. These systems help you get an idea of how many dollars you'll have to relinquish to Uncle Sam as different things happen to your financial picture.

Tax preparation programs take the information you enter to calculate your taxes and print most or all of the

tax return forms. The better programs provide the IRS schedules that detail what's summarized on form 1040. Accountants and other tax preparers use these programs for client accounts, since the Apple does the drudge work.

Some packages combine these two programs when both planning and preparation are needed.

Tax Law Changes

One of the first things you learn about tax programs is that they aren't always a sure thing. Tax laws change, and so a tax package must allow you to make internal changes or offer quick updates in case you bought a system the day before the new law went into effect.

A case in point: I received Personal Tax Planner 1984/85, from Aardvark/McGraw-Hill for review in mid-July, and by late August the program was outdated. When I questioned the company about how something could become obsolete so quickly, I was told a new law had just been put into effect. I said, gee, didn't they know that the law was coming along? Well, yes, they did, but they weren't sure if it would be signed into law. So they kept selling the program until the President signed the bill.

While you might question their mar-

keting methods, you must sympathize with the folks who put out tax programs, because they live or die at the whim of Congress and the executive branch of the government.

Look Before You Leap

So, the first consideration is to make sure you buy a current product and check into the company's background to determine if they'll upgrade the package when changes occur. (For your information, Aardvark/McGraw-Hill intends to upgrade the Professional Tax Planner, but there are no scheduled plans for the Personal Tax Planner.)

The second consideration is your tax situation. If you get by without itemizing deductions, have a stable income, currently do your own tax paperwork by hand, perhaps even report on the 1040A short form, chances are you really don't need to computerize your taxes. The same holds true if you don't have any tax shelters (like real estate investments), don't see your income changing in the near future, won't be making large donations, and so on. If your life is simple, and it appears that it'll stay that way, why spend anything on a tax program?

But if your income is rising, if you spend the week before April 15 in a

state of hysteria, if the check you send your Uncle in Washington, D.C., gets larger every year, if your accountant is driving a better car than you are, then let your Apple and a good tax program come to your rescue.

Would it help you to forecast what your tax situation will be under certain conditions? In 1985, suppose you get a 15 percent raise, your oldest daughter gets married (so you lose her as an exemption), and you sell a share of your vacation home? What if all those things take place, and you buy a small apartment building as a tax shelter? Most tax programs let you plug your data into their forms, and will calculate your tax liability. You can change items to project what your tax situation would look like under different conditions.

Other tax packages concentrate on the forms themselves. After you enter your information, following a pre-set plan, the system calculates your taxes and prints the necessary IRS forms. You'd find this type of software appropriate if you know where to list each item and which form to use.

In any case, know what you're doing. None of these programs takes you by the hand and shows you which number goes where. Sure, the line your total income goes on is pretty obvious (the government makes that part easy), but how you should itemize deductions is the real trick. If you don't know what is allowable and what isn't, or what are the proper forms to use, then you'll have trouble with your taxes—whether you do them by hand or on your Apple.

If you understand the tax system, then a program for your Apple can be a true help, because the calculations are built in and the computer does the math. Many programs also let you enter data for next year's taxes as income is received and deductions are spent, so you'll be ready when the next tax season comes along. Almost every company sells yearly updates that change along with the laws.

Personal Considerations

Start with who you are and what your financial future holds. Read a good tax book or two (one often recommended is J.K. Lasser's *Your Income Tax*) so you're up-to-date on tax laws. The IRS publishes *Your Federal Income Tax*, if you can get someone to pick up a copy for you at the IRS office. (You wouldn't go in yourself, would you? They might recognize you.)

Poke through your old income tax forms; they are excellent guidelines for

Circle 229 on Reader Service card.

UPGRADE get 11e features on your apple II

up to 5 keyboard features with the
REPEATERRRR+

Auto Repeat: Invaluable. Repeats any keypress, including control characters for scrolling, rubout, etc. **Adjustable delay** to match your typing touch. **ON/OFF control.**

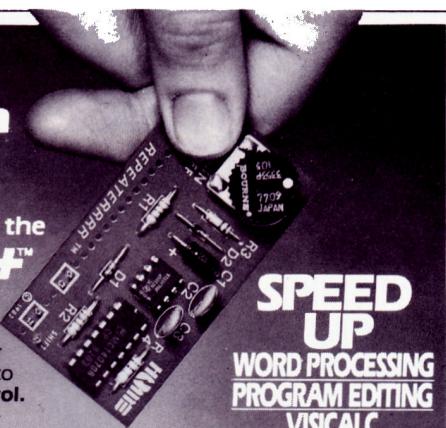
High Speed Cursor: Makes Apple's REPT key a speed control to double the repeat rate of any keypress. Zip through text or across a VisiCalc spreadsheet to get there fast. A must for 80 column displays.

New option for the REPEATERRRR:
SHIFT-key Modification: SHIFT as you should. Get the "standardized" connection (SHIFT-key to Game I/O) while leaving the Game I/O open with our plug-in connector. Supported by most popular word processors (Apple Writer II, Word Handler, Screen Writer II, etc.) and many other programs. Works only with certain software and/or most 80 column boards.

Easy installation. Open top and plug onto 25-pin connector between keyboard and encoder board (fits Rev. 7 or later).

REPEATERRRR
without SHIFT-key modification **\$27.95**

REPEATERRRR+
with SHIFT-key modification **\$37.95**



TO ORDER: Ask your local dealer or order direct.

Add \$2 per order shipping/handling (\$5 foreign). Ohio orders add 6.5% sales tax. Check, MasterCard VISA (incl. card no. & exp. date). 30 day trial — full refund if not satisfied. One year warranty.

HOME
HIGH ORDER MICRO ELECTRONICS CORP.

17 RIVER ST. CHAGRIN FALLS OHIO 44022
PHONE 216-247-3110

Trademarks: Apple/Apple Computer, Inc., Screen Writer II/Sierra On-Line, Inc., Word Handler/Silicon Valley Systems Inc., VisiCalc/VisiCorp.

■ **They're all winners:** Apricorn's Apple upgrades are designed and manufactured for trouble-free performance. All of our cards are totally software and hardware compatible, fully burned-in, tested, and socketed. Our comprehensive, illustrated manuals and Lifetime Warranty give you a winning hand, everytime.

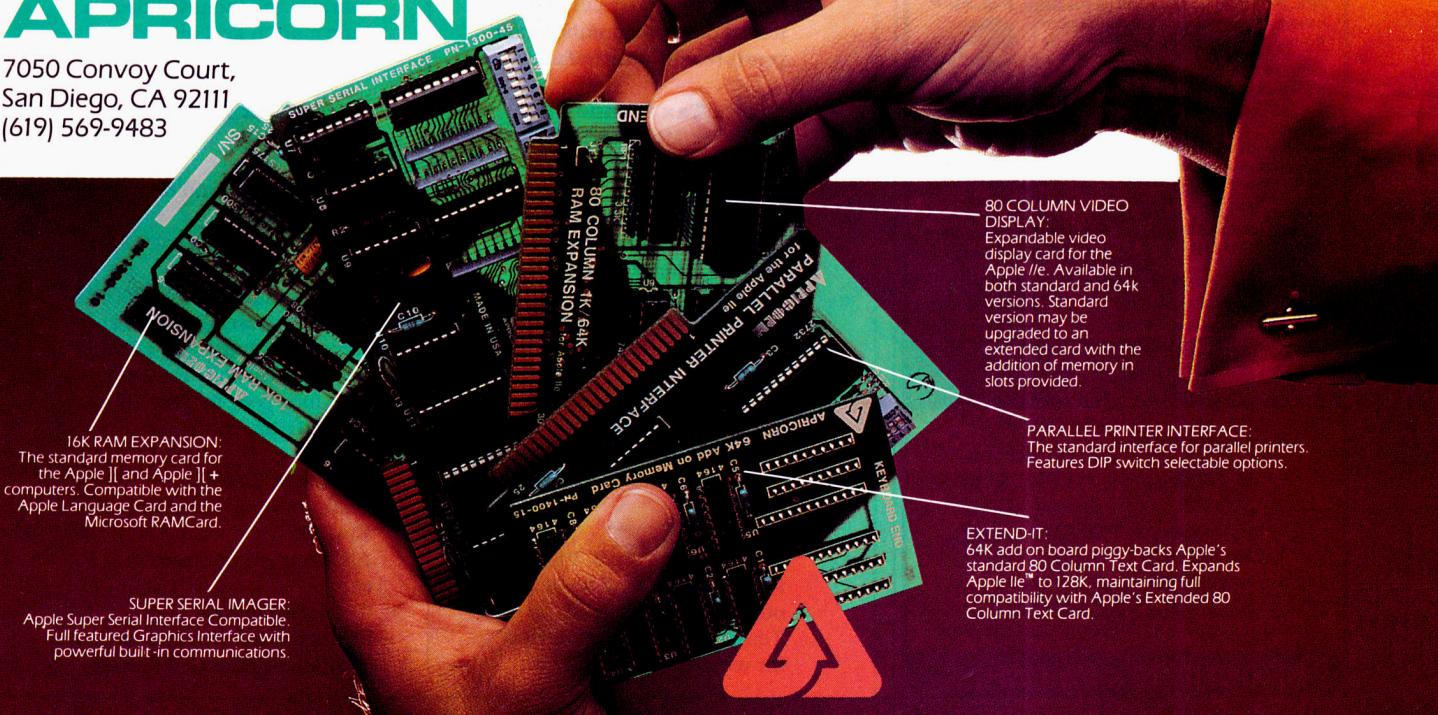
■ **Super Serial Imager™:** This powerful new card replaces Apple's own Super Serial Card as the best RS-232 interface available for Apple // computers. In terminal mode, Imager's powerful built in communications firmware contains interrupt support for trouble free operation at 300-1200 baud and beyond with special support of most intelligent modems. In printer mode, it's a full featured graphics interface. Support provides full screen dumps to Apple Imagewriter printers and most serial interfaced graphics printers. Command compatible with graphics card described below.

■ **Graphics Printer Interface:** A potent graphics output card for parallel printers. Pictures and graphs from the hi-res screen as well as snapshots of the 40/80 column text screen are performed with a simple print command. Contains Grappler+ command set as subset for software compatibility.

**pick
a card,
any card**

APRICORN

7050 Convoy Court,
San Diego, CA 92111
(619) 569-9483



*The
Master
Handicapper™*
Series by Professor Jones



EVALUATES FROM RACING FORM!

Age	Gender	Post Position
Class	Jockey (Today)	Post Position
Condition	Jockey (Last)	Speed
Consistency	Length	Trainer
Earnings	Time of Year	Workouts

And many more... GRAPHIC REPRESENTATION of finish

PROGRAM



GLD. Thoroughbred "Gold" Edition™
A "Full" featured thoroughbred analysis designed for the professional and serious novice. \$159.95 complete

EGLD. Enhanced "Gold" Edition™

"Gold" Edition with complete Master Bettor™ system integrated onto the same disk. This powerful program will transfer all horses and scores to the bet analysis with a "single keystroke." (Master Bettor™ included) \$199.95 complete

GLTD. Limited "Gold"™

Enables Professional Handicappers to assign specific values to the racing variables "they" feel are important.

PROFESSIONAL HANDICAPPING SYSTEMS

%	%	%
Age 5	Consistency 15	Speed 10
Class 15	Jockey 15	Workouts 0
Condition 10	Trainer 5	Time of Year 0
Earnings 5	Post 10	Consistency 5
100%	Is Everything OK (Y/N)	

Create program weight based on a particular track and fine tune it for maximum win percentage. This program is designed for "ease of use." The user needs no programming experience.

(contains Integrated Bettor™) \$299.95 complete

GD. Gold Dog Analysis™

The only professional dog handicapper on the market, includes:

1) Speed	6) Condition
2) Post Today	7) Running Style
3) Kernel	8) Weight
4) Post Last	9) All new internal weighting
5) Distance	10) NEW class indicator

If you are near a greyhound track, you can't afford not to use this program.

\$149.95 complete

(with integrated Master Bettor™) \$199.95

Limited DOG analysis™ 299.95

**MHH. Master Harness Handicapper™**

Professional software designed to provide a thorough analysis of all trotter and pacer races in North America and Canada. Features:

Class	Post Positions	Time Finish
Driver	Track Conditions	Time Last Quarter
Days Since Last	Trainer	Track Rating
Gender	Time 1/4	Temp Allowance

\$159.95 complete w/integrated Master Bettor™ \$199.95

PPX. Professor Jones' Football Predictor, Prof. Pix™

Complete Football Analysis with Data-Base.

1) Overlays	4) "Over/Under" bets
2) Point Spreads	5) Data Base Stats
3) "Super Plays"	6) Holds "100" teams

Highest percentage of winners 1983 \$39.95 complete

\$99.95 with Data Base Management

\$\$ MB. Master Bettor™

A compliment to ALL Master Handicapper programs, includes:

1) Win/Place>Show	4) Trifecta	7) Money Management
2) Quinella	5) Pick Six	8) Odds Analysis
3) Exacta	6) Daily Double	9) and Much More

A perfect program designed to use results from all Master Programs to generate "best bet". \$59.95 complete

Model 100 Portable Systems

TP-Thoroughbred/Pace™ (24K) \$99.95 complete

DG1-Master Dog Analysis™ (24K) \$99.95 complete

Prof's Basketball Analyzer Complete Program 79.95Send check / money order / VISA / MasterCard
(Include expiration date) to:

Prof. Jones
1114 N. 24th St.
Boise, ID 83702

TELEPHONE
(208) 342-6939

TERMS: FREE SHIPPING ALL SOFTWARE.
Add \$6.00 hardware / C.O.D. Add \$6.00 / Add 3 weeks personal checks / Add 4.5% ID residents / Add \$6.00 outside U.S.A. / Prices subject to change.

BROCHURE AVAILABLE

itemizing this year's deductions and checking that you don't miss any deductions.

Before you buy a tax program, make sure it provides all the forms and schedules your financial condition warrants. Ask your local computer store owner to let you borrow a program (or test it in the store) before you buy it. Enter information from last year's tax return to see how complex a particular package is and to check its math.

While no tax program substitutes for competent advice, a good, coordinated program can save you hard-earned, taxed dollars by forecasting your tax liability under various circumstances and by tracking your information. None of this is great fun, but why not use your Apple to make the process a bit less painful? ■

Write to Gregory Glau at P.O. Box 1627, Prescott, AZ 86302.

Buyer's Guide to Tax Preparation Software

An Apple II-family computer (II, II Plus, //e, or //c) running on DOS 3.3 and with 48K RAM and one disk drive is assumed in these product descriptions. Additional system requirements or capabilities are specified.

Asset-Manager

Micro Lab

\$200

Forms 1040, 1065, 1120, 4562, 4797, 4255

Two drives

Keeps track of depreciation on 999 assets and ten businesses. Automatically chooses most cost-effective method.

Corporate Tax Planner

Aardvark/McGraw-Hill

\$350

64K

Evaluates tax implications of continuing operations, analyzes the effects of potential audit adjustments, and plans for special, non-recurring items. Does computations and prints results on schedules.

Estate Tax Planner

Aardvark/McGraw-Hill

\$750

128K

Offers complete estate tax planning for the professional. Generates eight different analyses and processes four estate plans simultaneously.

Estate Tax Planner

TaxCalc Software

\$100 (\$50 when purchased with TaxCalc Tax Planner at \$150)

Form 706

128K; SuperCalc 3, VisiCalc IV, Multiplan, and some other spreadsheets
Templates follow tax forms for what-if analyses.

Forecast

Monogram

\$49.95

Form 1040, Schedules A-E, G, W, XYZ; income averaging, alternative minimum tax

Estimates federal taxes. Integrates data from Monogram's Dollars and Sense program into Forecast to create and analyze up to five alternative tax situations.

J.K. Lasser's**Your Income Tax**

Simon & Schuster

\$79.95

Collects data and does calculations for tax returns. Summarizes the included book's information and provides help windows on screen.

Master Tax Preparer

CPAids

\$1795

Over 32 forms and depreciation schedules
64K, 80-column card, CP/M, hard drive
Handles complex tax returns for the professional tax preparer. Automatically chooses the best method. Transfers data files year-by-year to generate pro forma.

Pay Less Tax II

Computer Mart Inacomp

\$149.95

All forms except farm income
CP/M, two drives
Prints tax information on computer-generated forms.

Haba Claus

has something special for all the Apples of your eye.

Finally there's a friendly face you can turn to for all your Apple computer gift-giving needs this holiday season. Haba Claus, one of the family at Haba Systems.

No one else brings you such a unique line of simple-to-use products for your Apple //e™, //c™, or ///™ computer. And you can spend as little as \$30.00 or as much as \$500.00* — depending on how special the Apples of your eye really are.

Just be sure to keep your gift-giving plans under wraps. That is, if you want want this season's most tempting gifts to stay that way. Otherwise, those presents will be opened faster than you can say "Haba Happy Holiday". And we wouldn't want anyone to peek, now would we?

Besides, if you've been real good this year, Haba Claus may even have something extra-special for you, too.

Apple //e, //c, ///

Silent Butler™

Bill-Paying/Check-Writing program for //e and //c that maintains checking and savings accounts, and using exclusive CheckHolder™, automatically prints payments on your existing checks. \$69.95

HabaDisk™ for //e and //c

3.5" external drive with SoftBundle software package featuring HabaTemplates, HabaMerge, HabaCom, HabaMemory-Manager™, plus the application for down-loading AppleWorks to 3.5" program disk. \$449.95

HabaMerge™

Form Letter/Mailing Label program for AppleWorks™ or /// E-Z Pieces™ that links data base and word processor for letter perfect mail-merges every time. \$69.95

HabaTemplates™

54 pre-defined spreadsheet and data base formats for use with AppleWorks or /// E-Z Pieces. Gets you up and working quickly, plus you can modify them to suit your needs. \$29.95



haba systems

Making apples more tempting than ever.™

15154 Stagg Street • Van Nuys, CA 91405-1025 • (818) 989-5822

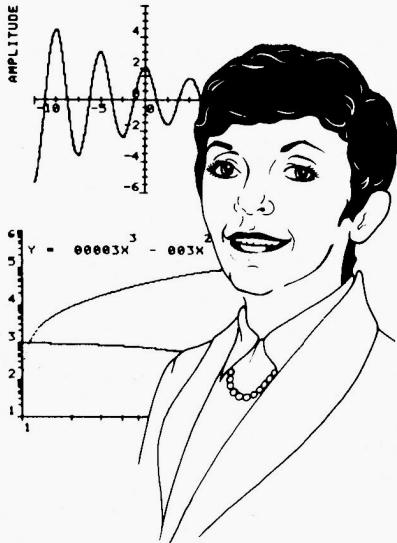
HabaMerge, HabaTemplates, HabaDisk, HabaCom, HabaMemoryManager, and /// E-Z Pieces are trademarks of Haba Systems, Inc. Silent Butler is a trademark of Silent Butler Software. Apple //e, //c and ///, and AppleWorks are trademarks of Apple Computer, Inc.

©1984 Haba Systems, Inc.

*All prices listed are suggested retail. Actual dealer prices may vary.

'I like plotting equations with a computer, don't you?"

—Virginia Lawrence, Ph.D.
Chief Executive Officer



If you're like me, you'd rather not plot data by hand. That's why I've made sure that **CALCU-PLOT™** can plot your data and equations quickly and easily.

CALCU-PLOT™ can graph your equations, their derivatives, and their integrals.

And if you think our equation plots are great, wait until you see our data plots. You can choose linear, semi-log, log-log, or polar coordinates.

CALCU-PLOT™ is the professional equation solver from Human Systems Dynamics, publishers of The Statistics Series. Like the other programs in The Series, **CALCU-PLOT™** easily performs sophisticated work for professionals at an affordable price.

\$150.00

For more information, call me on our toll free number.



HUMAN SYSTEMS DYNAMICS

To Order—Call
Toll Free (800) 451-3030
In California (818) 993-8536
or Write
HUMAN SYSTEMS DYNAMICS
9010 Reseda Blvd. Suite 222/Dept. C
Northridge, CA 91324
Dealer Inquiries Invited



Planmode

Sawhney Software

\$395

Apple //I, as well as the II family

Plans and projects federal and state (CA, CT, DC, MA, MD, PA, VA) personal income taxes. Offers 1-10 year projections or alternatives for one year. Customizes reports.

Professional Tax Planner

Aardvark/McGraw-Hill

\$350

128K

A problem-solving tool that determines accurate answers to various what-if tax situations. Up to five alternative tax strategies or projections can be examined simultaneously.

Shortax + Plus

Syntax Corporation

\$395

56K, CP/M

Provides year-round tax and financial strategy analysis. Computes the effect of alternate financial and tax opportunities for individuals, corporations, and trusts.

SofTax—Individual Version

Design trends

\$199

Form 1040

Apple //I, as well as the II family; VisiCalc

Prepares and prints forms and schedules. Includes what-if analysis.

SofTax—Preparer's Version

Design trends

\$499

Form 1040

Apple //I, as well as the II family; VisiCalc

Prepares and prints forms and schedules. Contains an organizer and a client cover-letter. Saves or prints on continuous forms or as a batch.

SofTax—Professional Version

Design Trends

\$850

Form 1040

Apple //I, as well as the II family; VisiCalc

Same as Preparer's version, but also includes trust, partnership, and corporate forms.

Tax Advantage

Continental Software

\$69.95

Form 1040, schedules A-E, G, SE, W; form 4562

Prints out information onto form 1040 as a general purpose preparation program. Works as an effective tax planner and projects income for the fiscal year.

Tax Break Annual

Proforma Software

\$130

All schedules

Computes taxes for the current year and future years by indexing.

Tax Break Junior

Proforma Software

\$50

Prepares uncomplicated tax returns.

Tax Break Planner

Proforma Software

\$180

Automatically determines the lowest bottom-line tax. Provides what-if studies and forecasts tax consequences of an investment strategy.

Tax Command Planner

Practical Programs

\$79.95

Current tax tables

Compares up to six options to plan taxes over five years. Helps decide questions on income averaging, tax shelters, depreciation, and others.

Tax Command Professional

Practical Programs

\$79.95

Form 1040, schedules A-E, G, RP, SE, W; forms 2106, 2119, 2441, 3902

Includes built-in tax tables with automatic calculations to tell how to average income, compute capital gains and losses, and itemize deductions. Prints directly on forms.

Tax Manager

Micro Lab

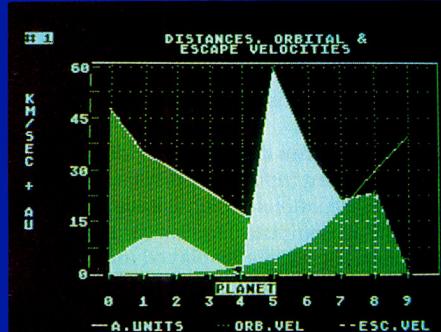
\$180

Form 1040, schedules A-E, G, SE; forms 2210, 2446, 3468, 4625, 4726, 5695, 6251

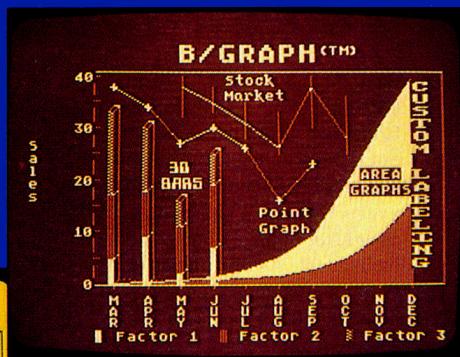
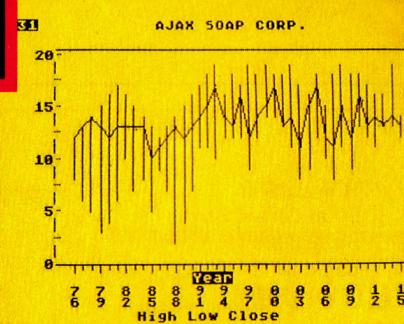
Collects information for and prints out forms.

FOR
ATARI
AND APPLE

B/GRAPH



A SENSATIONAL STATISTICAL ANALYSIS AND GRAPHICS CHARTING SOFTWARE PACKAGE!



Give your data maximum impact – analyze it, graph it and chart it with B/Graph. Simple to learn, easy to use, and you get professional-quality results every time. Here's what the experts say:

“...a powerful graph-generating and statistical analysis program...we recommend B/Graph for all Atari users.”

InfoWorld

“...easy to use, an excellent manual, an outstanding value.”

Creative Computing

“...the finest business graphics package available.”

S.P.A.C.E. Newsletter

Graph up to three factors with 100 data points each. Pie charts, 2 or 3-dimensional bar graphs, line and area graphs – just some of the many exciting possibilities at your command. Plus, you can convert instantly between graph types. Other

flexible control features include full screen editor, scaling, labelling, overlays and automatic “slide show.”

“...graph features alone make B/Graph a good buy. The addition of a sophisticated statistical package make it superb.”

InfoAge

Statistical analysis functions include standard deviation, variance, Chi-square, regression analysis, factor manipulation and much more. Plus, you can use B/Graph in conjunction

with VISICALC™ to perform “What If?” projections.

Even with no computer experience, you'll easily master B/Graph's smooth, natural interface. The clear, comprehensive manual is supported by a complete tutorial – you'll be graphing in minutes!

For sales, marketing, forecasting, accounting, management administration, educators and students. In every way and for every need B/Graph is the ideal graphics/charting software program! Your data never looked so good!

B/GRAPH: professional graphics/charting and statistics for Atari and Apple II + /e/c.



BATTERIES INCLUDED

“The Energized Software Company!”
WRITE FOR A FULL COLOR BROCHURE

Circle 40 on Reader Service card.

186 Queen St. West
Toronto, Ontario,
M5V 1Z1 Canada
(416) 596-1405

17875 Sky Park North,
Suite P, Irvine, California
USA 92714

Tax Mini-Miser

Sunrise Software

\$295

Evaluates up to six alternative tax strategies, or projects strategies up to six years.

Tax Optimizer

Dynacom

\$59.95

Examines and evaluates various tax alternatives and selects the most advantageous method for the individual federal tax.

Tax Planner

CPAids

\$300

Form 1040, schedule G; forms 4625, 4972, 6251
64K, two drives, 80-column card
Computes long-range tax calculations, then helps project tax liability into future years. Data entry offers checking of alternate years or multiple assumptions per year.

Tax Preparer

HowardSoft

\$250

Form 1040, schedules A-G, R, SE, W; forms 2106, 2119, 2210, 2441, 3468, 4562, 4797, 5695, 6251
64K

Keeps records throughout the year and investigates alternate tax strategies. Creates itemized lists for various entries.

Tax Templates

Omega Microware

\$89.95

Form 1040, all schedules Apple //, as well as the II family; 64K; VisiCalc
Uses VisiCalc files to handle all 1040 forms.

Tax-Prep

EZ Ware

\$129.95

Form 1040, schedules A-E, G, R, RP, SE, W; forms 2106, 2119, 2210, 2440, 2441, 3903, 4684, 6251
64K, Multiplan
Works with Multiplan to dis-

play IRS schedules and forms as working templates. Automatically selects income averaging if lower tax results. Can be used as a tax planning aid also.

TaxCalc Tax Planner

TaxCalc Software

\$150 for the program; \$50 for planning templates for AZ, IL, MO, OH, OR; \$100 for CA, NYC, NY

Form 1040, schedules D, G; form 4972
128K; SuperCalc 3, VisiCalc IV, Multiplan, and some other spreadsheets
Templates follow federal and state tax forms for what-if analyses.

Taxmode

Sawhney Software

\$295

Apple //, as well as the II family

Simplifies data entry by displaying input items and user instructions simultaneously. Tax computation results are continuously displayed and updated.

Manufacturers

Aardvark/McGraw-Hill

1020 North Broadway

Milwaukee, WI 53202

(414) 225-7500

Continental Software

11223 South Hindry Avenue

Los Angeles, CA 90045

(800) 421-3930

CPAids

1061 Fraternity Circle

Kent, OH 44240

(216) 678-9015

Design Trends

525 South Washington Street

Naperville, IL 60540

(312) 357-2664

Dynacomp

1064 Gravel Road

Webster, NY 14540

(800) 828-6772

EZ Ware

17 Bryn Mawr Avenue

Bala Cynwyd, PA 19004

(215) 667-4064

HowardSoft
8008 Girard Street
Suite 310
La Jolla, CA 92037
(619) 454-0121

Inacomp
1824 West Maple Road
Troy, MI 48084
(313) 649-0910

Micro Lab
2699 Skokie Valley Road
Highland Park, IL 60035
(312) 433-7550

Monogram
8295 South LaCienega Boulevard
Inglewood, CA 90301
(213) 215-0529

Omega Microware
222 South Riverside Plaza
Chicago, IL 60606
(815) 568-6684

Practical Programs
P.O. Box 93104
Milwaukee, WI 53203
(414) 278-0829

Proforma Software
2706 Harbor Boulevard
Suite 203
Costa Mesa, CA 92626
(800) 248-7923

Sawhney Software
888 Seventh Avenue
New York, NY 10106
(212) 541-8024

Simon & Schuster
1230 Avenue of the Americas
New York, NY 10020
(212) 245-6400

Sunrise Software
36 Palm Court
Menlo Park, CA 94025
(415) 441-2351

Syntax Corporation
4500 West 72nd Terrace
Prairie Village, KS 66208
(913) 362-9667

TaxCalc Software
4210 West Vickery
Fort Worth, TX 76107
(817) 738-3122

Graphic Conversions LO-RES to HI-RES

L by **Mark Steinborn**

Low-resolution graphics, simple both to learn and to produce, let you see your drawing develop as you add lines to your program. But most printing programs and printer interface cards with built-in graphics screen-dump generators print only high-resolution pictures. My program, LORES TO HIRES, lets you convert any picture from lo-res to hi-res. By producing all 16 possible lo-res colors in hi-res, the program ensures that sufficient contrast exists for you to recognize your pictures—even if you use a black-and-white printer.

Background

The following facts from the Apple II reference manual helped me write the machine-language version of LORES TO HIRES (**Listing 1**):

- The lo-res graphics screen consists of 960 bytes (24 rows by 40 columns), with an address range of \$400-\$7FF. (Note that a \$ signifies a hexadecimal number; otherwise, the number is decimal.)
- Each lo-res byte describes two lo-res

color dots (pixels) plotted on top of each other. This accounts for the 48 row by 40 column lo-res picture resolution.

- The hi-res graphics screen consists of 7680 bytes—exactly eight times as many as the lo-res screen (192 rows by 40 columns). The address range of page 1 of the hi-res screen is \$2000-\$3FFF. Consider each lo-res byte as 8 stacked hi-res bytes (a “box”) or each lo-res color pixel (one half of a lo-res byte) as 4 hi-res bytes stacked on top of each other.
- Given the address of any lo-res byte, adding \$1C00 to it determines the equivalent hi-res page 1 starting ad-

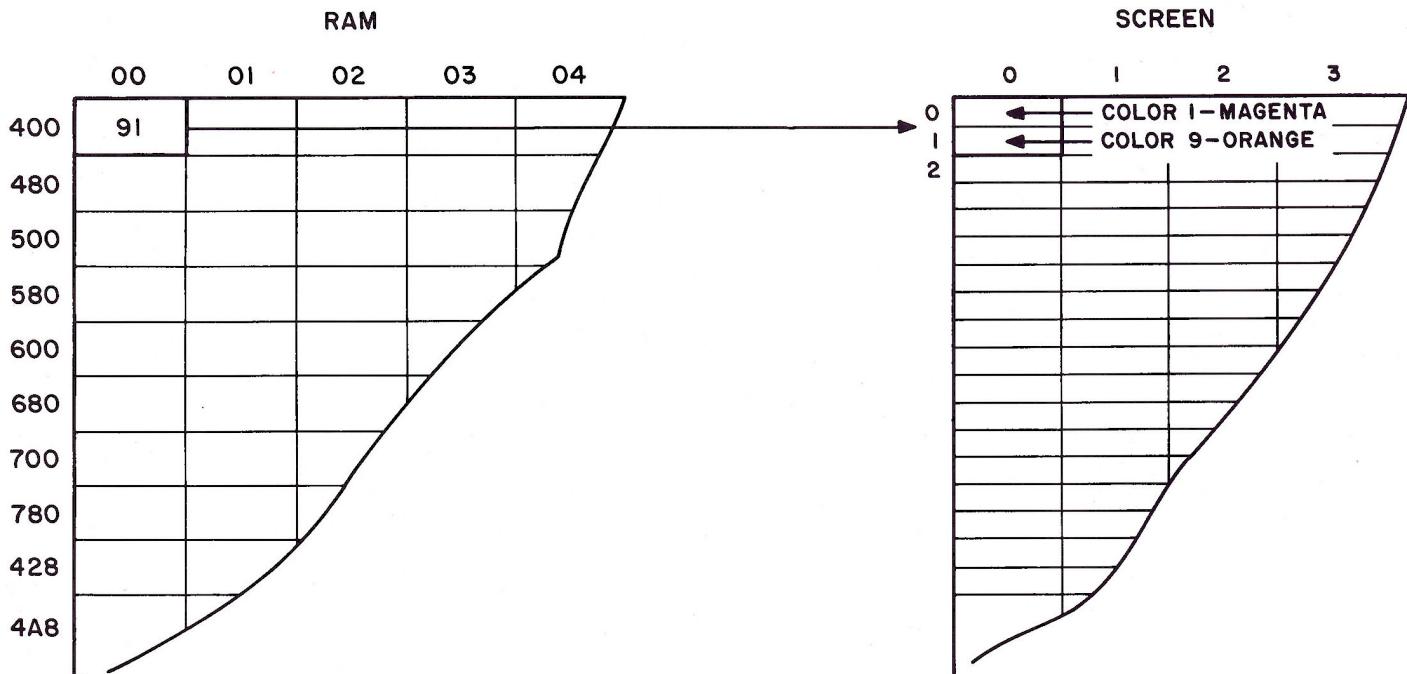
dress—the address of the top byte in the box mentioned above. (Add \$3C00 to determine the hi-res page 2 starting address.)

Lo-Res RAM and Screen Organization

Assume that \$91 is stored at memory location \$400, the upper-left corner of the lo-res graphics screen (see **Figure 1**). Each nibble of a byte of RAM can hold a number from 0-15 (\$0-\$F), and these 16 numbers translate conveniently into the Apple's 16 lo-res color numbers (see the **Table**). In **Figure 1**, byte \$91 represents the colors orange (9) and magenta (1) with

Figure 1. Lo-res RAM and screen organization.

1 BYTE RAM = 2 SCREEN PIXELS



Listing 1. LORES TO HIRES: machine language code.

```

0300- A9 00 85 00 A8 A9 04 85
0308- 01 A9 00 85 06 A5 00 85
0310- 02 18 A5 01 69 1C 85 03
0318- A5 02 29 03 85 06 B1 00
0320- 48 29 0F 20 47 03 20 64
0328- 03 68 29 F0 18 6A 6A 6A
0330- 6A 20 47 03 20 64 03 E6
0338- 00 D0 08 E6 01 A5 01 C9
0340- 08 F0 03 4C 09 03 60 0A
0348- 0A 18 65 06 AA BD 82 03
0350- 85 04 A5 06 C9 02 B0 04
0358- E8 E8 D0 02 CA CA BD 82
0360- 03 85 05 60 A2 00 A5 04
0368- 91 02 18 A5 03 69 04 85
0370- 03 A5 05 91 02 18 A5 03
0378- 69 04 85 03 E8 E0 02 90
0380- E5 60 00 00 00 00 44 08
0388- 11 22 91 A2 C4 88 55 2A
0390- 55 2A 08 11 22 44 33 66
0398- 4C 19 D5 AA D5 AA DD BB
03A0- F7 EE 88 91 A2 C4 AA D5
03A8- AA D5 66 4C 19 33 77 6E
03B0- 5D 3B 2A 55 2A 55 EE DD
03B8- BB F7 3B 77 6E 5D FF FF
03C0- FF FF

```

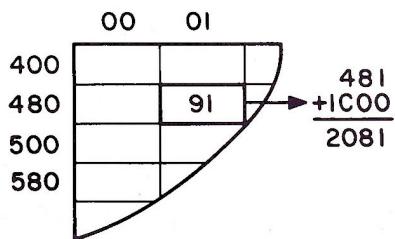
the lower-nibble color plotted on top of the upper-nibble color (magenta at 0,0 and orange at 0,1).

Lo-Res and Hi-Res RAM Addressing

In Figure 2, adding \$1C00 to lo-res address \$481 converts it to the associated hi-res address \$2081, yielding the top address in the 8-byte box. The blown-up box at \$2081 shows the 8 bytes of RAM with \$2081 at the top. Within the 8-byte box, each byte's ad-

Figure 2. Lo-res to hi-res RAM address relationships.

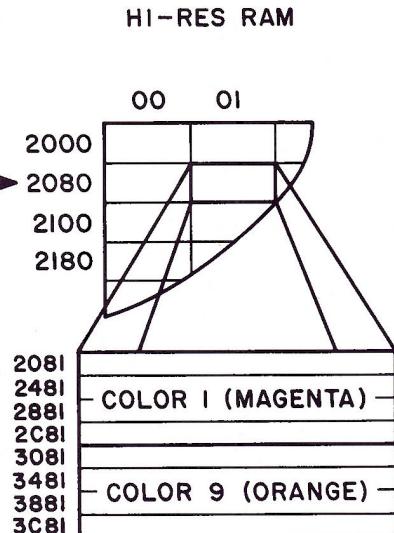
LO-RES RAM HI-RES RAM



dress is \$400 greater than the byte above it.

Hi-Res Color Plotting

After calculating the effective hi-res addresses, you need to determine which color table bytes to plot. (The color table is found at address range \$382-\$3C1. See Listing 1.) Under normal circumstances, when you use only the colors Apple provides, 2 bytes are necessary to display any one color. For example, if you want a solid row of blue, you would alternately place in RAM \$D5 and \$AA for even and odd column numbers, respectively. Normally, Applesoft's Hi-res Position and Plot subroutines at \$F411 automatically ensure that you're plotting with the correct color byte (color mask). If you were to reverse the color bytes (\$D5 odd and \$AA even), you'd see an orange row instead of a blue one.



Normally, I'd be more than happy to let Applesoft set up the color mask for me. Unfortunately, to provide the 16 colors necessary in the lo-res to hi-res conversion, I had to create my own Hi-res Position and Plot routine. Because the composite colors are so complex, it takes me twice as many bytes to describe a color as it does Applesoft. Composite colors are created by alternating a normal Apple hi-res color with either black or white. For example, a composite orange can appear as either light orange or dark orange, depending on whether black or white is

Turn your Apple computer into a complete color graphic workstation.

A complete system for only \$299.

Our new Digital Paintbrush System™ gives you the ability to express your ideas dramatically with color graphics.

You get state-of-the-art features in the first low-cost package to integrate sophisticated graphics, presentation, printout and telecommunication capabilities.

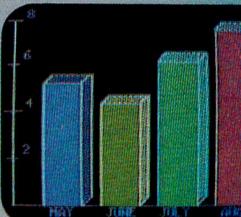
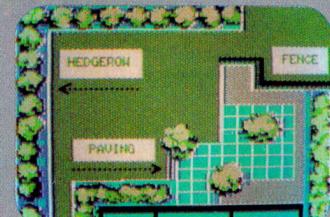
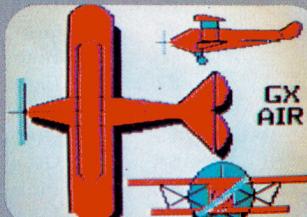
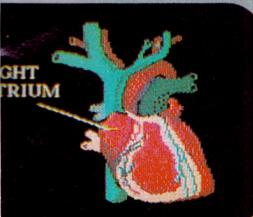
Plus, you get an input device as natural to use as a pencil. And the software is so easy to learn some

Pick up and move any portion of a drawing. All at the touch of a button.

Show & sell.

Our system is meant for everyone who has to sell their ideas to someone else. Because nothing communicates as directly as a picture.

Create instant illustrations, diagrams, business graphics, presentations, overhead transparencies, training material, title slides, symbols, logos, layouts, flow charts. You name it.



Apple IIe & II+ with 64K, one or two Disk Drives.

All images were created on The Digital Paintbrush System™ with an Apple IIe and II+.

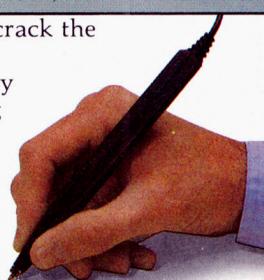
people never crack the manual.

Instead, they learn by using the system. You can turn out vivid color graphics and eye-popping presentations in minutes.

A picture is still worth a thousand word-processed words.

Develop your ideas on the screen. Draw electronically. Then printout or present these ideas. You can even draw interactively over phone lines. Mix in text or labels with dozens of loadable typestyle fonts.* Then sequence everything into report form and printout or create a custom "slide show" on the computer.

You don't have to be an artist. Our powerful software lets you draw automatically. Even complex multi-point curves smooth themselves out.



Outperforms systems costing hundreds more

In fact, our *complete* system costs less than many software packages. And our product replaces expensive graphic printer interface cards. Plus, we're the first to offer interactive drawing over phone lines. • Easy-to-learn. • Complete, versatile system. • Create stunning graphics. • Printout to 37 popular printers. • Draw interactively over phone lines.

Order toll free 1 800 874-1888 or in California (415) 331-3022.

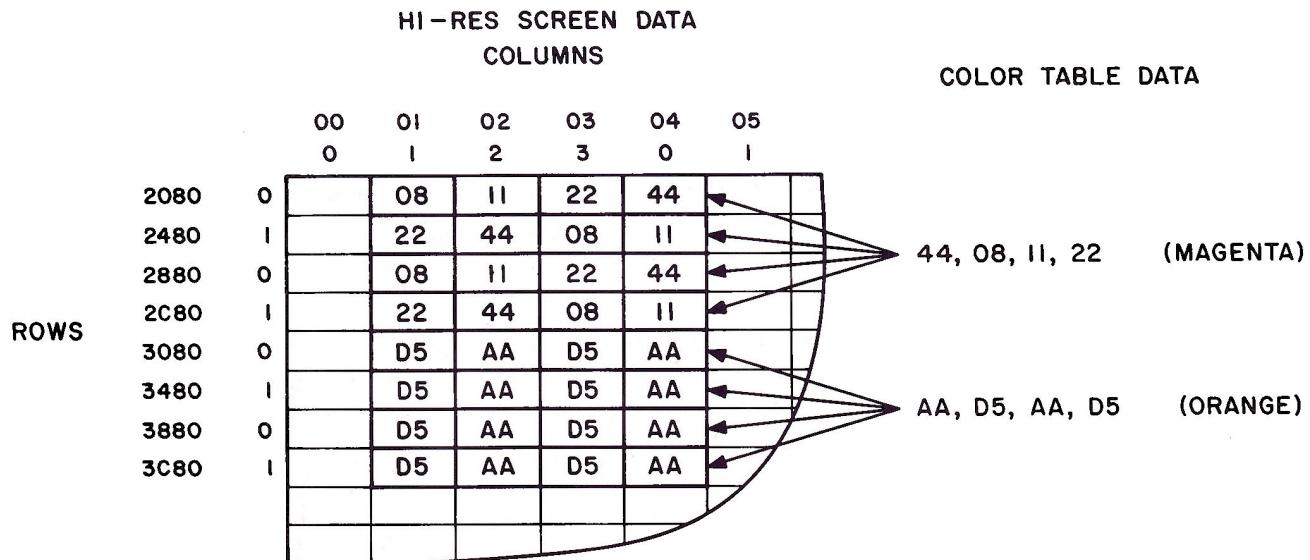
Visa and Mastercard.

The Digital Paintbrush System™

Circle 195 on Reader Service card.

THE COMPUTER COLORWORKS

Figure 3. Hi-res screen data versus color table data.



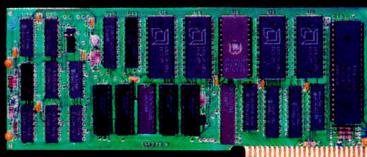
SUPERCHARGES WITHOUT OVERCHARGING.



RUN YOUR APPLE II, II+, IIe 3½ TIMES FASTER FOR \$295

Life just isn't fair. You spend good money to buy an Apple™ computer so you can be more productive, but it seems like you spend half your time waiting for the computer to finish its computing. You wait while it recalculates your VisiCalc™ spreadsheet. You wait while your word processor moves a paragraph. And if you write your own programs you can grow old waiting for compilers and assemblers to finish. At last, there is something you can do to win the waiting game. You can get a SpeeDemon,™ the Apple speed-up card. Just open the cover, plug it into the expansion slot and PRESTO! — your Apple runs up to 3½ times faster! Yes, it works with all Apple software. Yes, it works with all standard Apple peripheral cards. Yes, it works with whatever amount of RAM

you have. It only costs \$295, far less than competing brands. How can this be? Simple. SpeeDemon surgically replaces the slow Apple processor with a high speed 65C02 processor and fast cache memory to execute your software internally at high speed, but still accesses Apple RAM at normal speed. Your Apple will love it. You will love it. Here's how to order: Order direct from M-c-T by mail to: 1745 21st Street, Santa Monica, CA 90404. Or for faster service dial direct at (213) 829-3643. VISA / MasterCard / American Express or check accepted.



Dealer Inquiries Invited

MICRO COMPUTER TECHNOLOGIES

Apple is a registered trademark of Apple Computer Inc. VisiCalc is a registered trademark of VisiCorp. SpeeDemon is a registered trademark of M-c-T

EDX/AB...

if you are serious about
programming



EDX/AB is a full screen Applesoft editor which turns the Apple II+ or IIe into a serious programming tool. Full screen editing allows you to make changes to the program anywhere on the screen, unlike line editors which limit you to calling up and changing only one line at a time. In addition you can scroll through the program in both directions—forward and backward either a screenful at a time or line by line. Gone is that helpless feeling of watching the line you want roll off the screen. A simple keystroke brings it back.

EDX/AB is designed to work with ProDOS, Apple's new disk operating system, and has such "wouldn't it be nice" features as:

- full search and replace capabilities, either global or item by item.
- individual and total cross referencing for variables and GOTO, GOSUB.
- complete control of move, copy and deletion of lines (the move is a 'smart' move where all references to the moved lines are automatically adjusted).
- an active variables list which displays current values, including arrays.
- an extra fast renumber, partial or complete, that works up to five times faster than Apple's renumber.

EDX/AB does this and more. Hex to Dec, Dec to Hex is there of course, as are many additional helpful commands. EDX/AB even provides selectable auto line numbering. In all there are 25 commands, easily listed on the 'Help' screen. The commands are so simple that, after reading the manual, the 'Help' screen will be the only reference you'll need. Just two keystrokes implement any command, and they are at your fingertips all the time, so there is no repetitive loading in from disk.

At TROY SOFTWARE we felt it was time someone took the frustration out of Applesoft programming.

EDX/AB \$69.95

Contact your dealer or order direct. Please specify APPLE II OR APPLE //e. Visa and Master Card orders accepted. Please add \$2.50 for shipping and handling.

TROY SOFTWARE DESIGN INC.

63 Roseview Avenue, Richmond Hill, Ontario
Canada L4C 1C6 (416) 884-4527

*ProDOS requires 64 K RAM and APPLESOFT in ROM. APPLE and ProDOS are registered trademarks of APPLE Computers Inc.

Listing 2. This sample BASIC program displays all 16 colors in hi-res.

```

0  REM ****
1  REM * LORES TO HIRES *
2  REM * SAMPLE PROGRAM *
3  REM * BY MARK STEINBORN *
4  REM ****
10 TEXT : HOME : ST = 49168:KBD = 49152:HR = 49239:LR = 492
    38
20 PRINT CHR$(4)"BLOAD LORES TO HIRES": GR
30 :
40 REM DRAW APPLE
50 :
60 COLOR= 12: VLIN 9,10 AT 33: VLIN 10,11 AT 32: VLIN 11,1
    2 AT 31
70 HLIN 23,38 AT 16: HLIN 24,37 AT 15: HLIN 24,37 AT 14
80 HLIN 25,29 AT 13: HLIN 32,36 AT 13: HLIN 27,28 AT 12: HLIN
    33,34 AT 12
90 COLOR= 13: HLIN 23,38 AT 17: HLIN 23,37 AT 18: HLIN 23,
    36 AT 19
100 COLOR= 9: FOR Y = 20 TO 22: HLIN 23,35 AT Y: NEXT
110 COLOR= 1: HLIN 23,36 AT 23: HLIN 23,37 AT 24: HLIN 24,
    38 AT 25
120 COLOR= 3: HLIN 24,38 AT 26: HLIN 24,38 AT 27: HLIN 25,
    37 AT 28
130 COLOR= 2: HLIN 26,36 AT 29: HLIN 26,36 AT 30: HLIN 28,
    34 AT 31: HLIN 29,30 AT 32: HLIN 32,33 AT 32
140 :
150 REM PRINT "TRY A BYTE"
160 :
170 C = 1
180 POKE ST,0: COLOR= C: HLIN 8,10 AT 7: VLIN 8,11 AT 9: VLIN
    7,11 AT 12: VLIN 7,9 AT 14: VLIN 9,10 AT 13: PLOT 14,1
    1: PLOT 13,7: REM "TR"
190 VLIN 7,8 AT 16: VLIN 7,8 AT 18: VLIN 9,11 AT 17: REM
    "Y"
200 VLIN 18,22 AT 12: VLIN 18,22 AT 14: PLOT 13,18: PLOT 1
    3,20: REM "A"
210 VLIN 29,33 AT 5: HLIN 6,7 AT 29: HLIN 6,7 AT 31: HLIN
    6,7 AT 33: PLOT 8,30: PLOT 8,32: REM "B"
220 VLIN 29,30 AT 10: VLIN 29,30 AT 12: VLIN 31,33 AT 11: REM
    "Y"
230 HLIN 14,16 AT 29: VLIN 30,33 AT 15: REM "T"
240 VLIN 29,33 AT 18: HLIN 19,20 AT 29: HLIN 19,20 AT 33: PLOT
    19,31: REM "E"
270 :
280 REM CALL LORES TO HIRES ROUTINE AT $300
290 :
300 CALL 768
310 IF PEEK (KBD) < 128 THEN 310
320 POKE HR,0: POKE ST,0: REM WHEN KEY IS PRESSED, FLIP ON HIRES SCREEN
330 IF PEEK (KBD) < 128 THEN 330
340 POKE LR,0: REM WHEN KEY IS PRESSED AGAIN, FLIP LORES SCREEN ON AGAIN
350 :
360 REM INCREMENT THE COLOR NUMBER AND START OVER.
370 :
380 C = C + 1: IF C = 16 THEN C = 0
390 GOTO 180

```

again. To save your hi-res picture type:

BSAVE PICTURE NAME,A\$2000,L\$2000

The sample BASIC program (**Listing 2**) displays all 16 colors. The program draws an apple on the screen with the words TRY A BYTE. Lines 300-340 call the LORES TO HIRES transfer, and flip the screen from lo-res to hi-res and back to lo-res again. I've set up a loop from lines 180-390 that redraws the message over and over in all of the 16 colors.

You'll see what all the composite colors look like and be able to spot any typing error that might have occurred in the machine-language color table. An error would show up as any inconsistency in the color pattern.

You can modify LORES TO HIRES. If you prefer using hi-res page 2 to page 1, for example, change the \$1C at \$315 in **Listing 1** to a \$3C. From BASIC, BLOAD LORES TO HIRES, then POKE 789,60. To execute the program, CALL 768. Once the program transfers the picture, BSAVE PICTURE NAME,A\$4000,L\$2000. Additionally, POKE 49237,0 to view the hi-res picture on page 2.

Experimenting with different byte values in the color table results in literally millions of different color (and contrast) patterns. Have fun! ■

Write to Mark Steinborn, 29 West 451 Butternut Lane, Warrenville, IL 60555.

SEIZE CONTROL.

smart
Add a Print Screen Key to your Apple.

FingerPrint™ is the printer interface card that puts Apple in the palm of your hand. But that's only the beginning. A touch of the FingerPrint

Button allows you to dump whatever you have on the screen, graphics or text, to the printer without interrupting your program.

We made FingerPrint smart. The built-in ROM provides over 30 command features, giving you the versatility you should demand from a printer interface card. Functions include double width, rotate 90, multiple copies, double hi-res graphics, and now Adapt-A-Mouse. This exclusive feature of FingerPrint lets you use Mouse

Paint with most parallel printers on the market today.

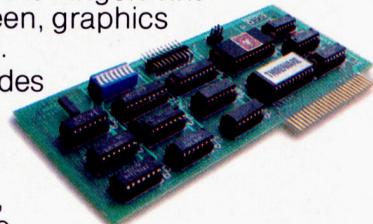
FingerPrint works with most parallel printers made, as well as the Apple Imagewriter. And it can be programmed to interface with new printers as they come on the market.

See why InCider Magazine, October '84, gave FingerPrint its highest product rating. They called FingerPrint "a great tool for producing enhanced business reports, presentations, or documents that need a professional appearance. FingerPrint is a value at \$149.00." (Suggested retail.)

Get the most out of your Apple II, II + or IIe. For more information and the dealer nearest you, call (305) 592-7522.

Or write:

Thirdware Computer Products
4747 N.W. 72nd Avenue
Miami, Florida 33166



THIRDWARE
COMPUTER PRODUCTS



Circle 32 on Reader Service card.

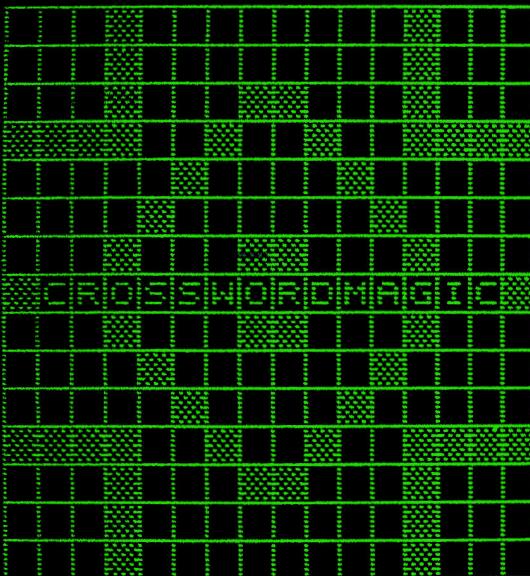
Apple, Finger Print and Thirdware Computer Products are trademarks, respectively, of Apple Computer, Inc., and Precision Software, Inc.

Only one program lets you create your own crossword, instead of filling in someone else's.

PRESS
ESC KEY
TO VIEW
OPTIONS

RETURN
IF CLUE
CORRECT

REVIEW



Clue: IT CREATES CROSSWORD PUZZLES

Crossword Magic is just like the crossword puzzles you see in the newspaper. It has the same crossword format. And the same crossword clues.

Yet, it's totally unique. (After all, does it make sense to spend \$49.99 for something you get in your newspaper for a few cents?)

Here's the twist.

Crossword Magic lets you create your own puzzles from scratch. Not only is this fun, but it's also educational. You can use it to test yourself and others on any subject. For example, will they remember that a "protozoan with pseudopodia" is an amoeba?

Now *that's* worth \$49.99.



Crossword Magic from Mindscape

Mandscape, Inc., 3444 Dundee Road, Northbrook, IL 60062. For more information, call 1-800-221-9884. In Illinois: 1-800-942-7315. Price listed is manufacturer's suggested retail price.



A Handle on Joysticks

Rby **Jeff Hurlburt**
ugged and reliable, today's joysticks—even inexpensive ones—represent significant advances over former designs. To match this trend toward improved hardware, software manufacturers are producing more games, word processors, graphics utilities, and other programs with a joystick option; some software even requires joystick control.

If you plan to buy a joystick, base your choice on at least two criteria: a "test-drive" (or simply, how individual sticks feel to you) and the applications you plan for your joystick. To help you decide, I've outlined some standards and provided examples of some joysticks on the market and their unique qualities.

From "hot" game sticks to the more utilitarian models, the eight joysticks

Get a grip on the best stick designed for your gaming or graphics needs.

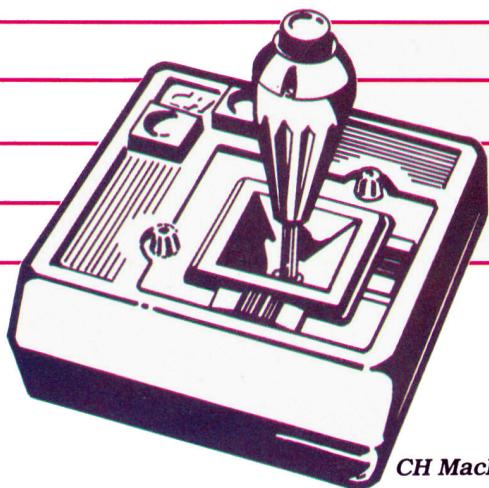
in this survey offer looks, actions, and options to suit every taste. A handle-mounted button, switched 16-pin game port extension, adjustable stick travel, a third pushbutton (connected to PB2), and switchable sensitivity are among the many features available.

Most manufacturers offer centering adjustment as well as the option to defeat centering. Fine-tuning your stick through centering adjustment is useful since "center" can vary from program to program. It also compensates for changes that occur with normal use. Despite the clever techniques and costs involved, the benefits of a centering-defeat option are less obvious. In graphics utility/electronic paintbrush applications, all but two of the units I

tested performed better with centering (see the **Table**).

"Feel"—that elusive quality—is possibly the single best index of joystick performance. Its basic elements include smoothness, centering tension, and handle design. Large, thick handles make for successful, comfortable game-playing; short, thin handles are usually best for graphics work.

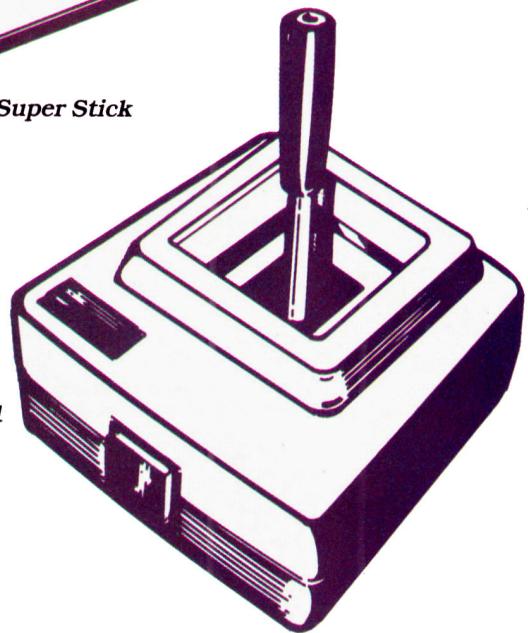
At high-action game speeds, shorter stick travel and quick return (higher tension) are definite pluses. Good graphics performance requires lower tension and smoothness, although very low stick resistance can tire you out. "Good feel" implies not only deft response but also accurate, easy-to-interpret tactile and positional feedback.



CH Mach III



P.P.I. Super Stick



Ampoc AJA-1

Ampoc AJA-1

This is a no-frills unit with a price tag to match. You get exceptionally smooth action with the right centering tension, optimal top/front button placement, and compactness. The absence of centering adjustment practically disqualifies the AJA-1 for serious game use, but as a graphics controller it ranked among the best.

P.P.I. Super Stick

Distinguished by its super-rugged, red-topped pushbuttons and quick-release centering defeat, the Personal Peripherals (formerly TG Products) stick is a good general purpose unit. Testing revealed significant centering error that, in some games, might prove unacceptable: You can find yourself moving when you mean to halt. Its slightly chalky feel and moderate centering tension place the stick among the better graphics performers.

Wico Computer Commander

With its large red handle and big red buttons Wico's Computer Commander looks like a parody of the hot game-stick. The buttons, sitting on leaf switches, lack any semblance of snap, and the handle turns somewhat floppily in its socket. Surprisingly, it's one of the top performers because its playing response is smooth and natural-feeling. Add quickness and you have a very good game stick. The real surprise is what happens when you flip off the centering. Except for the handle's weight (to provide necessary feedback) there is virtually no resistance to movement in any direction, resulting in a nearly ideal graphics controller.

CH Mach III

Top-rated for feel, the CH (formerly Hayes) Mach III is a handsome, rugged unit well suited to both gaming and graphics. The only Apple joystick with a button in the handle, it confers a decisive advantage in rapid-fire games like *Randamn* and *One-on-One*. The handle button and right-angle arrangement of on-case buttons make for virtual ambidexterity.

Suncom Star Fighter

Suncom's Star Fighter was designed to be a game, not a graphics, stick: Unusually hard tension and nonlinear response discourage fine control. Game specialization is further reflected in such refinements as an option to restrict handle travel, high/low sensitivity selection, and top/front button placement. The PBO button is duplicated on each side for ambidexterity. Star Fighter is compact for easy handling.

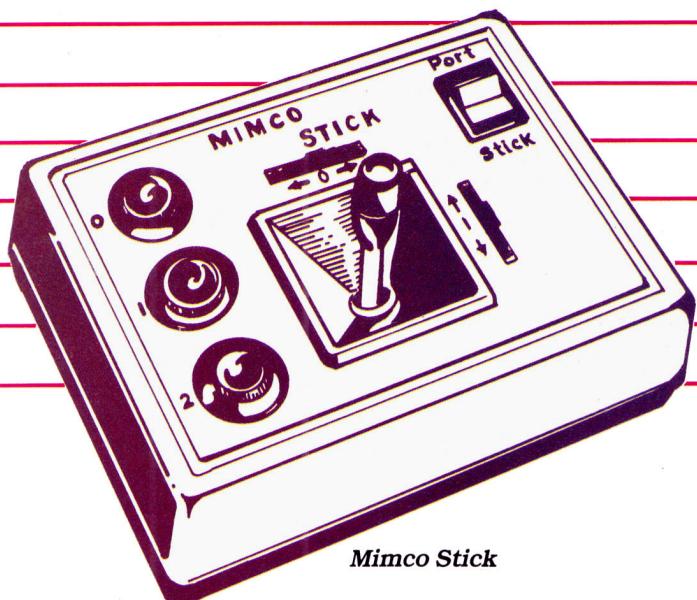
This is the only unit that uses pressure transducers as control elements. Silicone bumper activators and the silicone-anchored handle produce extraordinarily reliable centering and the sort of hard, fast response typical of commercial arcade devices.

Kraft Joystick

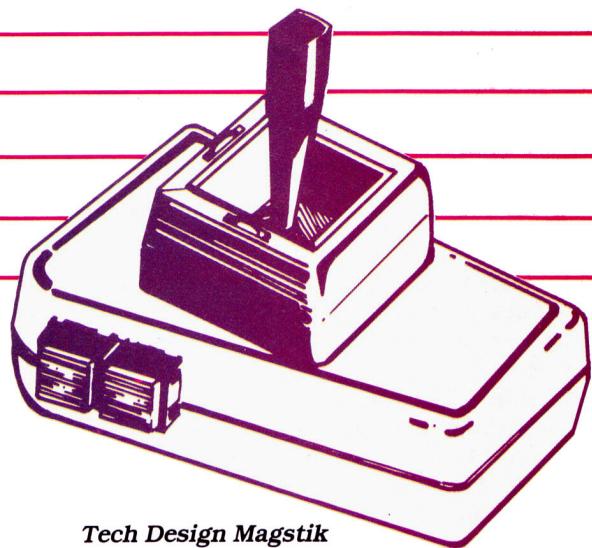
The Kraft Model 820-001, an attractive, Apple-colored unit, tested well in both competition and graphics applications. Compactly designed, the stick employs tough, short-travel buttons placed top/front for the thumb/forefinger triggering favored by most right-handers. Unlike other joysticks' handles, Kraft's is connected directly to both pots through an ingenious pivot arrangement for tight centering and exceptional responsiveness.

Mimco Stick

Among the larger units in my survey, the Mimco Stick is a solid performer incorporating features not found on other joysticks. Besides the usual buttons for PBO and PB1, it has a third pushbutton for word processors that use PB2. A port/stick switch and back-mounted 16-pin socket make swapping between paddles and graphics tablet or other accessories easy. Boasting the solid centering and quickness of a good game stick, the Mimco's no-glitch feel puts it near the top for graphics work as well.



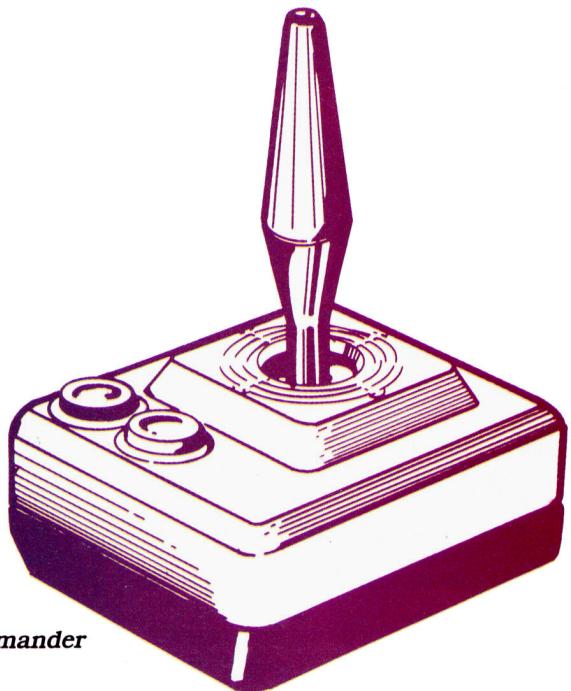
Mimco Stick



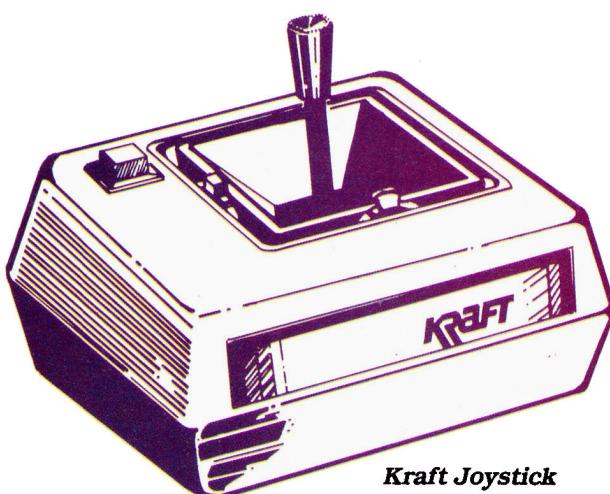
Tech Design Magstik



Suncom Star Fighter



Wico Computer Commander



Kraft Joystick

Tech Design Magstik

Tech Design's entry is a petite, professional-looking device molded for comfortable holding. The Magstik's centering through two permanent magnets produces a distinctly odd feel since pull decreases precipitously as you move the handle off center. (Be forewarned that hefty permanent magnets near a personal computer can cause data loss.)

A freely rotating square handle and slipperiness produce a difficult-to-control stick. Snap-action pushbuttons and a look inside confirm an overall impression of quality workmanship. The crimp-on metal strain relief ring, though, probably shouldn't be flopping around next to exposed circuit boards. Too slow for game use, the Magstik tested well as a graphics controller with the bottom centering magnet unsnapped.

"Ideally, centering should always restore a joystick's horizontal and vertical outputs."

Several vendors now offer game port expanders that place the game port within easy reach with some means for switching between two or more devices.

Ohm Electronics' ZF11 Scooter Twin Game Port (\$34.95) typifies the simple, direct approach to expansion: a pair of sockets mounted on a small circuit card with a slide switch to select between inputs. Since the sockets are zero-insertion types, the real hazards associated with plugging and unplugging 16-pin connectors are eliminated (no more broken pins, pulled wires, or puncture wounds). In fact, the second socket is hardly necessary, since inserting or removing connectors is so quick and easy.

The Paddle-Adapple (\$29.95) is one of several similar products, including models with //e type D sockets, offered by Southern California Research. Like the Scooter, this expander provides switched selection of two devices but with standard sockets.

Unlike its competitors, it has a third

expander with 22-pin socket and jumpers to allow practically any configuration of joystick and pushbutton inputs. This includes simultaneous inputs on all four game controller lines for two-stick games like One-on-One.

Personal Peripherals' Select-a-Port (\$39.95) offers five standard socket inputs; four are independently selectable via simple slide switches and an internal diode network. One socket is unswitched since, given the offsets introduced by diodes, some devices may not perform properly. (Testing each stick and a Koala Pad plugged into a switched socket did yield a small offset. However, except for the Suncom stick, the effect was negligible.) One of the selectable sockets is configured as a second stick, so the Select-a-Port also facilitates two-stick gaming. A fifth switch runs to a separate, one-line connector for convenient control of the popular shift-key modification.

The selection guide (see the **Table**) summarizes manufacturer, price, feature, and performance data for the

eight joysticks. Prices shown are suggested retail. "Hand" refers to handedness as determined by button placement, and assumes that you move the stick with your dominant hand and operate buttons with the other. Numbers in the "PB's" column show the button count. "H/V Adj. Range" indicates the percentage of total range over which horizontal and vertical center outputs may be set using centering adjustments. The following column tells whether or not a unit allows defeat of centering, and the next, the extent of centering tension.

Ideally, centering should always restore a joystick's horizontal and vertical outputs regardless of direction and distance of handle movement and whether the return is rapid or slow. Experiments with a number of different tests led to selection of centering error, "wiggle," as the best measure of centering action. To sample wiggle, move the handle slightly off center along one axis, then allow it to return slowly. Note output and repeat the

Table. Apple joystick selection guide.

Maker and Model	Price	Hand	PB's	Percent of H/V Adj. Range		DEF.	Centering Tension	Percent of Wiggle	Performance Ratings		
				None	51				G	P	F
Ampoc AJA-1	\$19.95	R	2	None	N	Medium	8.4	F	VG	G	
CH (Hayes) Mach III	49.95	RL	3*	51	Y	Medium	2.9	VG	G	EX	
Kraft 820-001	49.95	R	2	34	Y	Medium	0.4	VG	G	VG	
Mimco Mimco Stick	59.95	R	3	49	N	Medium	0.8	VG	G	VG	
Suncom Star Fighter	49.95	RL	3*	91	N	Hard	0.0	G	P	F	
Tech Designs Magstik	64.95	L	2	28	Y	Light	4.3	F	G†	P	
Personal Peripherals Super Stick	44.95	R	2	29	Y	Medium	18.2	F	G	G	
Wico 50-1030	44.00	R	2	37	Y	Medium	2.0	EX	VG†	G	
				63							
				67							

* Two buttons connect to one line, typically PBO.

† Rating is with the centering defeated.

P = poor F = fair G = good VG = very good EX = excellent

**GREAT BEFORE,
NOW EVEN BETTER!!**
Improved with new options, additional
instruments, new navigation aids, and more!!!

Circle 206 on Reader Service card.

SOLO FLIGHT SIMULATOR

REAL LIFE CHALLENGES FOR THE AIR FORCE MAJOR — GREAT FUN AND LEARNING — FOR HIS 10 YEAR OLD SON!!!

... Solo Flight... has so many features that it may take months to master the program. It is an excellent buy, and a real joy for novices and old pro's alike."

— Jim Stephens, RUN

"The word that best describes Solo Flight is Fun... it's (for those who) don't wish to spend a lot of time reading, but would rather be flying."

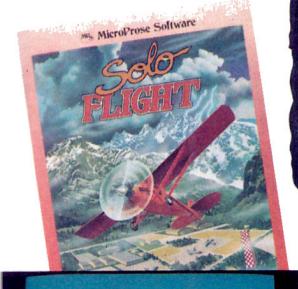
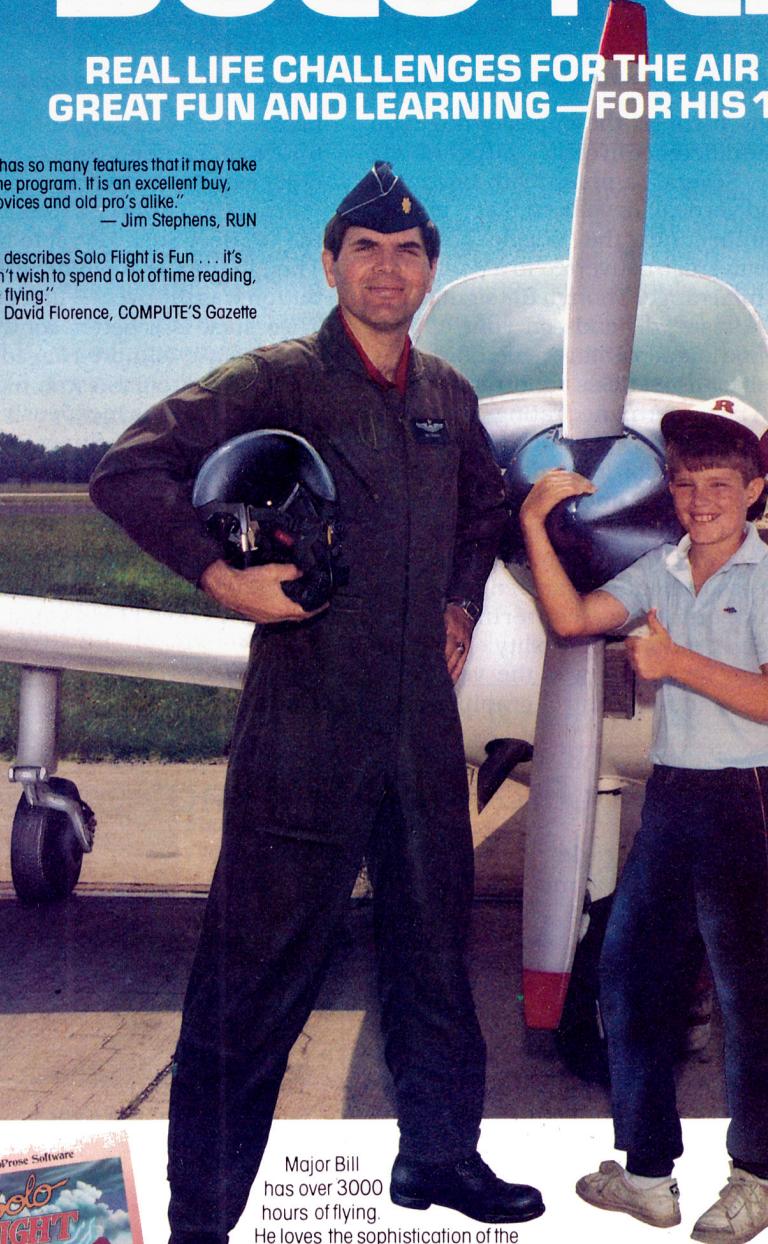
— David Florence, COMPUTE'S Gazette

"Solo Flight... is a flight simulator designed with fun in mind... it is easier to fly than Sublogic's Flight Simulator and... it is more fun to play."

— John Anderson, Creative Computing

"Solo Flight is the BEST flight simulator I've seen for any micro-computer. And I include the Microsoft simulator for the IBM-PC... it will be tough to top this one!"

— Jim Bumpas, BUMPAS REVIEWS



Major Bill has over 3000 hours of flying. He loves the sophistication of the SOLO FLIGHT simulation and its real life challenges of deteriorating weather, failing instruments, and overheating engines!! He knows the reality of flight — with SOLO FLIGHT he can bring it home!!

Bill Jr. has no real flying hours, but just moments after he plugs in his joystick, he's airborne, experiencing the fun and learning of flight. He loves the great 3-D graphics, the takeoffs, the touch and go's, and the NEW "INSTRUCTOR PILOT" option which enables the computer to give him flight instruction just like his fighter pilot Dad would!! Bill Jr. loves the fun of flying — with SOLO FLIGHT he has it!!

SOLO FLIGHT is a real flight simulator that includes VOR's, ILS, 21 different airports, VFR, and IFR flying. SOLO FLIGHT is easy to get started with, but you will get hooked on its Fun and Excitement!! Try to master

all the challenges of SOLO FLIGHT. But be careful, because that may take many more flying hours than a Major has!!

SOLO FLIGHT is available for Commodore-64, APPLE, IBM, and ATARI computers. Suggested retail price is only \$34.95. Find SOLO FLIGHT at your local retailer, or call or write for MC/VISA, Money Order, or COD orders. Add \$2.50 for postage and handling (Int'l, add \$4.00 USD). MD residents add 5% sales tax.

**Experience the reality of
these other great simulations
from MicroProse:**



Challenging and Exciting Air Combat from the Modern Electronic Cockpit!!

Heart Pounding Accelerated Real-Time Defense of Europe Against Soviet Invasion!!!

Exciting 3-Dimensional Aerial Combat Over Europe in World War !!!

MicroProse Software

The Action is Simulated — the Excitement is REAL!! (301) 667-1151

GOLEM COMPUTERS

APPLE
SOFTWARE/HARDWARE
AT SUPER SAVINGS

PLACE ORDERS TOLL FREE

1-800-345-8112

PA 1-800-662-2444



ARCADE	LIST PRICE	GOLEM PRICE
ZAXXON	39.95	26.97
DONKEY KONG	34.95	23.47
LODE RUNNER	34.95	23.47
MINER 2049er	40.00	27.00
SPARE CHANGE	34.95	23.47
DIG DUG	34.95	23.47

ADVENTURE	LIST PRICE	GOLEM PRICE
ZORK I, II, III	ea. 39.95	26.97
QUEST, TRANSYLVANIA	ea. 34.95	23.47
DEADLINE	49.95	33.97
DEATH IN THE CARIBBEAN	35.00	23.00
ENCHANTER	49.95	33.97

STRATEGY	LIST PRICE	GOLEM PRICE
FLIGHT SIMULATOR II	49.95	34.97
SARGON III	49.95	33.97
MILLIONAIRE	59.95	39.97

FANTASY	LIST PRICE	GOLEM PRICE
WIZARDRY	49.95	33.97
ULTIMA II, III	ea. 59.95	39.97
KNIGHT OF DIAMONDS	39.95	23.47
LEGACY OF LYLMAGYNN	39.95	26.97

UTILITIES	LIST PRICE	GOLEM PRICE
MICROSOFT BASIC (MAC)	150.00	102.00
GLOBAL PROGRAM LINE EDITOR	49.95	33.97
APPLE MECHANIC	29.50	20.50
FORTRAN COMPILER	195.00	131.00
ASCII EXPRESS PROFISSIONAL	129.95	85.97
SIDEWAYS	60.00	40.00
SMARTCOM I	119.00	75.30

HOME	LIST PRICE	GOLEM PRICE
HOME ACCOUNTANT	74.95	50.47
DOLLARS AND SENSE	100.00	65.00
CROSSWORD MAGIC	49.95	33.97
MEMORY TRAINER	89.95	60.97
JANE (IIC)	179.00	120.30
MICRO COOKBOOK	40.00	26.00

EDUCATION	LIST PRICE	GOLEM PRICE
MASTER TYPE	39.95	26.97
ALGEBRA I, II, III	ea. 39.95	26.97
EARLY GAMES FOR YOUNG CHILDREN	29.95	20.47
PIECE OF CAKE	29.95	20.47
ALLIGATOR MIX Iie	34.00	23.40
ALPHABET ZOO	2.955	20.47

WORD PROCESSOR	LIST PRICE	GOLEM PRICE
PFS:WRITE (Ile)	125.00	82.00
BANK STREET WRITER	69.95	46.97
BANK STREET SPELLER	69.95	46.97
MAGIC WINDOW II	149.95	99.97
HOME WORD	69.95	46.97
SENSIBLE SPELLER IV	125.00	82.00

BUSINESS	LIST PRICE	GOLEM PRICE
PFS:FILE	125.00	82.00
PFS:REPORT	125.00	82.00
CHART (MAC)	125.00	85.50
FRIDAY (MAC)	295.00	195.00
DBASE II	700.00	445.00
3PI GENERAL ACCOUNTING	395.00	250.00
MULTIPLAN	195.00	130.97

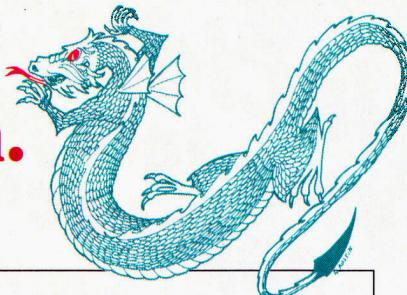
HARDWARE SPECIALS	LIST PRICE	GOLEM PRICE
SMARTMODEM 1200 (HAYES)	485.30	
GRAPHICARD (PRACTICAL PERIF)	75.00	
KOALA GRAPHIC TABLET W/SFT (KOALA)	83.00	
GRAPLER + (ORANGE MICRO)	117.00	
MICROMODEM 16/SMARTCOM (HAYES)	233.00	
COLOR 1+13" LOW RES COLOR MONITOR (AMIDEK)	295.00	
GEMINI 10X PRINTER (STAR MICRONICS)	270.00	
MACH III W/FIRE BUTTON JOYSTICK (HAYES)	38.00	
DISK DRIVE SLIM LINE (TITAN)	225.00	

ALL ITEMS SUBJECT TO AVAILABILITY
PRICES SUBJECT TO CHANGE WITHOUT NOTICE

To order call toll free or send check or money order. VISA/MC, C.O.D. orders welcome. Personal and company checks allow 10 working days to clear. Specify if to be reordered or to send refund. California residents add 6% sales tax. Include phone number with order. Shipping and handling: All shipments U.P.S. if possible. Continental U.S. add \$2.00 for 1 to 3 items, \$4.00 for 4 to 6 items, \$6.00 for 7 to 9 items, \$8.00 for 10 to 12 items, \$10.00 for 13 to 15 items, \$12.00 for 16 to 18 items, \$14.00 for 19 to 21 items, \$16.00 for 22 to 24 items, \$18.00 for 25 to 27 items, \$20.00 for 28 to 30 items, \$22.00 for 31 to 33 items, \$24.00 for 34 to 36 items, \$26.00 for 37 to 39 items, \$28.00 for 40 to 42 items, \$30.00 for 43 to 45 items, \$32.00 for 46 to 48 items, \$34.00 for 49 to 51 items, \$36.00 for 52 to 54 items, \$38.00 for 55 to 57 items, \$40.00 for 58 to 60 items, \$42.00 for 61 to 63 items, \$44.00 for 64 to 66 items, \$46.00 for 67 to 69 items, \$48.00 for 70 to 72 items, \$50.00 for 73 to 75 items, \$52.00 for 76 to 78 items, \$54.00 for 79 to 81 items, \$56.00 for 82 to 84 items, \$58.00 for 85 to 87 items, \$60.00 for 88 to 90 items, \$62.00 for 91 to 93 items, \$64.00 for 94 to 96 items, \$66.00 for 97 to 99 items, \$68.00 for 100 to 102 items, \$70.00 for 103 to 105 items, \$72.00 for 106 to 108 items, \$74.00 for 109 to 111 items, \$76.00 for 112 to 114 items, \$78.00 for 115 to 117 items, \$80.00 for 118 to 120 items, \$82.00 for 121 to 123 items, \$84.00 for 124 to 126 items, \$86.00 for 127 to 129 items, \$88.00 for 130 to 132 items, \$90.00 for 133 to 135 items, \$92.00 for 136 to 138 items, \$94.00 for 139 to 141 items, \$96.00 for 142 to 144 items, \$98.00 for 145 to 147 items, \$100.00 for 148 to 150 items, \$102.00 for 151 to 153 items, \$104.00 for 154 to 156 items, \$106.00 for 157 to 159 items, \$108.00 for 160 to 162 items, \$110.00 for 163 to 165 items, \$112.00 for 166 to 168 items, \$114.00 for 169 to 171 items, \$116.00 for 172 to 174 items, \$118.00 for 175 to 177 items, \$120.00 for 178 to 180 items, \$122.00 for 181 to 183 items, \$124.00 for 184 to 186 items, \$126.00 for 187 to 189 items, \$128.00 for 190 to 192 items, \$130.00 for 193 to 195 items, \$132.00 for 196 to 198 items, \$134.00 for 199 to 201 items, \$136.00 for 202 to 204 items, \$138.00 for 205 to 207 items, \$140.00 for 208 to 210 items, \$142.00 for 211 to 213 items, \$144.00 for 214 to 216 items, \$146.00 for 217 to 219 items, \$148.00 for 220 to 222 items, \$150.00 for 223 to 225 items, \$152.00 for 226 to 228 items, \$154.00 for 229 to 231 items, \$156.00 for 232 to 234 items, \$158.00 for 235 to 237 items, \$160.00 for 238 to 240 items, \$162.00 for 241 to 243 items, \$164.00 for 244 to 246 items, \$166.00 for 247 to 249 items, \$168.00 for 250 to 252 items, \$170.00 for 253 to 255 items, \$172.00 for 256 to 258 items, \$174.00 for 259 to 261 items, \$176.00 for 262 to 264 items, \$178.00 for 265 to 267 items, \$180.00 for 268 to 270 items, \$182.00 for 271 to 273 items, \$184.00 for 274 to 276 items, \$186.00 for 277 to 279 items, \$188.00 for 280 to 282 items, \$190.00 for 283 to 285 items, \$192.00 for 286 to 288 items, \$194.00 for 289 to 291 items, \$196.00 for 292 to 294 items, \$198.00 for 295 to 297 items, \$200.00 for 298 to 300 items, \$202.00 for 301 to 303 items, \$204.00 for 304 to 306 items, \$206.00 for 307 to 309 items, \$208.00 for 310 to 312 items, \$210.00 for 313 to 315 items, \$212.00 for 316 to 318 items, \$214.00 for 319 to 321 items, \$216.00 for 322 to 324 items, \$218.00 for 325 to 327 items, \$220.00 for 328 to 330 items, \$222.00 for 331 to 333 items, \$224.00 for 334 to 336 items, \$226.00 for 337 to 339 items, \$228.00 for 340 to 342 items, \$230.00 for 343 to 345 items, \$232.00 for 346 to 348 items, \$234.00 for 349 to 351 items, \$236.00 for 352 to 354 items, \$238.00 for 355 to 357 items, \$240.00 for 358 to 360 items, \$242.00 for 361 to 363 items, \$244.00 for 364 to 366 items, \$246.00 for 367 to 369 items, \$248.00 for 370 to 372 items, \$250.00 for 373 to 375 items, \$252.00 for 376 to 378 items, \$254.00 for 379 to 381 items, \$256.00 for 382 to 384 items, \$258.00 for 385 to 387 items, \$260.00 for 388 to 390 items, \$262.00 for 391 to 393 items, \$264.00 for 394 to 396 items, \$266.00 for 397 to 399 items, \$268.00 for 400 to 402 items, \$270.00 for 403 to 405 items, \$272.00 for 406 to 408 items, \$274.00 for 409 to 411 items, \$276.00 for 412 to 414 items, \$278.00 for 415 to 417 items, \$280.00 for 418 to 420 items, \$282.00 for 421 to 423 items, \$284.00 for 424 to 426 items, \$286.00 for 427 to 429 items, \$288.00 for 430 to 432 items, \$290.00 for 433 to 435 items, \$292.00 for 436 to 438 items, \$294.00 for 439 to 441 items, \$296.00 for 442 to 444 items, \$298.00 for 445 to 447 items, \$300.00 for 448 to 450 items, \$302.00 for 451 to 453 items, \$304.00 for 454 to 456 items, \$306.00 for 457 to 459 items, \$308.00 for 460 to 462 items, \$310.00 for 463 to 465 items, \$312.00 for 466 to 468 items, \$314.00 for 469 to 471 items, \$316.00 for 472 to 474 items, \$318.00 for 475 to 477 items, \$320.00 for 478 to 480 items, \$322.00 for 481 to 483 items, \$324.00 for 484 to 486 items, \$326.00 for 487 to 489 items, \$328.00 for 490 to 492 items, \$330.00 for 493 to 495 items, \$332.00 for 496 to 498 items, \$334.00 for 499 to 501 items, \$336.00 for 502 to 504 items, \$338.00 for 505 to 507 items, \$340.00 for 508 to 509 items, \$342.00 for 510 to 511 items, \$344.00 for 512 to 513 items, \$346.00 for 514 to 515 items, \$348.00 for 516 to 517 items, \$350.00 for 518 to 519 items, \$352.00 for 520 to 521 items, \$354.00 for 522 to 523 items, \$356.00 for 524 to 525 items, \$358.00 for 526 to 527 items, \$360.00 for 528 to 529 items, \$362.00 for 530 to 531 items, \$364.00 for 532 to 533 items, \$366.00 for 534 to 535 items, \$368.00 for 536 to 537 items, \$370.00 for 538 to 539 items, \$372.00 for 540 to 541 items, \$374.00 for 542 to 543 items, \$376.00 for 544 to 545 items, \$378.00 for 546 to 547 items, \$380.00 for 548 to 549 items, \$382.00 for 550 to 551 items, \$384.00 for 552 to 553 items, \$386.00 for 554 to 555 items, \$388.00 for 556 to 557 items, \$390.00 for 558 to 559 items, \$392.00 for 560 to 561 items, \$394.00 for 562 to 563 items, \$396.00 for 564 to 565 items, \$398.00 for 566 to 567 items, \$400.00 for 568 to 569 items, \$402.00 for 570 to 571 items, \$404.00 for 572 to 573 items, \$406.00 for 574 to 575 items, \$408.00 for 576 to 577 items, \$410.00 for 578 to 579 items, \$412.00 for 580 to 581 items, \$414.00 for 582 to 583 items, \$416.00 for 584 to 585 items, \$418.00 for 586 to 587 items, \$420.00 for 588 to 589 items, \$422.00 for 590 to 591 items, \$424.00 for 592 to 593 items, \$426.00 for 594 to 595 items, \$428.00 for 596 to 597 items, \$430.00 for 598 to 599 items, \$432.00 for 600 to 601 items, \$434.00 for 602 to 603 items, \$436.00 for 604 to 605 items, \$438.00 for 606 to 607 items, \$440.00 for 608 to 609 items, \$442.00 for 610 to 611 items, \$444.00 for 612 to 613 items, \$446.00 for 614 to 615 items, \$448.00 for 616 to 617 items, \$450.00 for 618 to 619 items, \$452.00 for 620 to 621 items, \$454.00 for 622 to 623 items, \$456.00 for 624 to 625 items, \$458.00 for 626 to 627 items, \$460.00 for 628 to 629 items, \$462.00 for 630 to 631 items, \$464.00 for 632 to 633 items, \$466.00 for 634 to 635 items, \$468.00 for 636 to 637 items, \$470.00 for 638 to 639 items, \$472.00 for 640 to 641 items, \$474.00 for 642 to 643 items, \$476.00 for 644 to 645 items, \$478.00 for 646 to 647 items, \$480.00 for 648 to 649 items, \$482.00 for 650 to 651 items, \$484.00 for 652 to 653 items, \$486.00 for 654 to 655 items, \$488.00 for 656 to 657 items, \$490.00 for 658 to 659 items, \$492.00 for 660 to 661 items, \$494.00 for 662 to 663 items, \$496.00 for 664 to 665 items, \$498.00 for 666 to 667 items, \$500.00 for 668 to 669 items, \$502.00 for 670 to 671 items, \$504.00 for 672 to 673 items, \$506.00 for 674 to 675 items, \$508.00 for 676 to 677 items, \$510.00 for 678 to 679 items, \$512.00 for 680 to 681 items, \$514.00 for 682 to 683 items, \$516.00 for 684 to 685 items, \$518.00 for 686 to 687 items, \$520.00 for 688 to 689 items, \$522.00 for 690 to 691 items, \$524.00 for 692 to 693 items, \$526.00 for 694 to 695 items, \$528.00 for 696 to 697 items, \$530.00 for 698 to 699 items, \$532.00 for 700 to 701 items, \$534.00 for 702 to 703 items, \$536.00 for 704 to 705 items, \$538.00 for 706 to 707 items, \$540.00 for 708 to 709 items, \$542.00 for 710 to 711 items, \$544.00 for 712 to 713 items, \$546.00 for 714 to 715 items, \$548.00 for 716 to 717 items, \$550.00 for 718 to 719 items, \$552.00 for 720 to 721 items, \$554.00 for 722 to 723 items, \$556.00 for 724 to 725 items, \$558.00 for 726 to 727 items, \$560.00 for 728 to 729 items, \$562.00 for 730 to 731 items, \$564.00 for 732 to 733 items, \$566.00 for 734 to 735 items, \$568.00 for 736 to 737 items, \$570.00 for 738 to 739 items, \$572.00 for 740 to 741 items, \$574.00 for 742 to 743 items, \$576.00 for 744 to 745 items, \$578.00 for 746 to 747 items, \$580.00 for 748 to 749 items, \$582.00 for 750 to 751 items, \$584.00 for 752 to 753 items, \$586.00 for 754 to 755 items, \$588.00 for 756 to 757 items, \$590.00 for 758 to 759 items, \$592.00 for 760 to 761 items, \$594.00 for 762 to 763 items, \$596.00 for 764 to 765 items, \$598.00 for 766 to 767 items, \$600.00 for 768 to 769 items, \$602.00 for 770 to 771 items, \$604.00 for 772 to 773 items, \$606.00 for 774 to 775 items, \$608.00 for 776 to 777 items, \$610.00 for 778 to 779 items, \$612.00 for 780 to 781 items, \$614.00 for 782 to 783 items, \$616.00 for 784 to 785 items, \$618.00 for 786 to 787 items, \$620.00 for 788 to 789 items, \$622.00 for 790 to 791 items, \$624.00 for 792 to 793 items, \$626.00 for 794 to 795 items, \$628.00 for 796 to 797 items, \$630.00 for 798 to 799 items, \$632.00 for 800 to 801 items, \$634.00 for 802 to 803 items, \$636.00 for 804 to 805 items, \$638.00 for 806 to 807 items, \$640.00 for 808 to 809 items, \$642.00 for 810 to 811 items, \$644.00 for 812 to 813 items, \$646.00 for 814 to 815 items, \$648.00 for 816 to 817 items, \$650.00 for 818 to 819 items, \$652.00 for 820 to 821 items, \$654.00 for 822 to 823 items, \$656.00 for 824 to 825 items, \$658.00 for 826 to 827 items, \$660.00 for 828 to 829 items, \$662.00 for 830 to 831 items, \$664.00 for 832 to 833 items, \$666.00 for 834 to 835 items, \$668.00 for 836 to 837 items, \$670.00 for 838 to 839 items, \$672.00 for 840 to 841 items, \$674.00 for 842 to 843 items, \$676.00 for 844 to 845 items, \$678.00 for 846 to 847 items, \$680.00 for 848 to 849 items, \$682.00 for 850 to 851 items, \$684.00 for 852 to 853 items, \$686.00 for 854 to 855 items, \$688.00 for 856 to 857 items, \$690.00 for 85

Big Game Hunting? Try Baggin' Our Dragon.

It's the biggest game in town



Our dragon, of course, is Wizardry—that unique series of computer recreation programs designed for Apple users who are seeking the ultimate "big game" challenge.

Since its debut, Wizardry has been the best-selling computer game of its kind.

For a very good reason:

Because Wizardry is more than just a game, more than a diabolically clever maze.

Wizardry is a complex world of variety and depth. A world of richness and pleasure.

Packed with suspense, full of surprises, Wizardry is enchanting—a compelling

diversion that turns your leisure time into prime time.

Wizardry is powerful and sophisticated. A simple command system, 3D maze displays and superb programming provide you with month after month of involvement and satisfaction.

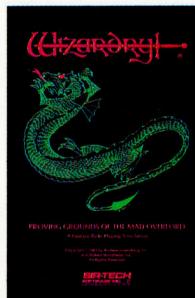
Four years old and still growing, the game is already recognized by critics and game lovers as a classic.

Simply stated, Wizardry is the finest fantasy role-playing computer game you can buy.

Set your sights on the best. Track down Wizardry—the biggest game in town.

Enter the World of Wizardry®

A Classic Encounter

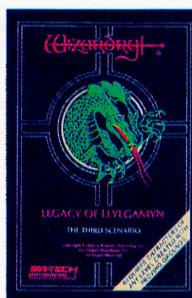


Proving Grounds of the Mad Overlord

The First Scenario

Unlike any other game you have ever played. A fascinating 10-level maze full of monsters, sorcery, traps and treasures. As you gain skills, the characters you create grow stronger, richer, wiser and better able to survive. The final goal is elusive. Your experience...unforgettable.

Twice voted "All Time Most Popular Computer Program" —Softalk Readers

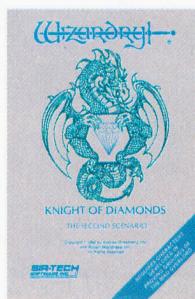


Legacy of Llylgamyn

The Third Scenario

A spellbinder that advances the classic traditions of Wizardry. Find the great dragon L'kbreth and save the people of Llylgamyn. Includes full screen maze display and Windo-Wizardry, the revolutionary pop-up window graphics system. Requires brave adventurers of any level developed in PROVING GROUNDS.

"...A Landmark in Graphics Advancement" and "The Best Yet" —Softalk

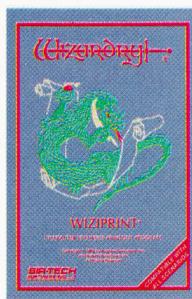


Knight of Diamonds

The Second Scenario

This classic journey should only be attempted with those Wizardry heroes who have attained the 13th level of ability in PROVING GROUNDS. Their challenge—and yours—to adventure through a six-level maze and become the Knight of Diamonds. First-rate fantasy!

Awarded "Best Adventure Game for the Home Computer" —Game Mfrs. Association of America



Wiziprint

Character Statistics Printout

A helpful utility program that prints the possessions, attributes and known spells of all your Wizardry characters. Quick, neat and easy-to-read. For use with 80-column printers. Compatible with all Wizardry scenarios. A real timesaver!

"Wiziprint is a very handy utility disk for ardent Wizardry players" —Roe R. Adams III, Softalk

LOOK FOR THE DRAGON—
SYMBOL OF WIZARDRY.
PROMISE OF EXCELLENCE.

Circle 218 on Reader Service card.

All software available for Apple II series computer 48k
Coming soon for the Macintosh
Proving Grounds also available for IBM PC and PCjr 64k

SIR-TECH
SOFTWARE INC.

6 MAIN STREET • OGDENSBURG, N.Y. 13369 • (315) 393-6633

LEADERS IN COMPUTER FANTASY ROLE-PLAYING

inCider... your integrated approach to Apple computing.

Having all the essential hardware and software does not necessarily add up to a complete home Apple* system. To make your system whole, you need information to guide you through the complexities of home computing. inCider will pull it all together for you.

Child's Play gives you fun programs to introduce your children to computing.

The Glau Report is head to head software evaluations for your business applications.

The Applesoft Adviser guides you step-by-step through BASIC, so you'll program better.

The Apple Clinic saves you money with answers to your maintenance and repair questions.

Hard-hitting reviews help you make every purchase a sound investment.

Plus, you'll get the latest games... new product descriptions...utilities ...and programming tips.

Subscribe today and save 30% off the cover price.

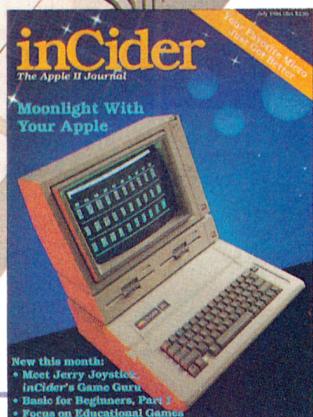
One year of inCider...twelve big issues...is only \$24.97. That's a savings of 30% off the newsstand price. Just fill out the coupon and return it today with payment enclosed.

To get your first issue faster, call toll free:

1 (800) 258-5473

(In New Hampshire, call 1-924-9471).

Your money-back guarantee: You can cancel your subscription at any time. We'll reimburse you for all undelivered issues—no questions asked.



YES! I want to accomplish more!

Send me 12 issues of inCider for \$24.97. I'll save 30% off the newsstand price.

Payment Enclosed

Bill me \$24.97

Name _____

Address _____

City _____ State _____ Zip _____

Canada and Mexico \$27.97, 1 year only, US funds drawn on US bank. Foreign surface \$44.97, 1 year only, US funds drawn on US bank. Please allow 6-8 weeks for delivery. Foreign airmail please inquire.

inCider • PO Box 911 • Farmingdale, NY 11737

351BS

Back-up Your Floppy with Diversi-Copy™

A New Breakthrough

Diversi-Copy will copy unprotected floppy disks faster and more easily than any other copy program.

Don't get burned by a bad disk!

Back-up your disks with
Diversi-Copy.



A Must For The Apple //c

You'll be amazed how much easier it is to make back-ups on the new Apple //c. Diversi-Copy makes copies without all those annoying re-insertions of the disks. You'll save over 2 minutes per copy, and save your sanity too!

Verifies Every Byte

Diversi-Copy checks every byte written on the disk, so you know your copies are good.

Shows Motor Speed

Diversi-Copy displays motor speed on each track while making a copy, eliminating a major source of disk errors.



Formats Data Disks

You can use Diversi-Copy to format data disks for ProDOS, DOS 3.3, Pascal, or CP/M (18 seconds per disk).

Mass Production

Diversi-Copy can mass produce 1 disk every 18-20 seconds, faster than most duplication machines (may require extra 128K card for full disks).

For Unprotected Disks

Diversi-Copy will copy all unprotected Pascal, CP/M, DOS 3.3, and ProDOS disks. It can't copy protected program disks, but it usually will copy data disks produced by these programs. Works on Apple //c, //e or II+ compatible computers.

We Back You Up Too

Mail and telephone support is available from Bill Basham, author of Diversi-Copy and Diversi-DOS.



"Readers have frequently praised Basham's support."

—Softalk Magazine

	ProDOS Copy	Diversi- Copy*
1-Drive Copy (50% Full Disk)	172 sec. 18 insertions	36 sec. 2 insertions
1-Drive Copy (100% Full Disk)	172 sec. 18 insertions	44 sec. 4 insertions
2-Drive Copy	80 sec.	33 sec.

* On 128K Apple //e or //c

Also From DSR, Inc.

Diversi-DOS™ Still The Best!

The top-rated DOS 3.3 enhancement program. Speeds up read/write of BASIC, Binary and Text files. DOS mover frees 10K additional memory. Includes new insert/delete mode, improved BASIC listings, keyboard MACROS, wildcard filenames, text file printer, keyboard/print buffers, and MORE! Works on Apple //c, //e, or 64K II+.

RAM Disk Emulator Now Included

Use the extra 64K in the //c or //e extended 80-column card as a high-speed pseudo-disk drive. Also works with most 128K cards in any slot.

24-Hour Toll Free Ordering

800-835-2246 ext. 127 (orders only)

For information, call 815-877-1343.

Disks normally shipped within 24 hours. Sold by mail-order only.

Price includes 1st class or foreign airmail. Return in 30 days for full refund if not totally satisfied!

FREE: Dogfight II arcade game, by Bill Basham included on each disk.

NEW: Diversi-DIAL™

Start your own CB-simulator on an Apple with 7 modems. Try our station at 815-877-9521 (300-baud modem).

"More fun than humans should be allowed to have!"

Diversi-Copy ... \$30
 Diversi-DOS \$30



Diversified Software Research, Inc.
5848 Crampton Court
Rockford, IL 61111

Name: _____

Address: _____

City: _____

State: _____ Zip Code: _____

Visa/MasterCard, C.O.D., or
personal check accepted

Card #: _____

Expiration Date: _____

A Crafty Joystick Adapter

H by Tom Benford

Having been Commodore aficionados at my home for the last few years, we thought it was about time to see how the rest of the world lives. So, we bought an Apple, choosing the //c for its portability as well as its supposed compatibility with all of the other Apple products. However, we found that our Kraft joystick, although designed for the Apple, wouldn't work on the //c because the joystick port doesn't match the connector on the stick.

We had two options: purchase another joystick (for approximately \$50) that would plug in directly, or come up with a makeshift adapter for the stick we already had. Looking for an alter-

native to mowing the lawn that afternoon, I chose to build the adapter.

Materials for this project (pictured complete in **Photo 1**) cost no more than \$5, you can finish it in under a half-hour, and all you need to know is how to use a soldering iron. Follow my instructions and you'll have no problem.

Construction

Begin by gathering the supplies listed in the **Table**. When you're ready to start work, the first step is to cut the 30-gauge insulated wire into nine 4-inch pieces. Strip off approximately $\frac{1}{4}$ inch of insulation from both ends of each piece. Then plug in the soldering iron.

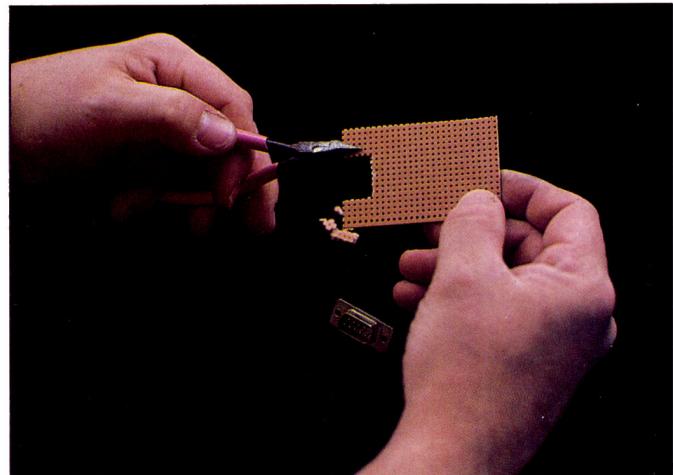
The next step is to notch out an opening on one end of the circuit board large enough to accommodate the DB-9 socket; it should be just large enough for the socket itself to fit through, but not the mounting flanges. It'll help to refer to **Photos 2, 3, and 4**. Apply some Krazy Glue to the flanges to hold the socket in position on the board.

Position the 16-pin DIP socket at the opposite end of the board and apply some glue to it, being careful to glue only the plastic edges, not the pins themselves. Note that the pins of both the DB-9 socket and the DIP socket should be on the same face of the circuit board (**Photos 3 and 4**).

Photo 1. The completed Kraft joystick adapter.



Photo 2. Cutting out a piece of the board.



If your //c and your Kraft joystick don't mix, try this easy fix for under \$5.

By now your soldering iron should be hot enough to work with. Take each of the nine pieces of wire and "tin" both ends by melting a small amount of solder onto the wire. Then refer to the photos and the wiring diagram in the **Figure** for making your connections. Be sure to work carefully, applying only enough heat to solder the wire onto the appropriate pin. Beware of solder "runs" or "bridges," as these will impede the proper operation of the joystick.

I can't stress enough the importance of checking and double-checking the connections. You're dealing with nine pins on the DB socket, and 16 pins on the DIP socket, seven of which aren't

Table. Joystick adapter project supplies, available at Radio Shack or other well-stocked electronics parts/repair stores.

Parts (Photo 1):

A male DB-9 joystick socket (chassis mount).

A 16-pin wire-wrap DIP socket. (Be sure it's the wire-wrap type—these have longer "legs" than standard sockets.)

A 2-inch-by-5-inch piece of perforated "breadboard" (no foil or soldering runs—just plain phenolic circuit board with holes in it).

Four feet of AWG 30-gauge insulated wire (wire-wrap wire).

Tools and Materials:

Rosin-core electronics solder.

Krazy Glue (or other "instant" glue).

A medium-heat (30–50 watt) fine-tipped soldering iron.

Wire-strippers or nipping pliers.

Photo 3. The front (plug) face of the board, with the DB-9 socket (bottom) and DIP socket in place.

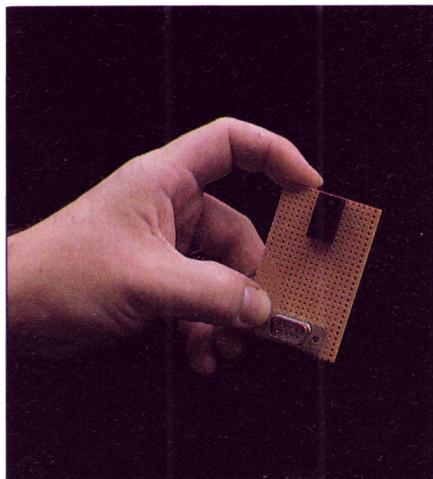


Photo 4. The back (wiring) face of the board, with the DB-9 socket and DIP socket in place.

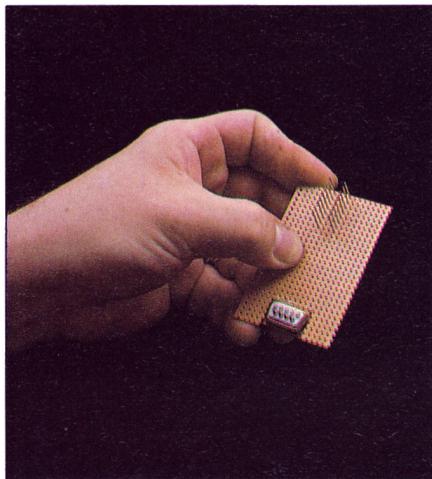
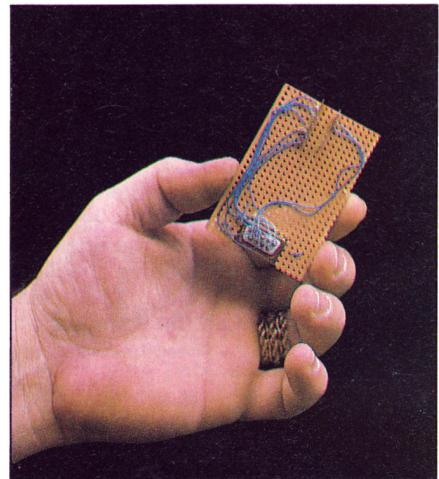


Photo 5. The back (wiring) face of the completed board.



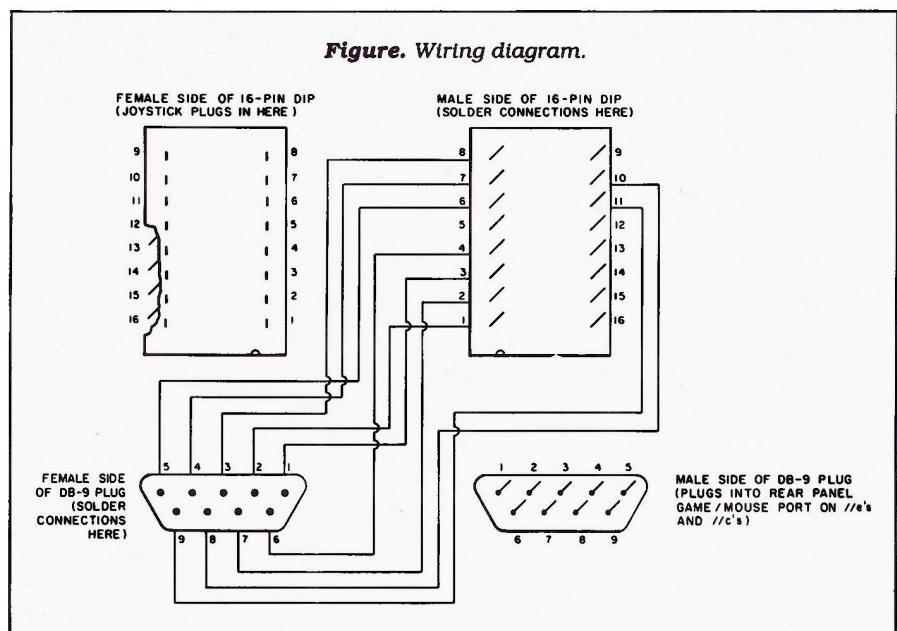
used. This can be confusing if you're not careful.

Using your nippers, trim off any excess wire, and be sure there are no visible "shorts" caused by dripped solder or stray pieces of wire. Once again, check all connections against the wiring diagram.

Plug the board into the //c, and then carefully plug the stick into the DIP socket (taking care not to bend any legs on the stick connector). The joystick cable should be facing the top of the circuit board.

Now turn on the //c with a game disk in the drive. If the joystick doesn't work, check all of your connections again. Locate the bad connection(s) and correct the situation before repeating the above step.

When it does work properly, remove the board and, with your nippers, cut off the seven unused legs on the DIP socket flush with the board. This will make it much easier to reconnect a wire to the right leg should the present one ever work loose or break off. You can also trim off any extra length on the nine legs you did use for your connections, to make a neater job. (Just make sure you don't ruin the connections!)



You can use any leftover scrap wire to "tie down" your wiring on the board. Not only does this improve the board's appearance, it also lessens chances of a wire pulling loose from its connection (Photo 5).

That's it! Give yourself a pat on the back—you did something useful, and

saved about \$45 to boot. That's enough money to pay the kid down the block to mow the lawn, pocket the difference, and settle down to an afternoon of *Lode Runner* on the //c! ■

You can write to Tom Benford at P.O. Box 4125, Osborneville, NJ 08723.

Circle 22 on Reader Service card.

WORD HANDLER

It's easy... and we're not monkeying around!

The Word Handler is the easiest word processor around... also the most sophisticated. Word Handler, a single-key command word processing program that runs without hardware modifications to your Apple® II, II+, IIe and IIC, or Apple compatible computer. Words can't describe how much we love the Word Handler! It has a two character format and everything else found in a dedicated, high level word processor. Our Word Handler comes with a simple to understand manual and complete customer service. See your Apple or Apple compatible computer dealer or call us directly at 408-730-0307. For sophisticated simplicity... The Word Handler. After you've gone ape over the Word Handler try the List Handler, a data base file manager, and the Spell Handler, the simplest, most powerful spelling checker available. Word Handler, List Handler, Spell Handler... great together; known as the Handlers and great apart.

Apple is a registered trademark of Apple Computer Inc.

Advanced Logic Systems

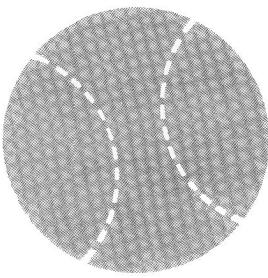


1195 E.Arques Ave., Sunnyvale, CA 94086

\$79.95



Tennis, Anyone?



by Barry Wilmeth

Remember Pong's brief popularity a few years ago? Old games may fade away, but as long as people spar on video screens, opposing paddle rattlers will continue to meet in head-to-head competition. Match Point, a two-player, hi-res game based on a three-set match, carries on the video tennis tradition.

I wrote Match Point to teach my five-year-old son tennis. By playing on the screen, he's learned score-keeping and serving rules as well as how to use his quick young reflexes to his advantage.

You can select an advanced, intermediate, or beginner's level. Score and ball movement are controlled within the program. The player on the left uses PDL(0) to control the movement of the player on the screen; the player on the right uses PDL(1).

Game play coincides with the standard tennis rules observed at the U.S. Open. No tiebreaker rule exists. You earn each set by winning a minimum of six games and having a two-game advantage over your opponent.

The three competition levels govern ball speed and serve accuracy. Court coverage is wide-ranging, so the beginner's level is quite forgiving. Intermediate play provides more of a challenge, since the ball moves twice as fast as it does in the beginner's level. The advanced mode quickly separates

The U.S. Open may be months away, but tennis buffs can practice their serves on Match Point.

Table 1. Line descriptions.

Lines	Description
10-140	Load initial variables and draw court.
150-290	Reset ball and player locations.
300-650	Control ball movement.
700-820	Control player movement.
900-970	Ball is returned.
1000-1080	Ball hits net.
1100-1370	Point is scored.
1400-1650	Match is over.
1700-1840	Check for faults on serve.

the club players from the pros.

To start, load the Applesoft program (**Listing 1**) and save it to the file, MATCH POINT. Next, load the hi-res, machine-language coding in **Listing 2**. Type CALL - 151 to enter the monitor and type the code as follows with colons used in place of hyphens:

6000: 11 00 24 00 61 00 9C 00

Return to Applesoft by entering 3DOG. Save the code by typing BSAVE PLAYERS, A\$6000, L720. Test the program, then practice paddle control.

I deliberately set a fast-paced game because: 1) the ball occasionally curves across the net and you need speedy control to respond; 2) the game is considerably slower when players move every time the ball crosses the screen; 3) players have more control over the game's action.

To restrict player movement for a realistic game, make the following changes in **Listing 1**:

```
720 IF PDL(0) < Y - 6 THEN Y = Y - 6:  
    GOTO 740  
725 IF PDL(0) > Y + 6 THEN Y = Y + 6:  
    GOTO 740  
780 IF PDL(1) < W - 6 THEN W = W - 6:  
    GOTO 800  
785 IF PDL(1) > W + 6 THEN W = W + 6:  
    GOTO 800
```

Match Point was originally set on a green court with orange tennis balls and fashionably dressed players. If you rewrite the game in color, the game may be too slow for today's gamers. Tailor the game to your own play level by using **Tables 1** and **2** as redesign guidelines. ■

Barry Wilmeth serves up aces at 1901-F Fox Boulevard, Honolulu, HI 96818.

Not Piracy...



Read
Hardcore COMPUTIST
 & get step-by-step instructions
 on how to move your
 uncopyable software to
 normal disks so you can:

- Make backups for your expensive software more easily
- Move programs from floppy to hard disk
- Add custom modifications such as fast DOS to speed up LOADs & SAVEs

Also get: Adventure Tips, Advanced Playing Techniques (APT's), parameters, and more...

Just Good Sense!

If you're a vigorous Apple computist
 you can't afford to be without us any longer!

Subscription Rates Please check one of the following:

<input type="checkbox"/> U.S.	\$25
<input type="checkbox"/> Canada, 1st Class	\$34
<input type="checkbox"/> Mexico	\$39
<input type="checkbox"/> Foreign Airmail	\$60
<input type="checkbox"/> Foreign Surface Mail	\$40
<input type="checkbox"/> SAMPLE, U.S.	\$3.50
<input type="checkbox"/> SAMPLE, foreign	\$4.50

Yes, start my subscription now.	Name	Address	City	St	Zip	Phone	Visa/MC	Signature	Send to: Hardcore COMPUTIST, PO Box 110846J, Tacoma, WA 98411 <small>US funds drawn on US bank.</small>
---------------------------------	------	---------	------	----	-----	-------	---------	-----------	--

Table 2. Main variables.

Main Variables	Description
PT	Point indicator; determines the serve.
X,Y,Y1	Plot positions for left player (girl).
V,W,W1	Plot positions for right player (boy).
B1,B2,BX,BY	Plot positions for ball animation.
DIR	Direction. When DIR = 0, ball was hit by girl. When DIR = 1, ball was hit by boy.
SV	Determines direction of serve.
FS	Initial counter for displaying message: Press paddle button to serve.
NBR	Random number from 1 to 175 that determines vertical point of ball return.
INCR	Incremental variable that plots horizontal animation points of ball in play.
GC\$	Girl's current game score.
BC\$	Boy's current game score.
GG	Number of games girl won.
BG	Number of games boy won.
GS	Number of sets girl won.
BS	Number of sets boy won.
XC\$,YC\$,XG,YG,	Counters used to change score; X prefix indicates winner of point and Y prefix refers to the other player.
XS,YS	Uses GET command at game end to restart or quit.
G0\$	Adjusts speaker using PEEK(-16336).
CLICK	Serve percentage allowances. Serving accuracy will increase at higher competition levels (advanced or intermediate).
SQ,SP	Indicates ball being served.
SB	Status indicator. ST will equal 1, 2, or 3 to indicate beginner, intermediate, or advanced mode.
ST	

Listing 1. Match Point.

```

10 REM ****
11 REM * PLAY OPTION *
12 REM * AND COURT *
13 REM * SET UP *
14 REM ****
20 PRINT CHR$(4); "BLOAD PLAYERS,A$6000": POKE 232,0: POKE
233,96
30 TEXT : HOME : VTAB 4: HTAB 8: PRINT "WELCOME TO ";: INVERSE
: PRINT "MATCH POINT!": NORMAL
40 VTAB 7: PRINT "PLAYER ON THE LEFT WILL USE PADDLE 0 TO"
: PRINT "CONTROL PLAYER MOVEMENT. PLAYER ON THE": PRINT
"RIGHT WILL USE PADDLE 1. PRESS PADDLE": PRINT "BUTT
ON TO SERVE."
50 VTAB 12: PRINT "CHOOSE PLAYER STATUS: ": PRINT : PRINT
"1 - ADVANCED": PRINT : PRINT "2 - INT
EREDIATE": PRINT : PRINT "3 - BEGINNER": PRINT
: INPUT " ";ST
60 IF ST < 1 OR ST > 3 THEN 30
70 IF ST = 1 THEN ST = 10:SQ = 40:SP = 100
80 IF ST = 2 THEN ST = 20:SQ = 30:SP = 110
90 IF ST = 3 THEN ST = 40:SQ = 20:SP = 120
100 HOME : HGR : HCOLOR= 3: ROT= 0: SCALE= 1:X = - 5:Y =
10:GC$ = " 00 ":BC$ = " 00 ":GG = 0:BG = 0:GS = 0:BS
= 0:SV = 0:PT = 1:DIR = 0:SC = 0:FS = 0
110 FOR J = 8 TO 17: IF J = 13 THEN X = X + 20
120 X = X + 20: DRAW J AT X,Y: NEXT J
130 HPLOT 20,40 TO 220,40 TO 220,140 TO 20,140 TO 20,40: HPLOT
120,40 TO 120,140: HPLOT 122,38 TO 122,138: HPLOT 120,
40 TO 122,37: HPLOT 120,140 TO 122,137
140 HPLOT 190,40 TO 190,140: HPLOT 50,90 TO 190,90: HPLOT
50,40 TO 50,140: HPLOT 19,39 TO 221,39 TO 221,141 TO 1
9,141 TO 19,39
150 REM ****
151 REM * SET START *
152 REM * LOCATIONS *
153 REM ****
160 SB = 0
170 PT = PT + 1
180 IF SB = 1 THEN HOME : VTAB 22: HTAB 13: FLASH : PRINT
"SECOND SERVE": NORMAL
190 IF PT / 2 = INT (PT / 2) THEN X = 30:Y = 120:V = 200:
W = 80:CR = 0: GOTO 210
200 X = 30:Y = 80:V = 200:W = 120:SV = DIR:CR = 0
210 B2 = 100: IF SV = 1 THEN B1 = 210:B2 = W - 20: GOTO 230

```

Continued on p. 104.

Basic Koala'ficiations

**Use marvelous KoalaPad
graphics creations
in your BASIC
programs.**

by Phil Makurat

Aten-line program is all you need to incorporate your KoalaPad creations into a BASIC program. You can illustrate adventure games, create mazes or besieged cities for arcade games, or develop graphs and charts for business presentations.

In **Listing 1** on the next page, line 10 displays a message that explains how to use the program. Line 20 asks you to type in the name of the picture exactly as it appears in the catalog. Line 30 appends the address of hi-res page 1 (2000 hexadecimal) to the name of the picture. Adding this address to the name makes line 40 load the picture into memory. Lines 50, 60, 70, and 80 are four switches that determine the parameters of video output, as explained below. The program displays the picture and waits at line 90 until

you depress a key. Line 100 returns the screen display to text.

At this point the picture is still in memory and you can view it again quickly without reloading it by typing RUN 50. Line 60 sets the graphics resolution to hi-res.

You can have two drawings in memory at any time as full-screen pictures or as graphics with four lines of text printed at the bottom of the screen. To load a picture to the second graphics page, change the address \$2000 to \$4000 in line 30, and change line 70 to POKE - 16299,0. If you want text at the bottom of the graphics screen, change line 80 to POKE - 16301,0.

Listing 2 is the outline of a pro-

gram you can incorporate into a larger BASIC program to load a title or map into the first graphics page and a second picture into the second graphics page. In the example, the pictures are called MAP1 and MAP2.

To flip back and forth between the two maps, use a loop to hold the picture on the screen for a short period. **Listing 3** loads two pictures, MAP1 and MAP2, and flips between them. Since this program causes an endless loop, use control-C to interrupt it.

As you can see, KoalaPad graphics can easily grace any BASIC program you write. So illustrate your works lavishly—Koala'fy them! ■

Write to Phil Makurat c/o College of Education, 3031 Winther Hall, University of Wisconsin-Whitewater, Whitewater, WI 53190.



INTRODUCING THE COMPLETE MANUAL ON MAKING MONEY AT HOME WITH YOUR COMPUTER.

Here it is—everything you need to know to start and operate a money-making home business with your computer... created by Paul & Sarah Edwards, pioneers of the "electronic cottage" and nationally recognized authors and seminar leaders of the booming home-based industry.

In the first section, "HOW TO START A BUSINESS WITH YOUR COMPUTER," you'll go through 90 minutes of factual step-by-step instruction on tape cassettes that teach you how to spot all the opportunities, what computer equipment you'll need, the software you'll need, the problems you can expect, and the steps you'll need to succeed. You'll learn how to analyze your own skills, what makes a home computer business successful, how to avoid the pitfalls, and where to turn for help.

In addition, there's THE LEGAL CHECKLIST, THE TIME MANAGER, COMPUTER HELPERS, and THE MONEY MANAGER. Important tools you will need to work at home with your computer.

It's all here. Everything you need to turn your home into a fully operable money-making "electronic cottage."

To expedite your order, please send money order or cashiers check to:

**CHERRY VALLEY PRESS,
P.O. BOX 836,
SO. PASADENA, CA 91030**

\$6995

California residents add 6½% sales tax

Circle 223 on Reader Service card.

**★ EASY TO USE ★ FLEXIBLE ★
★ SAVES TIME ★**

- Creates 1 to 14 day menus, single meals or single items from up to 200 of your favorite meal items.
- The only program available that composes balanced meals and lets you change them!
- Compact, usable printout.
- Clear, Concise User's Manual.
- Add or change any meal item or ingredient in the database with ease.
- Reference your favorite cookbooks and recipes.

TESTED AND GUARANTEED
Send Check or Money Order to:

**SAV-SOFT PRODUCTS
P.O. Box 24898
San Jose, CA 95154**

(add \$1.50 handling; in CA add 6½%)

VISA, MC call : (408) 978-1048

48 K Apple II, II+, III, 1 disk, printer

Apple is a trademark of Apple Computer, Inc.

\$2995

Listing 1. Loading a KoalaPad-created picture into a BASIC program.

```

10 PRINT "THIS PROGRAM WILL DISPLAY PICTURES THAT
ARE DRAWN BY THE KOALAPAD. WHEN DONE VIEWING
ANY PICTURE PRESS THE SPACE BAR."
20 INPUT "WHAT IS THE NAME OF THE PICTURE?"; P$
30 P$ = P$ + ",A$2000" : REM APPEND ADDRESS $2000
40 PRINT CHR$(4) "BLOAD"; P$ : REM LOAD PICTURE
50 POKE -16304,0 : REM GRAPHICS
60 POKE -16297,0 : REM HI RES
70 POKE -16300,0 : REM PAGE ONE
80 POKE -16302,0 : REM FULL SCREEN
90 GET Z$ : REM WAITS FOR A KEY TO BE PRESSED
100 TEXT : REM RETURNS TO THE PROGRAM

```

Listing 2. Loading two pictures—the first with a full screen of graphics, the second with four lines of text at the bottom.

```

REM LOAD THE PICTURES MAP1 AND MAP2
PRINT CHR$(4) "BLOAD PICTR.MAP1,A$2000"
PRINT CHR$(4) "BLOAD PICTR.MAP2,A$4000"

REM VIEW MAP1
POKE -16304,0 : REM GRAPHICS
POKE -16297,0 : REM HI RES
POKE -16300,0 : REM PAGE ONE
POKE -16302,0 : REM FULL SCREEN
GET Z$ : REM WAITS UNTIL A KEY IS PRESSED
TEXT : REM RETURNS TO THE PROGRAM

REM VIEW MAP2 WITH FOUR LINES OF TEXT
POKE -16304,0 : REM GRAPHICS
POKE -16297,0 : REM HI RES
POKE -16299,0 : REM PAGE TWO
POKE -16301,0 : REM FOUR LINES OF TEXT
GET Z$ : REM WAITS UNTIL A KEY IS PRESSED
TEXT : REM RETURNS TO THE PROGRAM

```

Listing 3. Flipping between the two screens.

```

10 REM LOAD MAP1 ON PAGE ONE
20 PRINT CHR$(4) "BLOAD PICTR.MAP1,A$2000"
30 REM LOAD MAP2 ON PAGE TWO
40 PRINT CHR$(4) "BLOAD PICTR.MAP2, A$4000"
50 POKE -16304,0 : REM GRAPHICS
60 POKE -16297,0 : REM HI RES
70 POKE -16300,0 : REM PAGE ONE
80 POKE -16302,0 : REM FULL SCREEN
90 FOR X = 1 TO 250 : NEXT X
100 REM SWITCH TO PAGE TWO
110 POKE -16299,0
120 FOR X = 1 TO 250 : NEXT X
130 GOTO 70

```

Circle 281 on Reader Service card.



**"TermExec does a lot
for the money." InCider**

A total communications resource, TermExec lets you talk with any other phone-accessible computer...mainframes, information services, or micro-based Bulletin Board systems.

A lot for \$95.00 with our money-back guarantee. American Express, Visa & Mastercard accepted. Write or call today for more information and our free brochure.

Quinsept, Inc.

P. O. Box 216, Dept. IC
Lexington, MA 02173/(617) 641-2930
Bulletin Board (617) 863-0282

A User's Guide to Public Domain Software

The Computer Learning Center's Public Domain Library collection has been assembled from a variety of sources. Each one of these Public Domain Software (PDS) programs is unique. Some are early versions of copyrighted programs donated by the author(s). Many are simple versions of more complex programs available at much higher prices. Some are even actual routines that were later combined into a larger program now selling for a great deal of money.

Most of the programs are in BASIC so that you can modify them and use them in your own programs; best of all, they are not copy-protected.

You can make as many copies as you want and give, trade or sell them to whomever you please.

BUYING PDS VOLUMES

The Public Domain Library run by the Computer Learning Center contains a collection of programs that have been donated to the public and, therefore, have no copyrights attached. Such programs may be copied and distributed by anyone without regard for origin or ownership since they are owned by the public at large.

Public Domain Software is also known as FREEWARE.

The \$4/volume fee charged by the Computer Learning Center covers the cost of the disk and costs involved in copying, labeling, packaging, mailing, and other related expenses.

WHO CAN USE IT

There are over 175 volumes in the Computer Learning Center's PDS library collection. All of these volumes will run on Apple II computers or Apple II compatibles.

APPLE IIe, IIc & III OWNERS

Some machine language programs will function erratically on the IIe and IIc. This is because of changes in the F8 monitor. Many of the PDS programs will work on the Apple III in emulation mode. We have not tested all of the programs nor do we have a list of what works. So be careful. "Caveat Emptor."

PDS FORMAT

All of the PDS disks are supplied in DOS 3.3, 16 sector format. We do not supply DOS 3.2 or ProDOS formatted disks.

NEEDS WORK?

Occasionally you will notice a ▲ after a program title. This symbol is our way of telling you that this program needs some work on it.

DOCUMENTATION

Documentation, if it exists, is on the volume with the program. Usually the documentation has the same name as the program except that a 'DOC' is added to the name.

WHAT ABOUT COPYRIGHTS?

When you read the PDS listings, you might notice a © after the name of the individual program in a particular category. This abbreviation indicates that a copyright was attached to the program when it was contributed to the public domain. When you use these copyrighted programs, or if you copy them for someone else, be sure to give credit to the

thoughtful author who gave the program to the general public. Keep the copyrights and authors' credits on the program.

We do not knowingly list programs that are copyrighted. If you discover that a program on a Computer Learning Center volume is copyrighted (other than contributed programs already identified with a © after the title) you may order a free PDS volume with your next PDS order. In order to get this free volume, however, you MUST provide good documentation of your findings.

MAKING SENSE OUT OF THE PDS CATALOG LISTINGS

The name of each volume is in bold lettering followed by a number. When ordering, use the name and number of each volume you want.

The column of titles under the volume name shows the individual programs on that volume. So, if you're interested in business programs and are glancing through our Business & Finance PDS volumes, you'll notice that Business & Finance #19 has a letter writer program and a phone list program as well as programs for stocks and Visicalc formulas. Remember the ▲ symbol (program needs work) and the © symbol (copyright).

PROGRAM LANGUAGES

The individual programs on each volume are all keyed with a language code. The left column indicates the language required by the program.

Looking at our B&F#19 again, you'll note that the letter writer program is Integer BASIC (noted by an "I") while the stock monitor program is in Applesoft (noted by an "A").

Code requirements:

A - Applesoft in ROM or Applesoft firmware card or Language card and DOS master disk.

I - Integer in ROM or Integer firmware card or Language card and DOS master disk.

B - These programs are written in machine code. If the program uses routines from Integer or Applesoft, then the requirements for I and A programs apply.

T - These are text files and are used by the other three program types.

PROGRAM SIZE

Next to the language code is a column with three digits. This column indicates the number of sectors that each program occupies on the volume.

The letter writer program on B&F#19 uses 6 sectors on the volume.

PROGRAM CRASHES

If a program crashes, the disk may have a bad sector. We will replace any disk that has a bad copy of a program or one that has media defects. Return the disk to us with a note explaining your difficulties. Some programs will give SYNTAX ERRORS. These are not media defects or bad copies.

PDS is not commercial quality and is supplied as is.

Apple II, II+, IIe, IIc and III are trademarks of Apple Computer, Inc.

Apple Tutorial

Apple Tutor 001

I 004	Basic Programming
I 036	Basic Programming 1
I 047	Basic Programming 2
I 048	Basic Programming 3
I 044	Basic Programming 4
A 004	Basic-Integer
B 022	Basic-Integer.X
I 019	Conventions
I 016	CPU 6502
I 002	Hello Sample
I 030	Micro 6502 Simulation
I 051	Mini Assembler Tutorial
A 022	Random Drill Tutor
I 007	Sweet 16 Disassembler
I 004	Sweet 16 Speed ?
B 002	Sweet 16 Speed.X
I 026	Top Down Programming

A 016	Plot Pourri
A 010	Poster ?
A 008	Poster Banner I
A 009	Poster Love II
A 003	Rubber Apple
A 020	Shape Editor
A 010	Shape Generator
A 003	Shape Instr
A 023	Shape Table Editor
T 001	Shape Table for Hires Label
T 002	Shape Test
A 015	Skywriter
A 003	Skywriter I
A 003	Skywriter II
A 025	Skywriter Instr
A 013	Skywriter Snoopy
B 018	Star.shape
A 005	TV Pattern Generator

Business & Finance

Business & Finance 018

A 005	Annuity Principal & Int.
A 003	Annuity Reg. Deposits
A 018	Annuity ▲
A 013	Bond Price & Interest
A 012	Bond Value
A 032	Budget Monthly
A 013	Decision Matrix
A 054	Financial Pak
A 016	Invest. Annuity Forecast
A 012	Keogh Savings Program
A 014	Loan Amort. Schedule
A 008	Loan Direct Reduction
A 004	Loan Interest
A 029	Market Evaluator Pak
A 009	Mortgage Calculation
A 007	Nicer Writer ▲
A 003	Regular Deposits I
A 007	Sales Tax At 6%
A 017	Security Analysis
A 006	Sec. Analysis Copy Data
A 003	Simple Interest
A 010	Stock Option Analysis
A 016	Stock Op covered hedge
A 015	Stock Option Pricing I
A 021	Stock Option Pricing II
A 008	Stock Portfolio Valuation
A 028	Stocks
A 010	Trip Cost Analysis

Art & Graphic

Art & Graphic 011

A 006	Art Align
A 002	Art Bars
A 003	Art Circle
A 002	Art Demo
A 003	Art Diverging Circles
A 003	Art Diverging Octagons
A 003	Art Double Cross
A 006	Art Dougs Theme
A 003	Art Drifting Circle
A 003	Art Drifting Octagon
A 004	Art Elephant
A 003	Art Figure 8
A 005	Art Horizon
A 007	Art IBM
A 003	Art Octal 8
A 002	Art Oneliner 7
A 007	Art Super Kalied
A 003	Art Twist II
A 015	Art Xmas Card
A 014	Auto Space War II
A 002	Billboard Mother
A 002	Graphic Switch
A 010	Graphics Tablet
A 008	Hi-res Text Demo ?
B 007	Hi-res Text Set
A 004	Higher Hires
A 006	Hires Sketch
A 003	Invert Monitor Mode
A 035	Life
B 015	Life Language
A 004	Life Leader
A 002	Picture Loader

Business & Finance 019

I 030	Calendar Personal
I 006	Letter Writer
I 006	Letter Writer Enhance
I 014	Phone List
I 005	Real Estate Plot
B 034	Real Estate Plot.X
A 012	Stock Monitor I
A 015	Stock Monitor II
A 024	Trend Line Analysis
A 006	Visicalc Coord Formulas
A 012	Visicalc D File Printer
A 014	Visicalc Formulas
A 006	Visicalc Formulas Instr

Business & Finance 020

A 025	Apartment Mortgage
A 052	Banking And Finance
A 058	Business Finance
A 006	Check Stub
A 020	Household Exp. Profile
A 041	Income Tax 1040 For 77
A 029	Inventory Company
A 004	Inventory Cost File Entry
A 016	Inventory Home I
A 022	Inventory Model
A 009	Inventory Print ▲
A 003	Inventory Shortest
A 003	Inventory Shortest Read
A 023	Inventory

Advertisement

A 003 Inventory.DOC
 A 019 Inventory.File Create
 A 029 Inventory.File Read
 A 018 Stock Market Forecaster
 A 011 Stock Valuation

Business & Finance 021

A 004 Annuity
 A 004 Average Growth Rate
 T 001 Basenamefile
 A 046 CAC Record System ▶
 A 009 Check Book Balancer
 A 008 Check Writer
 A 004 Depreciation Amount
 A 003 Depreciation Rate
 A 010 Depreciation Schedules
 A 003 Depreciation Straight
 A 004 Disc. Commercial Paper
 A 024 House Sales
 A 005 Income Taxes
 A 012 Interest Earned
 A 003 Interest Rate
 A 038 Inventory Home II
 A 004 Invest. For Withdrawals
 A 004 Investment Future Value
 A 004 Investment Initial
 A 013 Lease Computation
 A 031 Life Mgmt And Finances
 A 012 Life Mgmt Txt Organizer
 A 005 Loan Balance
 A 007 Loan Interest Rate
 A 005 Loan Last Payment
 A 004 Loan Principal
 A 005 Loan Regular Payment
 A 004 Loan Term
 A 004 Mortgage Computer
 A 007 Mortgage Table
 A 063 Payroll
 A 004 Regular Deposits II
 A 003 Regular Withdrawals
 A 004 Salvage Value
 A 009 Savings Growth
 A 011 Survey Data Reduction
 A 003 System Reliability
 A 004 Treasury Bill Valuation

Business & Finance 022

A 013 Address File
 A 012 Print Amortiz. Schedule
 A 013 Amortization Sched Scrn
 T 002 Bork.INV
 T 003 Bork.OPF
 T 003 Comp.INV
 A 009 Compound Int. Tables
 A 008 Ellwood Graph Points
 A 009 Print Ell. Gr. Points
 A 029 File Manager
 B 003 File Manager.X
 A 018 Home Accounting
 A 010 Print Inc. Approach
 A 025 Print Inc. Approach Rate
 A 011 Inc. Approach Screen
 A 049 Income Tax
 A 021 Inventator
 T 002 Inventator.INV
 A 014 Names Search
 A 015 Net Present Value
 A 015 Net Present Value Irr
 A 008 NPV % Chg. Income
 A 008 NPV % Chg Income IRR
 A 008 NPV % Chg. Income PR
 A 012 Overall Rate Printed
 A 008 Overall Rate Screen
 A 013 Payment Schedule
 A 006 Tax Depreciation Sched.

Business & Finance 023

A 010 All Accounts
 A 010 Bills
 A 005 Clean Up
 T 003 Company
 A 028 Data Base
 A 028 File Cabinet I
 A 029 File Cabinet II
 A 038 File Cabinet III

A 040 File Cabinet IV
 A 015 Individual Accounts
 T 002 Jobwork
 A 008 New
 A 003 Nominal Interest Rate
 A 012 Pay
 T 001 Pfile
 A 003 Print All Entries For 1 #
 A 012 Property Mortgage
 T 009 Rec
 A 011 Statement Invoice
 A 002 Utility Write Blank Pfile
 A 003 Utility Write Empty Disk

Games**Game 036**

A 027 Blackjack Strategy
 A 012 Combat
 A 017 Craps BW
 A 035 Cribbage I BW
 A 028 Football Predictions
 A 011 Fox And Hounds
 A 026 French Military Game
 A 020 Gold Mine
 A 022 Golf II
 A 016 Hi Q
 A 027 Hockey I
 A 021 Horse Race III
 A 031 Kingdom
 A 008 Literature Quiz
 A 026 Marooned In Space
 A 004 Ping Pong
 A 010 Robot BW
 A 016 Survive
 A 018 Twonky I
 A 018 Word Maze Maker
 A 003 Football Predictions.note

Game 041

A 008 Animal
 A 055 Art Auction
 A 006 Ball Catcher
 A 017 Bombardment
 A 021 Boxed In
 A 008 Depth Charge
 A 010 Dogfight
 A 008 Doors
 A 016 Elevate
 A 036 Fort I
 A 020 Golf I
 A 014 Klingon Capture
 A 029 Monster Chase
 A 007 Number Guess
 A 014 Obstacle
 A 007 Petals Round the Rose
 A 004 Roll Dice
 A 010 Rotate
 A 070 Star Trek Super
 A 018 Stock Market Game
 A 015 Word Puzzle

Game 050

A 017 Battle
 A 015 Century 51
 B 002 Century 51.X
 A 020 Checkers II
 A 021 Commodity Market
 A 016 Craps I
 A 013 Cryptograms
 A 017 Frustration
 A 027 Geography II
 A 015 Hangman II
 A 022 Lunar Landing BW
 A 061 Market Crash
 B 005 Market Crash.X
 A 009 Name the States
 A 018 Puzzle Generator
 A 007 Solitaire Checker Puzzle
 A 010 Spell the States
 A 012 Subscan for Two
 B 002 Subscan.X
 A 031 World War

Math & Statistics**Math & Statistics 059**

A 008 Anglo To Metric I
 A 011 Anglo To Metric II
 A 003 Arcsin Arccos
 A 016 Calculator
 A 007 Calculus I
 A 013 Calculus II
 A 007 Cash Register
 A 005 Circle Area Circum
 A 009 Compound Interest
 A 010 Critical Path Analysis
 A 006 Curve Fit I
 A 013 Curve Fit II
 A 013 Curve Fit III
 A 003 Derivative of Equation
 A 010 Differential Eqn Solver
 A 015 Equation Solver
 A 005 Equations I
 A 014 Equations II
 A 014 Factor
 A 003 Fibonacci Numbers
 A 012 Foot Candle Analysis
 A 010 Fourier
 A 011 Fourier Transform
 A 007 Gaussian Quadrature II
 A 010 Math Drill I
 A 011 Math Drill II
 A 005 Matrix Inversion II
 A 009 Matrix Operation
 A 016 Mean Vari Stdr Devia II
 A 007 Mode Finder
 A 003 N Factorial
 A 007 Plot Consecutive
 Reactions
 A 006 Plot Functions of X
 A 003 Prog Chart ?
 A 011 Robot Motor Design
 A 005 Sine Function
 A 010 Statistics I
 A 014 Statistics II
 A 014 T Test Stdn Deviation
 A 004 Time Speed Dist. Exer.
 A 006 Time Speed Dist. Fuel
 A 014 Triangle Solver
 A 011 Unpaired Group Comp.

Math & Statistics 061

A 003 Angle Conversion
 A 012 Anglo To Metric III
 A 003 Area of Polygon
 A 008 Binomial Distribution
 A 004 Blackbody
 A 003 Chi Square Distribution
 A 004 Chi Square Test
 A 004 Coordinate Conversion
 A 008 Coordinate Plot
 A 003 Curvilinear Interpolation
 A 002 Derivative
 A 016 Dfit
 A 011 Differential Eqn Solver
 A 004 Exponential Regression
 A 004 F Distribution
 A 004 Gaussian Quadrature I
 A 003 Geometric Mean
 A 004 Geometric Regression
 A 004 Greatest Comm Denom.
 A 005 Histogram
 A 003 Linear Interpolation
 A 007 Linear Programming
 A 004 Linear Regression
 A 005 Mann Whitney U Test
 A 022 Math Drill III
 A 019 Math Multiply Drill
 A 019 Math ▶
 A 013 Matrices
 A 004 Matrix Inversion I
 A 004 Matrix Multiplication
 A 004 Matrix Operation Simple
 A 004 Mean Vari Stdr Devia I
 A 007 Mult. Linear Regression
 A 004 Normal Distribution

Math & Statistics**Math & Statistics 064**

A 006 Nth Order Regression
 A 004 Number Combinations
 A 002 Parabola Plot
 A 003 Permutation Comb. I
 A 007 Permutation Comb. II
 A 003 Poisson Distribution
 A 006 Polar Equation Plot
 A 011 Polyfit
 A 013 Polynomial Regression
 A 006 Power Curve Fit ◎
 A 003 Prime Factors I
 A 006 Prime Factors II
 A 003 Quadratic Formula
 A 006 Quadratic Surface
 A 015 Right Triangle Solver
 A 016 Root Finder
 A 005 Roots of Poly Half
 A 005 Roots of Polynomials
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 A 004 Vector Analysis
 A 003 Vector Operations

Math & Statistics 063

A 005 Averages
 A 007 Chess Board
 A 009 Compound Interest Tbl.
 A 007 Compression Ratio
 A 007 Consecutive Reactions
 A 005 Cycloid
 A 006 Equiprobable
 A 012 Fourier Transform Hires
 A 005 Function Plot I
 A 005 Function Plot IA
 A 006 Function Plot II
 A 012 Function Plotter I
 A 013 Function Plotter II
 A 006 Function Zeros
 A 012 Gamblers Ruin
 T 003 Grants 100
 T 006 Grants 400
 T 002 Grants 50
 A 015 Histogram Plot
 A 008 Hyperbola
 A 016 Integration
 A 006 Lissajoux
 A 005 Math Totals
 A 020 Math Willie Worm
 A 017 Metric Area
 A 004 Metric Gas Price
 A 005 Metric Kelvin Temp
 A 017 Metric Kitchen
 A 015 Metric Length
 A 004 Metric Temp
 A 020 Metric Temp Or Weight
 A 007 Metric Temperature
 A 026 Metric Volume
 A 005 Monte Carlo
 A 003 Polar Angles
 A 007 Polar Coordinates
 A 006 Poll
 A 005 Rosette
 A 014 Simult. Eqn & Matrix
 A 006 Spherical
 A 023 Spiral 2

Music and Sound**Music & Sound 064**

I 002 Music Alley Cat
 B 004 Music Alley Cat.X
 A 009 Name the States
 A 018 Puzzle Generator
 A 007 Solitaire Checker Puzzle
 A 010 Spell the States
 A 012 Subscan for Two
 B 002 Subscan.X
 A 031 World War

I 002 Music Childrens
 I 018 Music Flag
 I 009 Music Ode To Joy
 I 037 Music Pak 1
 I 016 Music Potpourri
 I 019 Music Small World
 I 012 Music Synthesized
 I 012 Music Tempered Scales
 I 016 Music Voice
 I 021 Music Writer 1
 I 024 Music Writer 2
 I 002 Music Writer 2 Doc
 I 007 Sound Effects Muzak
 I 009 Sounds By Hart
 I 004 Sounds Routine
 A 005 Xmas Song Printed

Music & Sound

I 021 Music Childrens
 I 018 Music Flag
 I 009 Music Ode To Joy
 I 037 Music Pak 1
 I 016 Music Potpourri
 I 019 Music Small World
 I 012 Music Synthesized
 I 012 Music Tempered Scales
 I 016 Music Voice
 I 021 Music Writer 1
 I 024 Music Writer 2
 I 002 Music Writer 2 Doc
 I 007 Sound Effects Muzak
 I 009 Sounds By Hart
 I 004 Sounds Routine
 A 005 Xmas Song Printed

Music & Sound 065

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson's Rule
 A 004 Simultaneous Equations
 A 004 T Distribution
 A 005 T Distribution Test
 A 003 Trapezoidal Rule
 A 005 Triangle Factors
 A 007 Triangle Parts
 A 003 Trig Polynomial
 I 023 Music In Ib
 A 004 Vector Analysis
 A 003 Vector Operations

T 003 America
 I 012 Hanon Etude #1 In C
 T 002 Happy Birthday
 A 015 Harmonic Analysis
 A 004 Simpson

Advertisement

I 002 IR
 B 034 Irish
 I 002 IT
 B 034 Italian
 I 002 Random Hello
 B 034 Random.obj
 I 002 RU
 B 034 Russian
 I 002 SP
 B 034 Spanish
 I 002 SW
 B 034 Swedish

B 018 Dirty Tricks.X
 I 020 Horoscope
 A 026 Miles Per Gallon Record
 I 074 Numerology
 I 002 Phone Mnemonic 1
 B 003 Phone Mnemonic 1.X
 A 010 Probability
 A 021 Random Insults
 I 002 Random Words 1
 I 003 Syn Tax
 I 008 Timer

A 005 Remove String Spaces
 A 012 Sort Numbers Woodrum
 A 009 Sort Quick Alpha
 A 006 Sort Quick Number
 A 005 Sort Words II
 A 005 String Reverse Function
 A 007 String Save Demo
 A 009 Super Catalog Builder
 B 002 Super Catalog Builder.X
 A 005 System Configuration
 A 004 Tape Recall Data
 A 004 Tape Store Data
 A 003 Throttle
 A 004 Token Address Table II
 A 005 Token Address Table III
 A 006 Variables Display
 A 013 Yes No And Pause

A 006 Renumber
 A 004 Renumber Merge
 B 010 Renumber Merge.X
 A 003 Reverse Print
 A 018 Sort Catalog
 A 003 Sort Catalog <
 B 002 Sort Catalog.X
 A 015 SSM AIO Board
 A 004 String Comparator
 A 004 String In A String Search
 A 004 Text File Edit
 A 003 Text File Peek
 A 003 Text File Read
 A 003 Text File Read & Print I
 A 005 Text File Read & Print II
 A 005 Text File Write
 A 004 Token Address Table I
 A 005 Utility Statements

A 009 Mem/dump To Text File
 A 006 Memory Interpreter
 A 004 Poke File
 A 009 Ram Test 48k
 B 005 Ref
 B 002 Ref@
 A 004 Rem Formatter
 I 007 Text File Out/cpy
 A 010 Text File Out/cpy (FP)
 A 004 Text File Random Disp.
 A 006 Text File Seq to Random
 A 003 Text File Writer
 A 005 Text To Applewriter
 B 005 Text To Applewriter.X
 B 005 Var
 B 002 Var@
 A 005 Volume Name Change I
 A 009 Volume Name Change II
 A 002 Word Repeater
 A 003 Words

Pastime and Other**Pastime & Other 069**

A 028 Analyst Eliza
 A 013 Analyst Hector
 A 003 Baby Names
 A 034 Bio Cycle
 A 003 Birthday Probability
 A 015 Booze N You
 A 008 Calendar I
 A 023 Calendar II
 A 004 Day Of The Week I
 A 006 Day Of The Week II
 A 005 Days Between 2 Dates
 A 017 Decision Maker I
 A 028 Decision Maker II
 A 014 Electricity Cost ©
 A 007 ESP Test
 A 030 Freud
 A 019 Grammar Mad Lib
 A 006 Greetings
 A 023 House Plants
 A 007 Jumbles Mnemonic
 A 003 Ladder Angle Safety
 A 010 Life Baker
 A 010 Map Check
 A 006 Mind Reader
 A 002 One Liner 2 ?
 A 003 Sailboat Stays
 A 015 Tout
 A 003 Vowel Finder
 A 008 Water Conservation
 A 021 Weather Forecast
 A 014 Weekday From 1582

Pastime & Other 071

A 048 Bio-Rhythms
 A 011 Calendar One Month
 A 007 Calendar Perpetual
 A 020 Calendar Reminder
 I 020 Colossus
 A 011 Decision Maker III
 I 063 Dirty Tricks Beware
 A 025 Dirty Tricks II

Utility**Utility 074**

A 003 Alphabetize
 A 003 Append File
 A 002 Autoboot 16
 B 004 Autoboot 16.X
 I 043 Basic-Applesoft
 A 005 Bstat How To
 A 002 Bstat II
 A 003 Catalog Sorter
 A 003 Command Generator
 B 002 Command Generator.X
 A 002 Comp-x Monitor ©
 B 016 Comp-x Monitor.X
 A 006 Debugging Aid
 A 004 Decimal Point
 A 004 DOS Command Finder
 A 005 DOS Cmnd. Finder
 A 012 DOS Short Commands
 B 002 DOS Short Cmnds.X
 B 002 DOS Short.restore
 A 014 Dump Track And Sector
 T 002 Exec File
 A 013 Exec File Generator
 A 005 Free Sectors DOS Patch
 A 002 Jump Points DOS 3.2
 B 002 Jump Points DOS 3.2.X
 T 009 Library 1
 I 017 Library Review Input
 A 004 Library Input Corrector
 A 019 Library Review
 B 006 Library Review.X
 A 005 Literal Input
 A 004 Lormen Himmel Ab
 A 008 MEM. Avail. RAM Only
 B 004 Memory Check 6502
 A 003 Memory Clear
 I 008 Motor Speed
 A 003 Motor Speed Doc
 A 007 Names File Create
 A 005 Names File Exch
 A 007 Names File Read
 A 004 Print Using I
 A 005 Print Using II

Utility 076

A 003 Base Conversion Chart I
 A 003 Base Conversion Chart II
 A 006 Base Convert **
 A 005 Base Convert Beymer
 A 012 Base Convert Ellmers
 A 005 Base Convert Jenkins
 A 029 Base Convert Massimo
 I 043 Basic-Applesoft
 A 007 Binary To FP
 A 053 Calendar And Posters
 A 002 Capture A Program
 A 005 Catalog Printer
 A 003 Clear Memory
 A 004 Copy Text File I
 A 004 Copy Text File II
 A 004 Copy Text File III
 A 004 Ctrl Char Catalog
 A 003 Ctrl Char Reveal
 A 003 Dump ASCII Memory
 A 002 Erase Hires Screen
 A 011 Format #
 A 003 Free Sectors Aldrich
 A 004 Free Sectors Brown
 B 002 Free Sectors Brown.X
 A 019 Illegal Commands
 A 005 List Page Diaz
 A 005 List Page Wysocki
 B 002 List Page Wysocki.X
 B 002 List Page.X
 A 007 Mach To Pokes Conv
 A 002 Musical Keys
 B 002 Musical Keys.X
 A 013 Phone Dialer
 A 003 Pointers
 A 002 PR# 6 On Reset
 A 003 Random Sentence
 B 002 Rem Stripper
 A 003 Rem Stripper Doc
 T 001 Ren/Mrg

Utility 080

B 012 All Purpose
 Disassembler A\$800
 B 012 All Purpose
 Disassembler A\$8B00
 A 012 Ampersand Catalog
 A 009 Applebetize
 T 003 Applesoft To Text
 I 006 Applewriter To Text
 B 002 Applewriter To Text.obj
 I 002 Assembler
 B 021 Assembler.X
 A 013 Auto Number II
 A 010 Autostart Rom Editor
 B 002 Autostart Rom Editor.X
 A 006 Backward MEM Move
 A 007 Base Convert
 T 002 Bindr
 A 003 Bindr Create
 A 007 Binary Link To Ab
 B 002 Cmp D1 & D2 after Copy
 A 002 Copy LHS
 B 009 Copy LHS.X
 A 004 Create Restore LN
 A 007 Ctrl Char Find
 A 002 Cursor Dash
 A 003 Cursor No Flash
 B 002 Dfind
 A 003 Dfind & Find Instr
 A 002 Find
 A 004 Garbage
 A 005 Hide Program Name
 T 004 Integer To Text (exec)
 B 002 Keyedit
 A 034 Keyedit & Utility Doc
 T 002 Line Input
 A 005 Line Input Improved
 B 005 Lit
 B 002 Lit@

Utility 086

B 002 EP1.3
 B 002 EP2.3
 B 002 EP3.3
 B 003 EP4.3
 A 003 Epson Catalog Dbl Strike
 A 008 Epson Driver Instr
 B 002 Epson Driver.
 I 002 Epson Greeting
 A 004 Epson Labels I
 A 005 Epson Labels II
 A 006 Epson Labels III
 A 002 Epson Lower Case
 A 002 MX/FX-80 List Capture
 A 008 MX/FX-80 List Format
 A 005 MX/FX-80 Listing Instr.
 A 003 Epson MX80 Catalog
 A 005 Epson MX80 Demo I
 A 007 Epson MX80 Demo II
 A 024 MX80 Label Maker I
 A 052 MX80 Label Maker II
 A 053 MX80 Label Maker III
 B 034 Epson MX80 Label.PIC
 A 003 Epson MX80 Letterhead
 A 015 Epson MX80 Prog. List
 A 023 Epson MX80 Calendar
 A 033 Epson MX80 Setup I
 A 033 Epson MX80 Setup II
 A 005 Epson Utility 3.3 Demo
 A 023 Epson Utility 3.3 Info
 A 022 Epson Word Game
 A 003 Epson EXEC.MakerA3.3
 I 003 Epson EXEC.MakerI3.3
 B 005 Text.Demo
 B 004 Text.MXtest
 T 002 XEpson.V3.3

How to Order

1. Select the volumes with the programs that you want.
2. Check the numbered boxes on this form that match your selections.
3. For every 10 volumes that you order, you get 1 free bonus volume. Circle your FREE bonus selection on the order form.
4. Fill in the address information and print neatly, PLEASE!
5. Total the number of volumes that you are ordering and multiply this number by \$4.00. The minimum order is two (2) volumes.

* Washington residents add 7.8% sales tax

* Overseas, Canada, and Mexico: add 20% for shipping.

6. Send a check or money order for the total amount due. We accept VISA/MC. Credit card orders must have a valid signature. We accept international money orders (in USA funds) and checks drawn on USA banks. Canadian checks must specify USA dollars. Make them payable to:

Computer Learning Center
 P.O. Box 110876-J
 Tacoma, WA 98411

<input type="checkbox"/> 01 App Tutor	<input type="checkbox"/> 22 Bus/Fin	<input type="checkbox"/> 63 Math/Stat	<input type="checkbox"/> 74 Utility
<input type="checkbox"/> 02 App Tutor	<input type="checkbox"/> 23 Bus/Fin	<input type="checkbox"/> 64 Music	<input type="checkbox"/> 76 Utility
<input type="checkbox"/> 11 Art/Graphic	<input type="checkbox"/> 36 Game	<input type="checkbox"/> 65 Music	<input type="checkbox"/> 80 Utility
<input type="checkbox"/> 18 Bus/Fin	<input type="checkbox"/> 41 Game	<input type="checkbox"/> 67 Passion	<input type="checkbox"/> 86 Utility
<input type="checkbox"/> 19 Bus/Fin	<input type="checkbox"/> 50 Game	<input type="checkbox"/> 68 Passion	
<input type="checkbox"/> 20 Bus/Fin	<input type="checkbox"/> 59 Math/Stat	<input type="checkbox"/> 69 Pastime	
<input type="checkbox"/> 21 Bus/Fin	<input type="checkbox"/> 61 Math/Stat	<input type="checkbox"/> 71 Pastime	

Send me the volumes that I have checked. I understand that the minimum order is two volumes. A complete catalog is sent free with your order.

Name _____

Address _____

City _____ State _____ Zip _____

Country _____ Phone _____

VISA/MC # _____ Exp _____

Signature _____

Public Domain Software is supplied as-is.

J

inCider's inSidious inSolubles

January is a time for reflection. Things accomplished, things undone. Resolutions. This month also marks the first-year anniversary of my column. In honor of the occasion, I'll let you peek behind the scenes of inSolubles—an inSide inSight, so to speak.

Your letters have been arriving at the rate of two or three a week. But because of a three-month lead time, they appear in the column much later than you might expect. And I don't like to tell someone that he or she has a great submission, though I won't print it for another seven or eight months. And you thought DOS 3.3 was slow.

In the past seven months I've received 71 inSoluble submissions or letters and comments. Several readers have sent in two problems; one error-ridden programmer has submitted as many as nine entries. I've heard from teenagers, lawyers, doctors, men, and women. The letters are postmarked Alaska, Hawaii, Guam, Singapore, Tokyo, even New Hampshire. None have come from Europe. (Don't they have bugs in Europe?) I've responded to all who've sent in problems and to many who've just asked questions or provided comments. I apologize for letters that have gone unanswered; I've tried to respond to everyone in these pages.

Some of your letters have included programming hints or minor problems that don't fit into the inSoluble format but are, nonetheless, interesting BASIC concepts that could lead to program problems or syntax errors. I may start to mention them in future columns. I've also received programs that improve and update the short inSoluble programs, and I'm thinking of listing some of them. What are your thoughts on these plans?

Now back to our usual (unusual?) assortment of brain teasers, puzzles, and erroneous results. Remember an

inSoluble is an Applesoft BASIC program that has one or more problems, errors, mistakes, or some inTangible inAccuracy submerged within. Most of our submissions are from readers whose programs developed the same problems their puzzles display. By submitting an inSoluble and having it published, you will receive \$20 and have your name proudly displayed in print.

If you're new to our column just key in the listing, follow the simple rules, type RUN, and hope for the best. If your typing was accurate, you won't see SYNTAX ERR, but what you will see is not what you'd expect. Or is it?

Rules for inSidious inSolubles

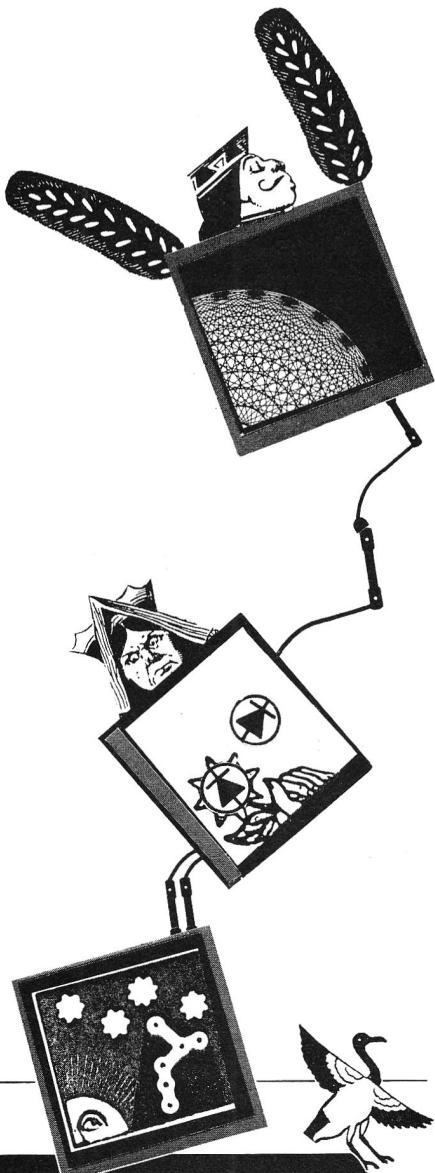
1. An inSoluble is a BASIC Applesoft program. Any POKED machine-language subroutines and CALL's to that subroutine are correct.
2. The program must accomplish something. In other words, when it's run it should produce some kind of a result.
3. The program should not generate an error message. If it does, check your typing.
4. A short explanation of what the program is supposed to do should be included and may contain clues to the problem.
5. The program can use common peripherals such as disk, printer, or modem. DOS 3.3 or ProDOS commands are acceptable.
6. More than one error can appear in the program.

When submitting your puzzles, remember to provide the solution, and please include an SASE if you would like a reply to your entry before it appears within these pages. The shorter the inSoluble, the better—but we like programs that do something useful.

Solutions on page 108.

Caught Off Base

The first problem, Caught Off Base, from Wayne Clift of Trona, California, converts a number from bases 2–9 to base 10. For example, the number 100, base 8 is 64, base 10. Wayne found this Applesoft dilemma in his programming class and thought we would enjoy it. I'm not sure we're all up to this one, Wayne, but I'll pass it on to those math wizards among us. Perhaps someone can come up with a simple program to convert any number to any base. In BASIC, please.



by Art Ude

Listing 1. Caught Off Base.

```

10 REM CAUGHT OFF BASE
20 TEXT : HOME
30 PRINT "FIRST TYPE A NUMBER, THEN THE BASE OF THAT NUMBER (2-9)."
40 PRINT "FOR EXAMPLE, YOU MIGHT TYPE: 1042,5": PRINT
50 PRINT "NO DIGIT IN THE NUMBER MAY BE GREATER OR EQUAL TO THE BASE.": PRINT
60 PRINT "THE PROGRAM WILL CONVERT YOUR NUMBER TO A BASE 10 NUMBER."
70 PRINT : INPUT "TYPE NUMBER, THEN BASE ";N$,B
80 L = LEN (N$)
90 FOR X = L TO 1 STEP - 1
100 S = S + B ^ X - 1 * (VAL (MID$(N$,X,1)))
110 NEXT X: PRINT
120 PRINT N$;" (BASE ";B;") = ";S;" (BASE 10)"
130 END

```

Disappearing DOS

The second inSoluble idea combines problems from Charles Moore of Dundee, New York, and Dave Townsend of Seattle, Washington. Disappearing DOS, it seems, is a national problem observed from coast to coast. You must send the list of items in the DATA statement first to your printer and then to the disk as a text file. If you lack a printer, you can still tackle this problem by changing line 60 to 60 PR# 0. This will send the list to your screen before it writes (or tries to) to the file. Lots of answers to this one. I can think of two. ■

Listing 2. Disappearing DOS.

```

10 REM DISAPPEARING DOS
20 TEXT : HOME
30 DIM A$(10):D$ = CHR$(4)
40 FOR X = 1 TO 10
50 READ A$(X): NEXT
60 PR# 1
70 PRINT "HERE IS THE LIST OF DATA IN THE FILE"
80 FOR X = 1 TO 10
90 PRINT A$(X): NEXT
100 PR# 0
110 PRINT D$;"OPEN TEXT FILE"
120 PRINT D$;"WRITE TEXT FILE"
130 FOR X = A TO 10
140 PRINT A$(X): NEXT
150 PRINT D$;"CLOSE TEXT FILE"
160 DATA APPLE,DISK,PROGRAM,KEYBOARD,ANIMALS,DOS,CAT,BIRD,FI
SH,RABBIT
170 END

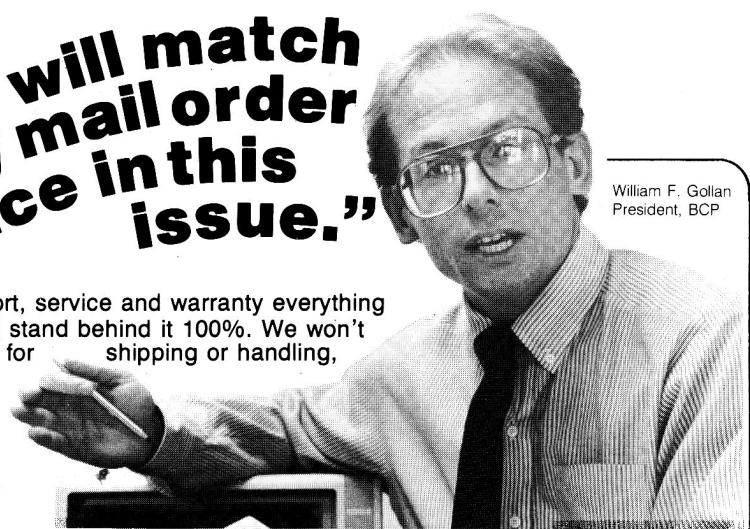
```

Send your inSolubles to Art Ude c/o inCider, 80 Pine Street, Peterborough, NH 03458.

"We will match any mail order price in this issue."

We'll support, service and warranty everything we sell and stand behind it 100%. We won't charge you for shipping or handling, nor will we penalize you for using a credit card.

William F. Gollan
President, BCP



COMPUTERS				SOFTWARE FOR Ile, IIC			
Apple Ile's & IIC's call							
MONITORS				PFS: Report	79.95	Graphics Magician	42.95
Amdek 300 A	159.95	Taxan Vision RGB	309.95	PFS: Graph	79.95	Sideways	42.95
Amdek Color 600 RGB	519.95	NEC JB 1201 A	159.95	PFS Access	79.95	Beagle DiskQuick	19.95
MODEMS				Think Tank	109.95	Beagle Apple Mechanic	19.95
Hayes Smart 300 Ile	259.95	MicroCom ERA2	369.95	Home Acct. En.	54.95	Data Capture	45.95
Hayes Smart 1200	499.95	Prometheus Pro 1200	389.95	Tax Advantage	49.95	Flight Simulator II	39.95
Hayes Micro Ile w/SC	249.95	Prometheus Pro 1200A	359.95	Dollars & Cents	79.95	Champ Lode Runner	29.95
PERIPHERAL CARDS & ACCESSORIES				Apple Works	219.95	Choplifter	29.95
ALS Z-Engine 2.2	159.95	Cricket Ile	139.95	ASCII Exp. Prc.	94.95	Zork 1,2,3(ea)	29.95
ALS Z80 CP/M 3.0+	289.95	Alphabits	99.95	CrossTalk	129.95	Zork 2 or 3	34.95
Cnt. Pt. Wildcard 2	109.95	TG Joysticks	34.95	DJ Inv/Eval.	99.95	Seastalker	29.95
Koala		TG Paddles	29.95	DJ Market Anal.	249.95	Sorcerer	39.95
Graphics Pad	79.95	Titan		DJ Investors Wks. Ile	99.95	Deadline	34.95
Gibson Light Pen	189.95	Accellorator II/IIE	429.95	DJ Spreadsheet Lnk.	169.95	Sargon III	39.95
Kensington System Srv	64.95	64k Ram II+	259.95	Home * Educational *		Beyond Castle Wolf.	29.95
Kraft Joysticks	39.95	128k Ram II+	319.95	Entertainment		Zaxxon	29.95
Kraft Paddles	39.95	Neptune 64k+80	199.95	Beneath Apple DOS	18.95	Objective Kursk	29.95
Microsoft		Neptune 128k+80	299.95	Bag of Tricks	29.95	Exodus Ultima III	45.95
Z80 CP/M Softcard	229.95	Neptune 192k+80	339.95	Robot Odessy	34.95	Xyphus	24.95
Premium Pack Ile	499.95	Videx		Kings Quest	34.95	Exp. Amazon	24.95
Premium Ile w/d:BASE	369.95	Videoterm w/ss	219.95	MACINTOSH SECTION			
Street		Ultraterm	269.95	Mac Modems			
ECHO II	99.95	GRAPHIC INTERFACES & BUFFERS				Exodus Ultima III	45.95
Fingerprint				Kensington 300	109.95	Frogger	29.95
Print-It	169.95	Grappler w/64k	209.95	Microcom Macmodem	469.95	Murder by Dozen	29.95
Grappler +	119.95	Quadram 32k Fazer	179.95	Prometheus Macmodem	399.95	Millionaire	44.95
Grappler + RS232	89.95	Quadram 64k Fazer	194.95	Novation Macmodem	389.95	Run for Money	39.95
Grappler w/16k	159.95	Quadram 128k Fazer	274.95	Mac Peripherals & Accessories			
PRINTERS DOT MATRIX				Artsci Magiphone	149.95	Business & Personal	
Apple Imagewriter	499.95	Gemini 15x	379.95	Kensington		MacForth Lev. 1	119.95
Apple Scribe	239.95	Gemini Delta 10	369.95	MacForth Lev. 2		MacForth Lev. 2	119.95
C. ITOH 8510	349.95	Gemini Delta 15	479.95	Mac Speller	59.95	Mac Speller	59.95
Epson LQ 1500	1039.95	Gemini Radix 10	539.95	Mac Surge	39.95	1st Base	149.95
Epson RX 80	229.95	Gemini Radix 15	629.95	Mac Swivel	25.95	Macacalendar	64.94
Epson RX 80 F/T	319.95	Okidata 92	399.95	Mac Disk	25.95	Typing Tutor III	39.95
Epson RX 100	419.95	Okidata 92 Image	469.95	Starter Pack	79.95	Think Tank	99.95
Epson FX 80	419.95	Okidata 93	609.95	Techmar	5.95	Devinci Ser.(ea.)	39.95
Epson FX 100	599.95	Okidata 84	709.95	5mb Rem.	1519.95	Mirage Trivia	39.95
Epson JX 80 Color	599.95	Toshiba P1351	1299.95	10mb Fixed	1519.95	Mac the Knife	29.95
Gemini 10x	279.95	Toshiba P1340	729.95	Imomega Bernoulli		Click Art	39.95
PRINTERS LETTER QUALITY				5mb Rem.	1519.95	Click Art Pub.	39.95
DW 2000 33cps 48k	829.95	Silver Reed 400 12cps	299.95	Apple		Dow Jones ST.	59.95
Dynax DX 150L 21cps	399.95	Silver Reed 500 14cps	369.95	Mac 128K	CALL	Home Accountant	69.95
Dynax DX 25 23cps	639.95	Silver Reed 550 17cps	439.95	Mac 512K	CALL	Dollars & Sense	99.95
Dynax DX 35 35cps	869.95	Silver Reed 770 36cps	839.95	Mac Drive	429.95	PFS:File	79.95
NEC 2010/2030	699.95	PowerType 17cps	359.95	Mac Pad	89.95	PFS:Report	79.95
SOFTWARE FOR Ile & IIC				Disks		PFS:File/Report	139.95
Word Processing				Memorex (10)	39.95	Megamerge	79.95
Bank Street Writer	49.95	Master Type	29.95	BASF (5)	19.95	Megafile	139.95
Bank Street Speller	49.95	Microsoft T Tutor 2	19.95	Software			
PFS:Write	79.95	Sim. Sch. T Tutor 3	39.95	Entertainment & Educational		Main St. Filer	149.95
PFS:Proof	54.95	Micro Cookbook	29.95	Mac Fun-Pac	29.95	Habedex DB	139.95
Homework	49.95	Owlcat 15hr SAT	69.95	Mac Slots	54.95	Odestra Helix	269.95
Homework Speller	39.95	Owlcat 60hr SAT	189.95	Cuthroat	29.95	Filevision	139.95
Apple Writer Ile	169.95	Crossword Magic	39.95	Microsoft Mac			
Sensible Speller IV	79.95	Print Shop	39.95	Zork 1	29.95	Chart	79.95
ScreenWriter Pro	84.95	Math Blaster	39.95	Zork 2 or 3	34.95	File	139.95
Format II Enh.	109.95	Word Attack	39.95	Witness	29.95	Word	139.95
Net Worth	59.95	Speed Reader II	39.95	Deadline	39.95	Multiplan	139.95
Multiplan	139.95	Alphabet Zoo	19.95	Enchanter	34.95	Basic	109.95
PFS: File	79.95	Story Machine	24.95	Infidel	34.95	Book	16.95
		Apple Logo	89.95	Plantettfall	29.95	TK Solver	169.95
		Terrapin Logo	69.95	Sargon III	34.95	OVERVUE	189.95
				Pensate	27.95	Softmaker II	99.95
				Transylvania	27.95	Mind Probe	39.95
				Xyphus	27.95	Sales Edge	179.95
				Graphic Magician	34.95	Mngt. Edge	179.95



BUSINESS COMPUTERS
OF PETERBOROUGH

**FREE
SHIPPING
CONTINENTAL US**



12 School Street • Peterborough, NH 03458

ORDERS ONLY:
800-845-3003

QUESTIONS
603-924-9406



No matter how many tax loopholes you think you've found or tax shelters you've tried to take advantage of, you still end up baring your financial soul on IRS form 1040 (or 1040A). Unfortunately, no one has yet devised a sure way to avoid paying taxes, but a few folks have come up with some helpful software programs that—while they won't make the process fun—help you fill out and understand all those forms.

This month I'll look at programs ranging from a simple forecasting tool that projects future tax liability (Dynacomp's Tax Optimiser) to a VisiCalc overlay that figures your taxes (SoftTax) all the way to a system that does everything for you from selecting the proper form to putting your numbers into the right places (HowardSoft's Tax Preparer). All you have to do is sign the form, attach your check, and drop it in the mail.

Documentation

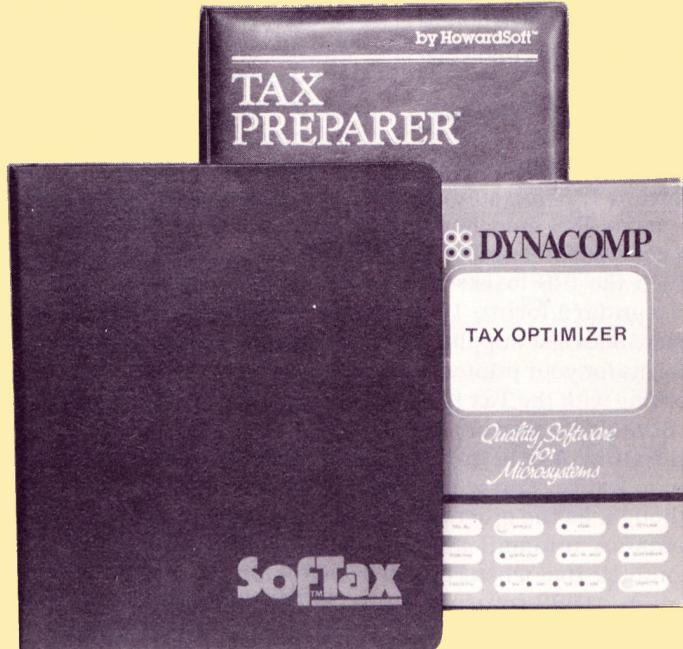
HowardSoft's Tax Preparer, while not the speediest program in the world, does a thorough and effective job of preparing your tax forms. The first 68 pages of the 235-page manual present a tutorial that uses a sample tax return on disk. The manual even includes a good section on recent changes in the tax laws, and annual

updates for the program disk are available.

Dynacomp's Tax Optimiser is a simple package that lets you forecast your tax liability under varied conditions. While the concept is a good one, the program is saddled with a brief, 25-page booklet that gets you started, but inadequately explains why certain things happen as they do. The program works with *scenarios*, different ways to examine your financial data.

A generic product, the Tax Optimiser is compatible with North Star's Horizon and with TRS-80's. You're led through each menu selection and then taken through a tutorial, but a few pages of advice on what to look for and how to manipulate your financial data would improve the manual.

SoftTax's 91-page manual places its reference section first, and then gives some tutorial examples. This package insists that you have VisiCalc, so for anyone familiar with VisiCalc, SoftTax's obvious operation is to its credit.



Lighten your tax burdens and gain financial security with an effective tax planner.

by Gregory R. Glau

Running the Packages

The HowardSoft Tax Preparer is designed for experienced users: people who already calculate their own taxes or professional tax preparers, who know what data to enter on the different forms. The manual gives good advice as to which figures go where, along with a complete rundown detailing each form. Though the most detailed of the three manuals, it still doesn't replace expertise in tax preparation.

HowardSoft's Tax Preparer lets you access 21 different IRS forms and schedules and, using IRS guidelines, prints them on plain paper (except for form 1040, which the IRS insists be printed on its standard form). The manual, however, does list suppliers of blank 1040 forms for your printer.

As you're working with the Tax Preparer, you can print any screen at any time—a helpful feature. A built-in calculator helps you figure. You won't need it often, though, as the program does all mathematics automatically. In fact, it's so complete that when I entered data from my 1983 return to check the program, it even calculated the depreciation, based on the type of property and its expected life. For an old building that my accountant listed as having 15/30 depreciation, the program incorrectly based its calculations on 15 years. Thankfully, for such situations, the Tax Preparer's override mode lets you adjust an entry manually.

One of the Tax Preparer's best features is its ability to itemize any line of any form, so you can insert as much detail into your tax return as necessary. The program keeps track of every entry, and on-line, context-sensitive help pulls up brief messages to explain any ongoing process.

The system's *roadmap* takes you through form 1040 line by line and always returns you to the current line, so it's impossible to get lost among the many forms. For example, at line 34a, pressing the letter I takes you to Schedule A to itemize your deductions. Then, the program totals this amount and automatically returns to line 34a, letting you continue to enter data. The system never forgets to save the itemized information either and, with a single-drive Apple, prompts for the data or program disk as needed.

Since the Tax Preparer collects so much detail in so many places, it's cumbersome as a tax planner. HowardSoft promises a new planning module to give it more flexibility to forecast the effects of tax decisions. This module will be included in future versions of the package and can also be added separately to existing packages.

Finally, the Tax Preparer includes a batch-entry method, eliminating some of the program's slowness and the constant recalculation the standard mode uses. Through this method the professional can enter a lot of data at one time, and the individual user can input his or her information rapidly, without waiting as each entry is handled mathematically.

Dynacomp's Tax Optimiser lets you select from one to five alternatives in 11 categories so you can see the effect of different income or deduction amounts on your net tax liability. The program comes with tax tables for 1982 and 1983 already on disk; you can update these, or create your own from IRS forms.

The Tax Optimiser's help screens display information about the area you're working in. Once you enter figures, the program calculates and displays or prints the results. It also automatically saves the data to use another time. Good thing, too, because if you want to return to that worksheet and change some information, you must reload it into memory.

The VisiCalc Approach

SofTax is an interesting program that provides VisiCalc *overlays*. In effect, you load templates for 21 different tax forms and schedules into memory as you need them—each template on a different section of your worksheet. This approach lets you work with just the forms and schedules that your own tax return requires. Once you've entered all your information, the system sums up the details and computes your tax liability.

A simulation screen lets you alter data to see the effect on your tax situation without affecting the actual information. For these what-if scenarios, SofTax is more effective than Tax Preparer, as its summary is more concise and the process itself much faster.

SofTax uses VisiCalc in its manual recalculation mode, so you don't have

to wait for the program to calculate after each entry. To compute, press the ! key. This method isn't perfect, of course; for some schedules you must request a recalculation seven times. SofTax also has a module that lets you remove all of last year's data, but still keeps permanent information like your name and social security number intact.

Weak Spots

Insufficient breakdowns for deduction categories is the Tax Optimiser's most serious drawback. The four that it does allow can contain all of your data, but don't let you change information in enough detail. The Tax Optimiser isn't completely idiot-proof, either. When I tried to load a fictitious scenario called CAT, a beep indicated that I'd reached the end of data and that there was a break in line 760. The program then was put into BASIC.

The Tax Preparer package takes two minutes to load. Even running on a 128K Apple //e, I still got the

STANDBY! Pausing to Refresh

message every so often. When you select a menu item, the instruction is carried out after a brief delay. While this program almost always tells you what it's doing, at times when there is no message in sight, it's tempting to hit the return or escape key (and that would move you somewhere else, once the package started again).

SofTax presents some problems, too. For example, you must know which schedule to use to itemize a particular income condition or deduction breakdown. Contrast that with the Tax Preparer, which automatically retrieves the correct schedule or form to use when you request itemization.

The version of VisiCalc SofTax was designed to work with cannot protect its cells, so you can easily write over an existing SofTax formula. This doesn't hurt your data, but means you must reload that particular section of your overlay to get the formula back into memory. (Perhaps future editions of the SofTax package will include the latest version of VisiCalc, which allows protected cells.)

VisiCalc never works with menus, so neither does SofTax. To load a form or schedule, you must use VisiCalc's /SL command, followed by the file

name. It's not as easy an approach as a menu-driven system provides.

SofTax also comes with VisiCalc's quirks. The screen displays two areas—one for the item description and the other for your data. However, you can scroll out of the entry area and unless you remember in which direction you accidentally went, you can get lost and be forced to reload the module you're working in. Pressing the ; key sends you into the text part of your worksheet (where you shouldn't be). Finally, you must save information in two forms—a standard file and a data interchange format (DIF) file—because the program uses the DIF file when it prints information.

What to Buy

For simple projections, Dynacomp's Tax Optimiser gives you fair capability (and it's not an expensive program). If you have VisiCalc and like its format, SofTax works well but you must know which schedule to use for each tax situation you find yourself in. HowardSoft's Tax Preparer is the most comprehensive package of the three, and well worth its cost to someone who wants to automate his or her tax preparation process. It's also a terrific program for someone with a good knowl-

edge of tax laws who wants to start his or her own tax business. Now, if only someone would come up with the cash to pay those taxes. . . ■

Write to Gregory Glau at P.O. Box 1627, Prescott, AZ 86302.



Product Information

The Tax Preparer

HowardSoft
8008 Girard Avenue, Suite 310
La Jolla, CA 92037
(619) 454-0121
64K Apple, one disk drive (two are recommended)
The Tax Preparer will run on any of the Apple II family.
\$250
\$75 for a yearly update

The Tax Optimiser

Dynacomp
1427 Monroe Avenue
Rochester, NY 14618
(716) 442-8960
48K Apple, one disk drive
The Tax Optimiser will run on any of the Apple II family.
\$59.95

SofTax

Design Trends Ltd.
525 South Washington Street
Naperville, IL 60540
(312) 357-2664
64K Apple, one disk drive
80 column card
SofTax will run on the Apple II Plus or the //e.
Unless your version of VisiCalc is designed to work with the Apple //e, you'll need a \$49 pre-boot package called VC/80, available from Saturn Systems.
\$199
\$50 for a yearly update

In a Nutshell

The Tax Optimiser lets you forecast up to five different tax alternatives to see how different conditions could affect your tax liability. While it doesn't provide for much detail, it can present an overall view of your tax situation. SofTax's VisiCalc overlays calculate your income and deductions and produce tax forms. It's workable and fast, but you must know which schedule(s) to use. HowardSoft's Tax Preparer is a comprehensive tax-preparation program that takes you line by line through each form and schedule and creates as detailed a return as you need. □

Circle 56 on Reader Service card.

AMPERGRAPH

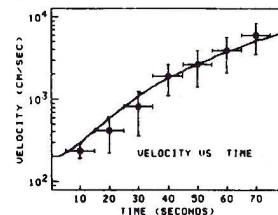
AMPERGRAPH is a powerful, easy-to-use relocatable graphics utility for the Apple II +/e/c. AMPERGRAPH adds twenty-two Applesoft commands that allow effortless generation of professional-looking plots of scientific or financial data. All of the necessary scaling and screen formatting is accomplished with just a few, simple Applesoft lines.

Unlike most other plotting systems for the Apple II which are stand-alone systems, the AMPERGRAPH utility provides extended BASIC graphics language macros that you can use directly in your own Applesoft programs. The additional commands are &SCALE, &LIMIT, &AXES, &GRID, &FRAME, &LOG X, &LOG Y, &LABEL AXES, &LABEL, &VLABEL, &CENTER LABEL, &CENTER VLABEL, &DRAW, &PENUP, &CROSS, &OPEN SQUARE, &CLOSED SQUARE, &OPEN CIRCLE, &CLOSED CIRCLE, &ERROR BARS, &DUMP (to dump the graph on a Silentype printer) and &*DUMP (to link with AMER-DUMP, see below).

\$45.00

SAMPLE AMPERGRAPH PROGRAM LISTING:

```
10 &SCALE, 0, 80, 80, 13000
15 LX$ = "TIME (SECONDS)":LY$ = "VELOCITY
(CM/SEC)"
20 &LOG Y: &LABEL AXES, 10, 10
25 LABELS = "VELOCITY VS. TIME":&LABEL, 30,
200
30 FOR T = 0 TO 80:&DRAW, T, 150 + T12:NEXT T
35 FOR T = 10 TO 70 STEP 10
40 &CLOSED SQUARE, T,
(150 + T12)*(8 + .4*RND(3))
45 &ERROR BARS, 5, T12/2
50 NEXT T:&DUMP
```



AMPERDUMP

AMPERDUMP is a high-resolution graphics dump utility which can be used either in menu-driven mode, or directly from your Applesoft program, with, or without AMPERGRAPH. The following printers will work with AMPERDUMP: Apple Dot Matrix, ImageWriter, Epson; Gemini; NEC PC-8023A-C; C-Itoh 1550, 8510A/B, 8600; Toshiba 1340, 1350. AMPERDUMP offers many features which are not available in other graphics dump routines:

- Horizontal magnifications: 3 to 12, depending on printer.
- Vertical magnifications: 2 to 9, depending on printer.
- Horizontal and vertical magnifications can be specified independently.
- Normal / Inverse dumps
- Adjustable horizontal tab
- Compatible with AMPERGRAPH

\$40.00

The AMPERGRAPH and AMPERDUMP graphics utilities require an Apple II +/e/c. The AMPERDUMP utility requires one of the following interface cards: Epson, Apple, Grappler, Interactive Structures, Mountain Computer, Epson Type2, Tymac, or Microbuffer II, Tackler, Microtek, Printerlink, Super Serial.

AMPERGRAPH and AMPERDUMP are available from your dealer or order direct. Include \$2.00 for shipping and handling; Wisconsin residents add 5% sales tax.

madWest
SOFTWARE

2014 Chamberlain Ave.
Madison, WI 53705



608-238-4875



If you have a question, our technical editor has the answer. Send your queries about Apple computing to Bob Ryan, Ask inCider, 80 Pine Street, Peterborough, NH 03458.

ProDOS on Parade

Dear inCider:

I'd like some information about the Apple //c. Can you explain what ProDOS is? Also, do you think there is much of a future for the //c and Apple Computer?

Dorrel Christie, Jr.
1 Meadow Hill Road
Newburgh, NY 12550

Dear Dorrel:

ProDOS is the latest disk operating system for the Apple II family. A disk operating system consists of programs and routines that allow a computer to communicate with and control a disk drive. For example, the disk operating system translates general statements like LOAD PROGRAM into the specific instructions that position the read/write head of the disk drive.

ProDOS is designed to supplement, and eventually replace, DOS 3.3. The most significant difference between DOS and ProDOS is that DOS is limited to working with 35-track disk drives. ProDOS, however, isn't limited by the number of tracks it can address. It also has a file structure that handles large directories (list of files) created with a hard disk. The ability to support a hard disk is the ProDOS raison d'être.

For more information about ProDOS, pick up next month's inCider. Lee Swoboda, author of "The Compleat Text File Primer," has written a new series that explains how to use ProDOS. I'm sure it will be as successful as his last series.

Your second question is a lot harder to answer. In the volatile microcomputer industry many major companies may not see the end of

1985, especially in the IBM-compatible market. Apple, however, appears to have a secure future. Macintosh sales are strong and the demand for //e's and //c's has not let up. Apple Computer will be around to support its products for a long time.

Joyous Menus

Dear inCider:

You published a program (August 1984, page 34) that lets someone choose and run programs from a menu using a joystick. Is there any way to modify the menu so that I could use it with my own programs?

Brian Cranford
32 Deane Avenue
Holden, MA 01520

Dear Brian:

You can easily modify the menu program to accommodate your own programs. First, change the DATA statements that begin at line 400. List the programs you want in the menu exactly as they appear on your disk catalog. Next, change lines 300 and 350 to reflect the number of choices in your menu. Finally, if you have more than ten menu items, change the DIM statement in line 20.

And the Winner Is...

Back in August, I announced the Two-Bit Game Contest. Originally, I planned to reveal the winner in the December issue, but I didn't foresee how many inCider readers would have the savvy to fit a fun, workable game into two lines of Applesoft BASIC code. No one was more surprised than I by the avalanche of entries that wound up on my desk. Although typing in the entries wasn't easy (thank God for GPLE), I was constantly amazed at your cleverness.

Out of the hundreds of entries, I

chose five finalists. With the staff's help, we decided on the winner and two honorable mentions. It was a tough decision, but here are the results:

• Winner (\$100): Brian Veit, of Mt. Holly, NJ, for his game, Weeds!

• Honorable Mentions: Joe Farmer for The Snake and Joseph Reynolds for Battle Barge.

These games are a lot of fun to play. In Weeds! (Listing 1 on the next page), you have to position your paddle to intercept the encroaching weeds (a peculiar species that grows horizontally). The pace gets frantic before too long. (Note: Anytime you play Weeds!, the first round appears in text, instead of graphics. If this annoys you, enter a GR from immediate mode before running the game.) In The Snake (Listing 2), use the A, Z, and arrow keys to avoid running into walls, obstacles, or the ever-expanding body of your reptile. In Battle Barge (Listing 3), you must dodge the torpedoes using the arrow keys (any other key stops the barge) and transport five loads of supplies back to your home port.

As a skill marker, my best score with Weeds! was 19. I made it to 188 on The Snake, and I received a "quick" rating with Battle Barge. I hope you have fun bettering my scores.

Congratulations to the three top contestants for their great games. I'd also like to thank Jim Moore, Paul Nix, Jon and Andrew Thomason, Jason Goldbloom, Aaron Leventhal, and the other entrants for keeping me entertained for hours. I only wish I could have published everybody's entry.

One more thing: When you enter the programs, don't include any unnecessary spaces. And be sure to use a ? for any PRINT statement. Have fun and Happy New Year!

by Bob Ryan, inCider staff

Listing 1. The winner—Weeds!

```

1 FOR X = 0 TO 38 STEP INT (S) +
1: COLOR= 12: HLIN 0,X AT Y:
COLOR= 0:L = - 16336:K = PEEK
(L):B = INT ( PDL (1) / 7.2
):VLIN D,D + 4 AT 39: COLOR=
15:D = B: VLIN D,D + 4 AT 39
: NEXT : HLIN 0,38 AT Y: IF
SCRN( 39,Y) < > 15 THEN FOR
F = 0 TO 39: HLIN 0, INT ( RND
(1) * 39) AT F:K = PEEK (L)
: NEXT : PRINT "WEEDS1": GET
A$: G$: RUN
5. SC = SC + 1: HOME : VTAB 23: PRINT
"SCORE:"SC: COLOR= 0: FOR E =
38 TO 0 STEP - 1: PLOT E,Y:
K = PEEK ( - 16336): NEXT :
Y = INT ( RND (1) * 37): S =
S + 1 / 4: POKE - 16368,0: GOTO
1

```

Listing 2. Honorable mention—The Snake.

```

5 HCOLOR= 3
10 HGR : HOME : FOR I = 0 TO 6: READ
A: POKE 768 + I,A: NEXT : POKE
232,0: POKE 233,3: ROT= 0: SCALE=
5: FOR I = 4 TO 278 STEP 6: DRAW
1 AT I,7: DRAW 1 AT I,151: NEXT
: FOR I = 13 TO 145 STEP 6: DRAW
1 AT 4,I: DRAW 1 AT 274,I: NEXT
:K = 49152:X = 136:Y = 79: DATA
1,0,4,0,37,55,0: POKE 234,0:
S = 0
20 N = X:O = Y:T = PEEK (K):X =
X + - 6 * (T = 136) + 6 * (
T = 149):Y = Y + - 6 * (T =
193) + 6 * (T = 218):P = INT
( RND (1) * 45 + 1) * 6 + 4:
Q = INT ( RND (1) * 23 + 1)
* 6 + 7: POKE 234,0: DRAW 1
AT X,Y:V = PEEK (234): DRAW
1 AT P,Q: IF (N = X AND Y =
O) OR V < 20 THEN S = S + (N
< > X OR O < > Y): VTAB 2
3: PRINT "SCORE: "S: GOTO 20

```

Listing 3. Honorable mention—Battle Barge.

```

1 S = 49200:K = S - 48:X = 2: TEXT
: HOME : COLOR= 13: HLIN 0,3
9 AT 6: POKE 34,4: FOR E = 0
TO 1:X = X + ( PEEK (K) = 1
49) - ( PEEK (K) = 136):X =
X - (X > 35) + (X < 2): VTAB
2: PRINT : PRINT T TAB (X +
1) MIDS ("000",1,3 * L) TAB(
40)5 - T - L: HTAB X: PRINT
"-# #-":D = SCRN (X,8) + SCRN
(X + 1,8) + SCRN (X + 2,8):T
= T + (L AND X = 2):M = M +
1
3 L = (L OR X = 35) AND X > 2: CALL
- 912:C = RND (1) < (T + 1
) / 5: COLOR= C: PLOT RND (
1) * 30 + 5,46:Z = PEEK (S *
C) - PEEK (S * C):E = T = 5
OR D: NEXT : HOME : TEXT : VTAB
5:R = INT (8.3 - M / 100):R
= R - (R < 0) * R: GET A$: PRINT
MIDS ("BARGE SUNK! SPEED=" +
MIDS ("SLOWGOODFASTQUIKWAR
",1 + 4 * R,4),1 + 11 * NOT
D,11): END

```

MICRO CITY

**TO ORDER OR FOR
FREE CATALOG, PHONE
312-355-9726**

If you don't see what you need,
call us...we probably have it.

HARDWARE FOR APPLE

	LIST PRICE	OUR PRICE		LIST PRICE	OUR PRICE
16K Ram Card for II, II+	\$ 79	\$ 42	DIGITAL RESEARCH	\$ 495	\$ 326
Z-80 Card for II, II+ and Ile	185	69	Gold Card CP/M 64K	775	499
Cooling Fan w/Two Outlets and Surge Protection	69	35	Gold Card CP/M 192K		
High Quality Joystick w/Fire Button	49	29	HAYES PRODUCTS		
Switching Power Supply	110	64	Mach II Joystick for II+	39.95	35
Computer Case Similar to II+	149	59	Mach II w/Fire Button for II+	49.95	42
Replacement Keyboard	159	69	Mach II Joystick for Ile	44.95	38
Computer Case w/Built-in Numeric Keypad	329	149	Much III w/Fire Button for Ile	54.95	45
RF Modulator	49	19	INTERACTIVE STRUCTURES		
Parallel/Printer Card w/Cable	149	55	Pkaso Card, Universal	175	135
Power Strip w/Surge Protection and 6 Outlets	59	20	Shuttle Buffer Parallel/Parallel (32K)	299	234
			System Saver Fan	89.95	69
			KENSINGTON MICROWARE		
			System Saver Fan		
			KOALA TECHNOLOGIES		
CPM Card	399	284	Koala Pad w/Micro Illustrator	124.95	75
Z Card II	169	139	MICROSOFT		
Smarterm II	179	149	SoftCard Premium System	695	485
Dispatcher Serial Card	139	109	Premium SoftCard Ile	395	309
			MICROTEK		
			Dumping-GX	89.95	75
			64K Ram Card	199	152
			128K Ram Card	299	219
			ORANGE MICRO		
			Grappler +	175	105
			Buffered Grappler +(w/16K of Buffer)	239	165
			BufferBoard	175	109
			PERSONAL COMPUTER PRODUCTS		
			Appli-Card 6MHz/64K Memory	375	259
			PRACTICAL PERIPHERALS		
			16K Microbuffer II	199	145
			32K Microbuffer II	219	159
			GraphCard (w/6' parallelable)	99	79
			Serial	159	119
			CHALKBOARD		
			Power Pad for II, II+ and Ile	99.95	79

PRINTERS

Call for prices on DIABLO and IDS					
BROTHER		ORIDATA		STAR MICRONICS	
HR-15P	599	459	Microline 82A	Gemini 10X	
HR-25P	995	735	Microline 83A	Gemini 15X	
MANNESMANN TALLY		Microline 92P	699	439	
Spirit 80	399	284	Microline 92S	719	515
MT-160L	798	609	Microline 93P	999	695
MT-180L	1,098	845	Microline 93S	1,099	795
				T315 Color Printer	
				120P	
				120P	
				130P	

MONITORS

AMDEK		NEC		TAXAN	
V300 12" Green	179	129	JB 1260 12" Green	149.95	115
V300A 12" Amber	199	145	JB 1205M (A) 12" Amber	210	159
Color II+	399	280	JC 1215 12" Color Comp.	399	265
Color II+	559	421	JB 902 9" Green	199	152

MODEMS

ANCHOR AUTOMATION		NOWATION		TRANSBEND CORPORATION	
Signalman 300/1200 Baud (RS 232)	399	269	J-CAT	149	99
Signalman Modem (RS 232)	99	85	103 Smart CAT	249	159
HAYES			103/1212 Smart CAT	595	375
Smartmodem 300	289	199	212 Auto CAT	695	549
Smartmodem 1200	699	479	Apple CAT II	389	199
Micromodem IIe w/Smartcomm I	329	239	212 Apple CAT Upgrade	389	240
				Transpax I (Transend I/ModemCard/Source/D.J.)	
				388	299
				AMC - 300 ModemCard with Source	
				325	239

DISK DRIVES

Standard Height Apple Compatible (Shugart SA390)	159	AP-100-A 2-in-1	469	AP-100-C Slim Line
High Quality Half Height Apple Compatible	185	AP-100-B Full Height	239	Super 5 Direct Slim Drive

SOFTWARE

PLEASE CALL FOR COMPLETE LISTING!		BRODERBUND SOFTWARE		SOFTWARE PUBLISHING	
Bank Street Writer	69.95	54	Pfs. File	125	89

DISKETTES

VERBATIM	SS DD Box of 10	49 19.95	Disk Drive Analyzer for Apple II, IIe	39.95	29.95	Disk Drive Head Cleaning Kit	10.95	8.95
----------	-----------------	----------	---------------------------------------	-------	-------	------------------------------	-------	------

We now carry Microsoft Software for Macintosh!

We accept check, money order, VISA, MasterCard, or American Express (include # and expiration date). Please add 2% for credit card purchase. \$2.50 shipping & handling in continental U.S. (Alaska, Hawaii and foreign add \$5.00 for orders under \$100, 5% for orders over \$100). Illinois residents add 6.25% sales tax. Personal and company checks allow 2 weeks to clear. **School purchase orders accepted.** Prices subject to change without notice. Dealer inquiries invited.

AMERICAN EXPRESS  VISA

MICRO CITY • P.O. Box 571 • Downers Grove, IL 60515

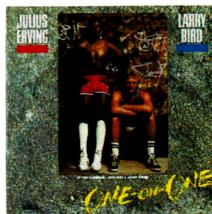
TO OUR MANY LOYAL SUPPORTERS, to new computer owners, and to everyone who still believes in the potential of personal computers to make the world a better place, we extend the following, somewhat uncharacteristic offer:

Buy 2, Get 1 Free.*



FINANCIAL COOKBOOK™

New. Powerful & versatile financial decisionmaker. IBM-PC, PCxt, PCjr, ApII, II+, IIe, IIc, C-64 & Atari



LARRY BIRD & JULIUS ERVING GO ONE-ON-ONE™

The best-seller. IBM-PC, PCxt, PCjr, ApII, II+, IIe, IIc, C-64 & Atari



SKY FOX™

New. 3-D flight & combat simulation with 5 skill levels and 15 different scenarios. ApII, II+, IIe & IIc



ARCHON™

Best-seller. Award-winner in *Omni*, *Creative Computing*, & *Softalk*. IBM-PC, PCxt, PCjr, ApII, II+, IIe, IIc, C-64 & Atari



ARCHON II: ADEPT™

New. Graduate school for Archon addicts. More magic, new icons and battlefields. C-64 & Atari



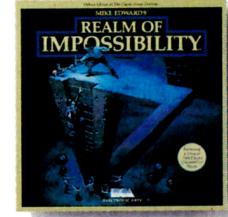
MUSIC CONSTRUCTION SET™

Composition for anyone who can point a joystick. Multi award-winner. IBM-PC, PCxt, PCjr, ApII, II+, IIe, IIc, C-64 & Atari



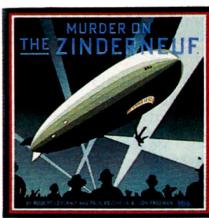
CUT & PASTE™

Fast, practical & easy to learn word processor. *Creative Computing* award-winner. IBM-PC, PCxt, PCjr, ApII & IIc C-64 & Atari



REALM OF IMPOSSIBILITY™

New. Action & adventure in world of 3-D illusions. Unique 2 player cooperative mode. C-64 & Atari



MURDER ON THE ZINDERNEUF™

A mystery novel in computer graphics. *Hotline* award-winner. IBM-PC, PCxt, PCjr, ApII, II+, IIe, IIc, C-64 & Atari



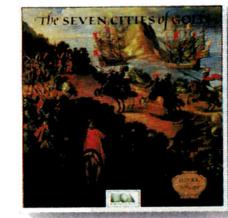
PINBALL CONSTRUCTION SET™

The classic. *Rolling Stone*, *Omni*, *Infoworld* & *Creative Computing* awards. IBM-PC, PCxt, PCjr, ApII, II+, IIe, IIc, C-64 & Atari



M.U.L.E.™

"Strategy Game of the Year" in *Infoworld* & *Video Review* for 1-4 players. C-64 & Atari



SEVEN CITIES OF GOLD™

New. Deep, rich discovery simulation with more than 2800 screens. ApII, II+, IIe, IIc, C-64 & Atari

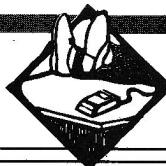


ELECTRONIC ARTS™

Circle 275 on Reader Service card.

*HOW IT WORKS: Buy any 2 EA products before Jan. 15, 1985 and send in the coupons enclosed in the packages along with your sales receipt and \$3.00 to cover insured shipping. We'll send you any EA product you choose (except Get Organized!) for free.

Trademarks and their holders: IBM, PC, XT, and PCjr; International Business Machines, Inc. Apple II, II+, IIe, IIc; Apple Computer Corp. Commodore 64; Commodore Business Machines, Inc. Atari; Atari Computer Corp. Financial Cookbook, Larry Bird and Julius Erving Go One-On-One, Sky Fox, Archon, Archon II: Adept, Music Construction Set, M.U.L.E., Seven Cities of Gold, Cut & Paste, Realm of Impossibility, Murder on the Zinderneuf; Electronic Arts, Inc.



Apple Ecology: Part I

Steal my car, burn my apartment, dump my Häagen-Dazs down the drain, but never call me before 10 a.m. Battling microproblems and fending off deadlines often keep me burning the oil into the wee hours.

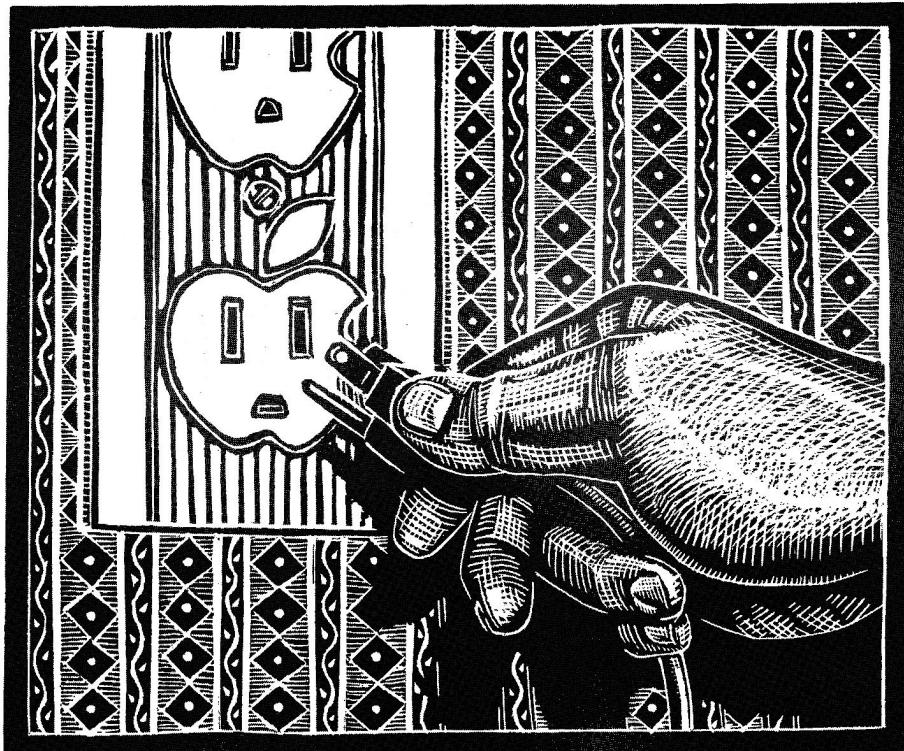
My clients know this one idiosyncrasy of mine, and they respect it. So you can imagine my surprise when Quasimodo rang me at 8:30 on a Saturday morning. At such times my erudition is suspect. I manage a gravel-voiced "Huh?" somewhere near the mouthpiece.

"The computer isn't working!" Phrases like that are the computer consultant's main fare. They can mean anything from "I can't find the right disk" to "The machine is in flames—what do I do now?"

"Yeah" was about as decisive as I could get at the moment, so I hung up. For the next 20 minutes, morning ablutions, dressing, and dog-walking became automatic functions. Somewhere along the way I packed a Pepsi for breakfast, and woke up while I was opening the garage door.

My client was kneading his hands when I met him in the parking lot outside his office. His Apple wouldn't boot, no matter which disk he tried.

It was one of nine machines in a beautifully carpeted, slightly extra-va-



gant floor of offices in a newly developed section of New Jersey. The offending machine looked no different from the others. I jerked my hand back at the small shock I got when I touched its metal back—they had very nice carpets.

There are quite a few reasons why an Apple won't boot. Knowing this particular installation, I went straight to the RAM. A few chips later everything was working correctly. Only two brief delays occurred when the power winked out for a few seconds.

When it was over, the client and I sat down to the usual quandaries: "How did it happen?" "I thought these things never broke down." (Ha!) "Are they reliable?" It becomes an exercise in therapy.

We talked for almost an hour, covering points that had been made when the computers were first purchased.

Create safe outlets for your computer.

by Bill O'Brien

Although my client listened with rapt attention now, he had shrugged off my initial suggestions with "This is a new complex. There aren't any of those problems here." We talked about the Apple and its environment: It must have good working conditions to operate at peak efficiency.

What constitutes a safe and viable environment? Surprisingly enough, computers need conditions that closely parallel those a living organism (like yourself) requires. Counterparts in an electronic ecology are electrical power, operating environs, and climate.

Most competent, servicing Apple dealers will perform a site inspection to determine what, if any, preventive steps you should take before plugging in the equipment. A comprehensive inspection can cost anywhere from \$100 to \$150. There's no question as to whether or not it's worth the money. It is. But with a little common sense, and for a lot less money, you can do your own.

Tapping the Power Line

The wall outlet in your home or office is not the meek and gentle beast you might think it is. Actually, it's a raging maelstrom of electrical activity. And you need to answer the following questions about an object you have probably taken for granted over the years:

- What type of outlet is it?
- How much power is available?
- How clean is the available power?
- Is it always available?

When electricity was first installed throughout the country, a simple principle was followed: Voltage needs one wire to enter the outlet (the power or "hot" line) and one wire to exit (the return or neutral line). The latter connection went back to ground (literally, the earth). The two-prong outlet was born. Toasters, tube-type televisions, and your old Victrola worked fine. Then "electronics" reared its ugly head.

Electronic equipment, and specifically your Apple computer, uses DC voltage internally. Although it also has a ground line, you can't directly mix an AC and DC voltage without catastrophic results. With a two-wire system, there was no way to compensate for the differences between the two. The DC return line was left floating in-

side the equipment, though it should have gone to ground.

To compensate, many homes and offices, and most new buildings, were converted to a three-prong wall outlet system. The additional line from the outlet was connected to the chassis, or frame, of the equipment, as was the return line of the DC electronics. With this "ground" line, both the AC and DC voltages could be brought back to a common point, the earth, without interfering with one another.

It's a good working arrangement and relatively easy to understand. One line from a three-prong outlet is AC in, another AC out to ground, and the third is DC ground to earth-ground. Your computer needs to be plugged into a three-prong, grounded outlet. If you have one, skip this section. If you don't, read on.

When Three's Company

The usual way of reconciling two-prong outlets and three-prong power cords is to take a pair of pliers and yank out the circular grounding lug from the cord. Alternately, in a fit of devious intellect, some have used extension cords that allow the grounding lug to pass harmlessly, and ineffectually, over the outlet.

Though suitable for power drills, saws, and sanders, such tactics are tantamount to Apple homicide. Perhaps it won't happen immediately. You'll feel smug. But as sure as Jobs and Wozniak made little Apples, someday there will be an acrid puff of smoke as the unequalized potential between the AC and DC voltage erupts in micro-Vesuvian style.

A simpler and relatively cheap solution, a three-prong adapter, is available in a package of two for \$1.09 from Radio Shack (catalog number 61-2720). Replacing the main logic board in an Apple costs about \$100. You do have a choice.

Like the outlet itself, the adapter is a simple device, with two prongs and a metal strip on one end, and a three-prong outlet on the other. Inside the adapter, one end of the metal strip is connected to the hole for the power cord's grounding lug; the other end terminates in its own U-shaped grounding lug.

First, unscrew the center screw on your wall outlet. Plug in the adapter. Then screw the center screw back in,

making sure that the adapter's U-shaped lug is seated between it and the wall plate. Tighten the screw to hold the lug firmly in place. The metal in the outlet box behind the wall, together with the metal jacket on the wires connected to it, make a good path to ground.

The Right Stuff

Whether you already have a three-prong outlet or you're using an adapter, you can't tell if the wires in the wall are connected to the correct holes in the outlet. And is that a problem?

Perhaps all "electricians" weren't created equal. Or maybe you've just paneled the computer room and needed to extend the outlets out from the wall to the panels. Whatever the cause, an accidental rearrangement of your electrical service usually won't be determined until *after* the damage has been done.

The solution is also available at Radio Shack: the three-wire outlet analyzer (catalog number 22-101). And it will set you back \$5.95. Depending on which of its light-emitting diodes (LEDs) glow, what color they are, and where they are in relation to one another, you'll know if your outlet is wired correctly.

Line Voltage

The last problem I'll look at this month involves the voltage level in your wall outlet. The Apple II series was meant to work with AC voltages between 105 and 129 volts. Your local power company does its best to keep the line voltage somewhere in the middle of this range.

Unfortunately, depending on your utility's actual voltage output and your position within the power grid, this isn't always possible. The real voltage level at your wall outlet may range anywhere from 90 to 130 volts.

Don't take my word for it. After research at 24 computer sites, spending an average of 11 months per site, researchers for Bell Labs found that 87 percent of all power line problems were caused by drops or "sags" in line voltage level (see Goldstein, M. and P.D. Speranza, "The Quality of US Commercial AC Power," *IEEE*, April 1982).

Given the probability of the problem, before you plug in your Apple you might need to bring the voltage up or

down to a level it prefers. But first determine if the problem exists.

Unless you're comfortable on your knees, under a desk, playing with an electrical outlet, you may want to take the simplest of several approaches. You can call your power company and ask them what their specified line voltage is for your area. They should be able to supply the information.

Then you can visually monitor your environment to determine the accuracy of their claim as it applies specifically to you. Do your light bulbs seem a little dim for their rating? Is your television picture just a little smaller than it should be? If so, you may have low line voltage. Alternately, if your light bulbs tend to burn out in a shorter period than their rated life span, you might have an over-voltage problem.

If these symptoms aren't obvious, and you suspect that you might have problems, you must measure the voltage at the outlet. You can call an electrician who will do this for you at a fee, or you can measure it yourself. If you're sure of your prowess around a potentially dangerous object like a wall socket, then be prepared to spend \$10.95.

You'll be buying a volt-ohm meter (VOM) from Radio Shack (catalog number 22-212). First, you turn a switch on its face to a VAC (volts AC) range usually between zero and 150. Then, using the two probes that come with the meter, you insert one into each of the thin rectangular sockets on your wall outlet (the power and return lines). It doesn't matter which probe goes where.

Be careful to handle the probes only by their rubber or plastic handles and not by the metal tips—a mishap could be fatal. The best approach is to insert one probe in one of the holes, release it, and then insert the other. Once you've done this you can read the actual line voltage from the meter.

A good reading will fall somewhere between 110 and 120 volts. You may think that anything within the Apple's range is all right. That's not true. If you're in the lower area of acceptable voltage levels, you'll need to take at least one more thing into account. Whether you call them drops, sags, or the more traditional "brownouts," if you're already on the low end of the power rating, dips in the line

voltage level can cause your outlet voltage to fall below acceptable levels.

Usually this will happen during the summer months. During periods of peak electrical usage, some power companies reduce the line voltage by anywhere from 3 to 7 percent. Peak loads themselves can cause the voltage to drop just from the drain on the utility's power supply.

The converse of this situation is over-voltage. If your measurements indicate that you're in the higher range of electrical power, you may feel safe during a voltage drop. Remember, after peak usage periods, your line voltage can go up. If your outlet measured 125 volts during a peak period, a rise of only 3 percent can put you dangerously close to Apple's upper maximum.

The usual answer in either situation is a line conditioner or voltage regulator. They're large and bulky and they're expensive—usually over \$200. They also work very well. (For a list of manufacturers of power-line conditioners, see the table at the end of this column.)

You plug a line conditioner into your wall outlet. It accepts the AC voltage, passes it through a transformer, and then pushes it through its own outlet. As long as your power company can deliver between 85 and 150 volts, the line conditioner will pump a steady 120 volts into any equipment you have plugged into it.

The cost of such conditioners can vary, depending on your system's power ratings. An Apple with monochrome monitor and printer would probably use one rated at 300 or 400 watts. A hard disk in your system will probably increase your requirement to between 500 and 750 watts. This higher power-handling capability drives up the price of a line conditioner.

Additional features in most conditioners further account for their costliness. I'll discuss some of these extra attractions, and devices that will handle them without the expense of a conditioner, in next month's episode, but I'll warn you about one thing in advance: Don't succumb to paranoia and run out to buy a line conditioner. Most urban computer installations don't require such a device. If you experience brownouts, or your light bulbs burn out quickly (provided that you're buying quality bulbs), you have ample evidence of your need.

Recap

Look at what you've done: For a grand total of \$18 you've tracked and traced the primary hazards to your Apple. Considering that this amount is probably less than 1 percent of the overall cost of your system, it's a solid investment. You've also seen one way to guard your system against the most immediate and dangerous voltage-level problem.

Next month I'll look at alternatives for those who have a rarer voltage-level problem—the blackout (and extended brownouts). I'll also discuss the more insidious problems of static, line noise, radio frequency interference (rfi), and voltage spikes that tend to rob you of your computer's usefulness.

Until then, with the proper precautions, have a Happy New Year and make mine Apple. ■

Contact Bill O'Brien at P.O. Box 1010A, Fort Lee, NJ 07024 or through Compu-Serve at user ID 74216,1215.

Product Information

Inmac
2465 Augustine Drive
Santa Clara, CA 95051
(408) 727-1970

Qubie
4809 Calle Alto
Camarillo, CA 93010
(805) 987-9741

RTE Deltec
2727 Kurtz Street
San Diego, CA 92110
(619) 291-4211

SGL Waber
300 Harvard Avenue
Westville, NJ 08093
(609) 456-5400

Sola Electric
1717 Busse Road
Elk Grove Village, IL 60007
(312) 439-2800

Basic BASIC Sorts

In my previous two columns I described the FOR...NEXT looping structure BASIC uses to conduct repetitive operations, and demonstrated how this structure, in conjunction with arrays, can greatly simplify the treatment of large amounts of data. December's column included a simple address book listing built on these principles. The data, stored in DATA statements, was deposited in arrays for processing by READ statements. Then a simple FOR...NEXT sequential search located a given name in the list of names in the array.

If you were to write a subroutine for that program to list the data, you would find the names appearing on the screen in the same order as they were read into the array. If the names weren't entered in alphabetical order, the displayed list would not be alphabetized either. This month's column presents two simple programming algorithms for sorting the elements of an array into alphabetical order.

Neither of these techniques is efficient for numbers of data elements much over 20. Their introduction at this point in my tutorial series is useful, however, in that both are relatively easy to understand. In fact, I will describe how they work in terms of sorting a stack of name cards. If you find my explanations difficult to follow, actually work your way through the procedures with some 3-by-5 cards. Then go back to the flowcharts and program listings and correlate what you are doing by hand with what the computer is doing electronically.

The Exchange Sort

So, imagine that you have a stack of name cards. The names are randomly

arranged, and your job is to sort the cards so the names are in alphabetical order. The only rules are that you may look at just two cards at a time and those two cards must be adjacent to each other in the stack. **Figure 1** illustrates how you might accomplish the task.

First, place the stack of cards face-up and call this the "unsorted-cards" stack. Now remove the top card and compare it to the card immediately below. If the top card comes first alphabetically, place it face-down on the table in a "discard" stack, and repeat the above process with the remaining cards.

On the other hand, if the top card comes after the card below, exchange the two. That is, remove the card now on top of the stack and place the first card back on the stack. You are now holding the second card from the stack, which alphabetically precedes the card now on top of the stack. So place the card in your hand face-down on the discard stack and proceed as before.

Eventually you will get to the bottom of the unsorted-cards stack, and the only card left in your hand will be the card that belongs at the end of the alphabetically sorted list. Start a third stack with this card, arranged face-up on the table, and call this the "sorted-cards" stack.

Finally, turn the entire discard stack face-up to become the new unsorted-cards stack. Repeat the process, this time ultimately finding the next-to-last name in the alphabetized list, which will go face-up on the sorted-cards stack. This procedure continues, with one more card being removed from the unsorted-cards stack and placed on top of the sorted-cards stack with each cycle.

To complicate things a little, but for the sake of efficiency, you might keep track of the last exchange to take place within the discard stack. If, for example, you make an exchange at the eleventh card from the end and then go through the last ten cards with no exchanges, the last ten cards, plus the one you are holding, are already in alphabetical order. They can be turned upright on the sorted-cards stack as a batch, with the card in your hand going down first.

Figure 2 shows the flowchart for the exchange sort subroutine (lines 100-170) in **Listing 1**. Since the subroutine uses a FOR...NEXT loop to cycle through the array, the minimum subscript value (MN) and maximum subscript value (MX) for the array are assigned starting values. Then the initial value of a flag variable, K, is designated as 1. This variable will be the marker the program uses, as it cycles through the unsorted-cards stack, to keep track of where the last exchange took place. When each cycle is completed, the value of MX, the maximum subscript value to be used for the next cycle, will be set equal to K so the computer won't have to sort through a sequence of array elements that are already known to be properly sorted.

The FOR...NEXT loop compares each array element, A\$(J), with its neighbor immediately following, A\$(J+1). If the two are already in alphabetical order, the loop cycles to compare the next pair. (That is, A\$(J+1) becomes A\$(J) for the next comparison.) If the two elements in the next comparison are not in order, the value of the marker, K, is set equal to J to keep track of where the most recent exchange took place, and the two ar-

by Dan Bishop

ray elements are exchanged (as described below).

Finally, when all the array elements have been compared, the value of the marker is checked. Since K was initially set to 1 and changed only if an exchange took place, if K still equals 1, the array has been completely alphabetized and the subroutine is finished. On the other hand, if K has a value other than 1, further exchanges may be necessary. MX is reset to the value of K so, if K is different from the previous value of MX, the next cycle of comparisons will stop before running through an already-alphabetized set of array elements. Then K is initialized again to 1, and the process repeats itself.

Loading the Array with Test Data

Figure 3 shows the flowchart for the programs in **Listings 1** and **2**. Note that, with the exception of dimensioning arrays and initializing some variables, the main program consists of a series of modular subroutine calls. The first is to the subroutine that loads the array with test data for the sorting procedures.

For these programs the array is loaded with string data. To set up a "worst case" situation, the array elements contain three alphabetic characters determined by the subroutine at line 1000. All three characters for a particular element are the same, such as MMM or TTT, and there are 104 elements. The subroutine cycles through the alphabet four times, assigning values to array elements starting at the end of the alphabet and working forward. So A(1) = "ZZZ"$, A(2) = "YYY"$, and so on. This sets the array elements in an order exactly opposite to the order required by the alphabetical sort technique.

The function that accomplishes this feat is the **CHR\$**, or *character string*, function. Every symbol (letter, numeral, punctuation mark, special character) the computer uses is stored in memory as a number having a value ranging from 32 to 255. The number that represents a given symbol is referred to as that symbol's **ASCII (American Standard Code for Information Interchange) code**.

For example, the ASCII code for a blank space is 32, that for the numeral 1 is 49, and that for an upper-

Figure 1. The exchange sort method illustrated. In this "hand," Sue and Ben are being compared. Since Sue comes after Ben, the cards must be exchanged. In the next move, the card in hand, Ben, will be placed upside-down in the discard pile. Then Sue will again be in hand, to be compared with whatever card is next on top of the unsorted-cards stack.

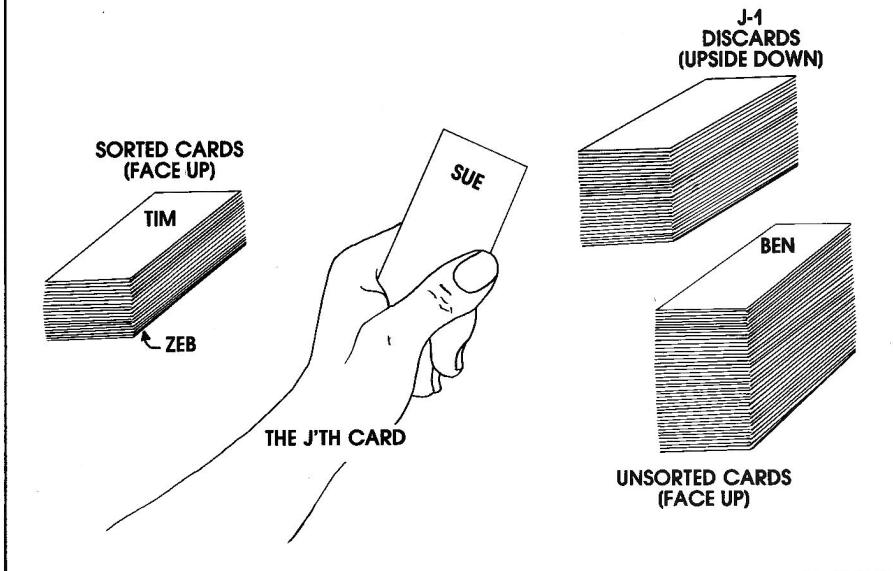
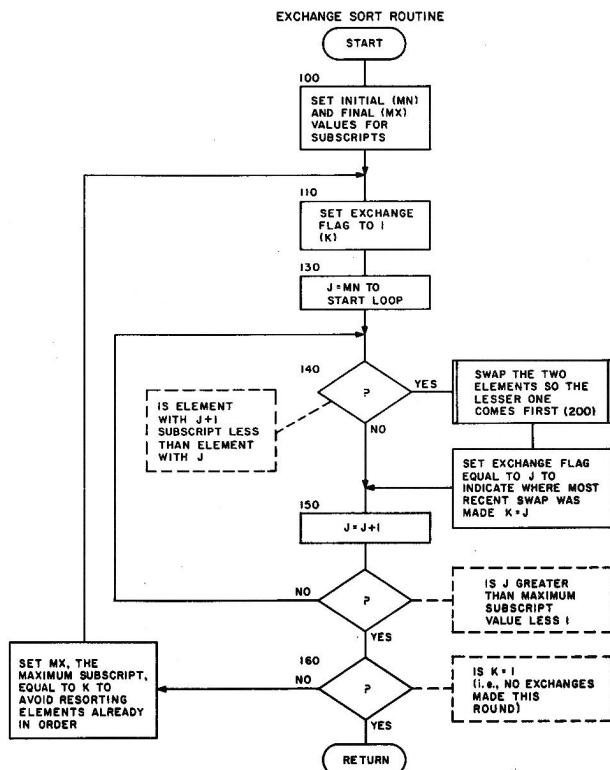


Figure 2. A flowchart for the exchange sort routine presented in Listing 1.



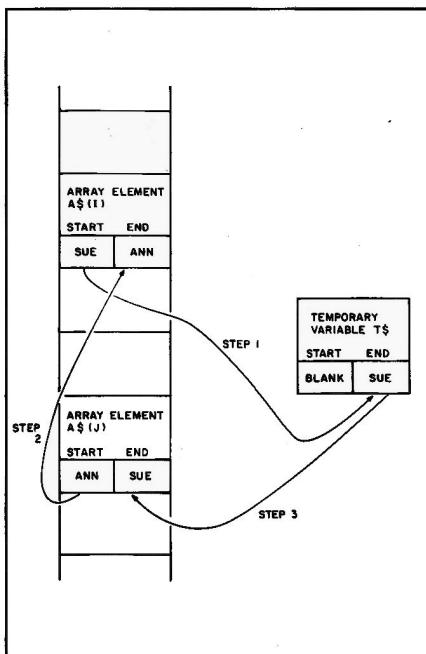
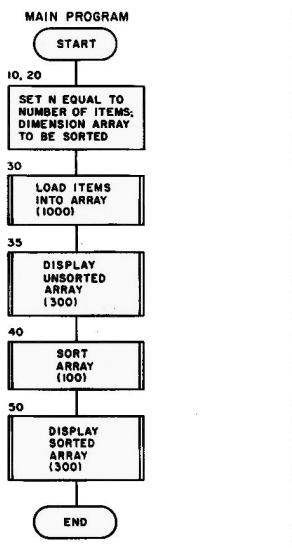
Listing 1. A sample program illustrating the use of an exchange sort to alphabetize the elements of an array.

```

9  REM **** EXCHANGE SORT EXAMPLE ****
10 HOME :N = 26 * 4: REM NUMBER OF ITEMS TO BE SORTED
20 DIM AS(N + 6)
30 GOSUB 1000: REM LOAD ARRAY TO BE SORTED
35 GOSUB 300: REM DISPLAY UNSORTED ARRAY
40 GOSUB 100: REM SORT ARRAY
50 GOSUB 300: REM DISPLAY SORTED ARRAY
60 END
78 REM
99 REM **** EXCHANGE SORT ROUTINE
100 MN = 1:MX = N: REM SET ARRAY SUBSCRIPT LIMITS
110 K = 1: REM INITIALIZE TERMINATION FLAG
120 PRINT "*** SORTING. PLEASE WAIT..."
130 FOR J = MN TO MX - 1: REM SECONDARY LOOP COUNTER
140 IF AS(J + 1) < AS(J) THEN K = J:I = J + 1: GOSUB 200: REM
    SWAP
150 NEXT J
160 IF K < > 1 THEN MX = K: GOTO 110
170 RETURN
198 REM
199 REM **** ROUTINE TO SWAP TWO ARRAY ELEMENTS
200 T$ = AS(I): REM HOLD I'TH VALUE IN T
210 AS(I) = AS(J): REM SO THE I'TH VALUE CAN BE
220 AS(J) = T$: REM REPLACED BY J'TH VALUE.
230 RETURN : REM THEN PUT VALUE IN T INTO
240 REM J'TH ELEMENT.
298 REM
299 REM **** ROUTINE TO DISPLAY ARRAY
300 HOME
310 FOR I = 1 TO 21
320 PRINT I;" ";AS(I);";";I + 21;" ";AS(I + 21);";";
330 PRINT I + 42;" ";AS(I + 42);";";I + 63;" ";AS(I + 63);";";
340 PRINT I + 84;" ";AS(I + 84)
350 NEXT I
360 INPUT "PRESS <RETURN> TO CONTINUE...";X$
370 RETURN
998 REM
999 REM **** ROUTINE TO FILL ARRAY WITH ALPHA CHARACTERS
1000 FOR I = 0 TO N / 26 - 1: REM # OF ALPHABETS IN ARRAY
1010 FOR J = 1 TO 26: REM LOOP FOR EACH ALPHABET
1020 X$ = CHR$(91 - J): REM GENERATE LETTER BASED ON J
1030 AS(J + 26 * I) = X$ + X$ + X$: REM ASSIGN ARRAY VALUE
1040 NEXT J
1050 NEXT I
1060 RETURN

```

Figure 3. The flowchart for the main program sequence in Listings 1 and 2. Note the modular subroutines.



case A is 65. When the computer compares data to determine if one string should come before or after another alphabetically, it is actually comparing the ASCII codes of the symbols within the strings. A string that begins with a number would be alphabetized ahead of one beginning with an alphabetic character; a string beginning with a blank space would come at the head of the whole list!

You can find the ASCII code for any symbol by referring to your computer manual or through the ASC command when your computer is in immediate mode. PRINT ASC("\$"), for instance, would display the number 36, since the ASCII code for the dollar sign is 36. Now try PRINT CHR\$(36). A dollar sign will appear on the screen. The computer is displaying the character that has the ASCII code of 36.

In line 1020 of both program listings, X\$ is assigned the character with an ASCII value of 91 minus the current value of J. As the computer cycles through the loop, J increases from 1 to 26, so the ASCII values in question start at 90 and decrease to 65. Since the ASCII value of Z is 90 and that for A is 65, the value of X\$ progresses from Z to A with each successive cycle through the loop. And since X\$ assigns values to the array elements in line 1030, the values in the array represent the alphabet in reverse order, creating an array with ideal text values for a sorting subroutine.

Swapping Array Values

Both programs require a procedure to exchange the values in two different array elements. Since a simple assignment statement erases a variable's initial value, a roundabout approach must be used. Suppose you wish to swap the values in the elements AS(I) and AS(J). **Figure 4** illustrates how this can be done without losing either of the two values.

Figure 4.

A diagram showing how an exchange of two variables is handled in Applesoft BASIC. Three steps are required. Note that the starting and ending values for each of the three variables involved in the swap are shown. The ending values, of course, replace the starting values as soon as the reassignment takes place.

The first step is to assign the value in A\$(I) to a temporary variable. The second step is to copy (using an assignment statement) the value in A\$(J) into A\$(I). The third step is to copy the value in the temporary variable—the old value of A\$(I)—into A\$(J). And there you have it! Some of the newer BASICs have a SWAP command that takes care of this operation in one step, but Applesoft doesn't, so the subroutine at line 200 in the program listings appears often in Applesoft programs.

The Bubble Sort

The bubble sort technique for sorting array elements can also be demonstrated by sorting a stack of randomly organized name cards, as pictured in **Figure 5**. The major difference between the bubble sort and the exchange sort is that, while the sorted-cards stack is built up from the bottom in the exchange sort, with the bubble sort the sorted-cards stack is built down from the top.

Place the stack of unsorted cards face-up on the table, just as you did before. The rule to follow when playing "bubble sort" is this: Always compare the card in your hand with the top card on the unsorted-cards stack, and if the card on the stack alphabetically precedes the card in your hand, exchange the two—so the card you end up holding would precede the card on the stack if sorted alphabetically.

Remove the top card from the unsorted-cards stack and compare it with the newly exposed card. Exchange the two if necessary, so you are holding the lower of the two cards. Now remove the top card from the unsorted-cards stack and place it face-down on the table, starting the discard pile. Repeat the process with the freshly-exposed card, exchanging if necessary and adding the resulting top card to the discard pile. Continue until there are no more cards left in the unsorted-cards stack. You have essentially gone through the entire stack and removed the lowest-valued card.

Place this card face-down on the table, forming a third stack, the sorted-cards stack. Now turn the discard stack face-up, to become the unsorted-cards stack for the next round. Begin again as described above, working your way through the unsorted-cards stack until you end with the next-to-lowest-val-

Listing 2. A sample program illustrating the use of a bubble sort to alphabetize the elements of an array. Note that this listing is identical to Listing 1 with the exception of lines 99–170, the subroutine that handles the sorting procedure.

```

9 REM ***** BUBBLE SORT EXAMPLE *****
10 HOME :N = 26 * 4: REM NUMBER OF ITEMS TO BE SORTED
20 DIM A$(N + 6)
30 GOSUB 1000: REM LOAD ARRAY TO BE SORTED
35 GOSUB 300: REM DISPLAY UNSORTED ARRAY
40 GOSUB 100: REM SORT ARRAY
50 GOSUB 300: REM DISPLAY SORTED ARRAY
60 END
70 REM
80 REM
99 REM ***** BUBBLE SORT ROUTINE
100 MN = 1:MX = N: REM SET ARRAY SUBSCRIPT LIMITS
110 FOR I = MN TO MX - 1: REM PRIMARY LOOP COUNTER
120 PRINT "*** SORTING. PLEASE WAIT...""
130 FOR J = I + 1 TO MX: REM SECONDARY LOOP COUNTER
140 IF A$(J) < A$(I) THEN GOSUB 200: REM SWAP ELEMENTS
150 NEXT J
160 NEXT I
170 RETURN
180 REM
199 REM ***** ROUTINE TO SWAP TWO ARRAY ELEMENTS
200 T$ = A$(I): REM HOLD I'TH VALUE IN T
210 A$(I) = A$(J): REM SO THE I'TH VALUE CAN BE
220 A$(J) = T$: REM REPLACED BY J'TH VALUE.
230 RETURN : REM THEN PUT VALUE IN T INTO
240 REM J'TH ELEMENT.
250 REM
299 REM ***** ROUTINE TO DISPLAY ARRAY
300 HOME
310 FOR I = 1 TO 21
320 PRINT I;" ";A$(I); " ";I + 21;" ";A$(I + 21); " ";
330 PRINT I + 42;" ";A$(I + 42); " ";I + 63;" ";A$(I + 63); "
;
340 PRINT I + 84;" ";A$(I + 84)
350 NEXT I
360 INPUT "PRESS <RETURN> TO CONTINUE...":X$
370 RETURN
998 REM
999 REM ***** ROUTINE TO FILL ARRAY WITH ALPHA CHARACTERS
1000 FOR I = 0 TO N / 26 - 1: REM # OF ALPHABETS IN ARRAY
1010 FOR J = 1 TO 26: REM LOOP FOR EACH ALPHABET
1020 X$ = CHR$(91 - J): REM GENERATE LETTER BASED ON J
1030 A$(J + 26 * I) = X$ + X$ + X$: REM ASSIGN ARRAY VALUE
1040 NEXT J
1050 NEXT I
1060 RETURN

```

Figure 5. The bubble sort method illustrated. In the "hand" shown, Carl and Ben are being compared. Since Ben precedes Carl in the sort, the two cards should be swapped so that Ben becomes the card in hand. Then the top card (Carl) on the unsorted-cards stack will be placed upside-down on the discard stack, revealing the next card for comparison.

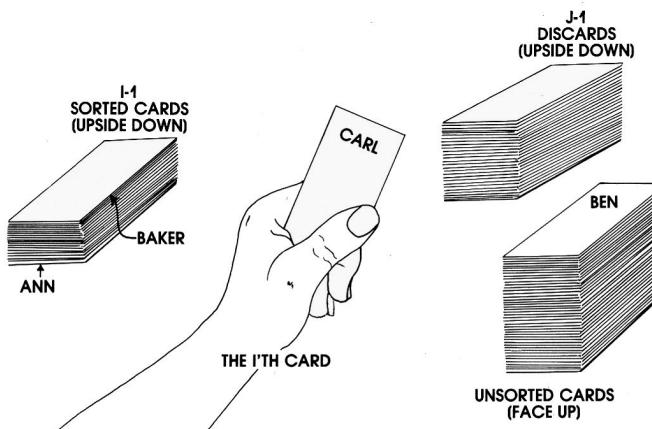
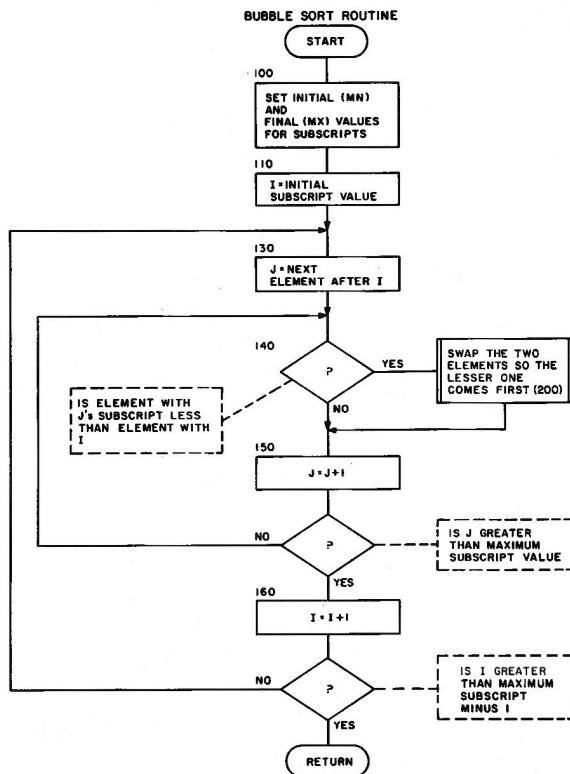


Figure 6. A flowchart for the bubble sort subroutine in Listing 2.

ued card in your hand. Add this card, face-down, to the sorted-cards stack. Continue until all cards are in the sorted-cards stack.

Listing 2 is identical to **Listing 1** except the sort subroutine from lines 100 to 170 is a bubble sort. As before, the beginning and ending subscript values are assigned to MN and MX, but in this listing these values remain constant throughout the process.

The bubble sort involves two nested FOR . . . NEXT loops. The inner one, with J for the loop counter, corresponds to going through the entire unsorted-cards stack just once. A swap is required each time the card at the top of the stack, A\$(J), is smaller than the card being held, A\$(I). When that loop has finished, the card in hand is the lowest-valued card remaining in the unsorted-cards stack. So the next cycle begins at array position I + 1, since elements 1 through I have now

been sorted (corresponding to the sorted-cards stack of the example above). **Figure 6** shows the flowchart for the bubble sort routine.

Which Sort Is Better?

As I mentioned above, neither of these sorts is actually efficient for more than 20 elements. But, to compare the two, for my program examples it takes the bubble sort 3 minutes and the exchange sort twice as long to sort the 104 elements.

These times, however, are somewhat misleading. The starting array was purposely set up in an order opposite to the sorting order. In this worst-case scenario the exchange sort is at a disadvantage—it has no choice but to work through the entire remaining unsorted elements on each cycle. There can be no chance to label a block that is already sorted, then skip that block the next time

around. Under normal circumstances the exchange sort might take less time.

The bubble sort, with no such trickery built in, always must plod through the entire remaining unsorted stack every cycle. Thus, the choice as to which technique to use depends on the starting array. If most of it is already in alphabetical order, the exchange sort would be more efficient. On the other hand, if the initial order is quite random, the bubble sort may be better.

Conclusion

As is true of many things, you must learn to walk before you fly. You now know two simple techniques for sorting arrays into alphabetical order, and (from last month) a sequential search technique to locate a given element in an array. With these methods you can manipulate small arrays with ease. As your arrays become larger, however, you will find them woefully inadequate. A bubble sort or sequential search on several hundred items can take hours, especially if disk access to the data is required, and the wear and tear on a disk drive can be horrendous.

There are solutions to these problems, and in a future column I'll tackle each in turn with array index manipulation, binary searching, and sort/merging. In the meantime, see if you can set up your own data-base files using the READ/DATA input approach I described last month, and then sort the data with the techniques covered in this month's column. ■

You can write to Dan Bishop c/o Custom Comp, P.O. Box 429, Buena Vista, CO 81211.

Note

I'd like to correct an omission in Listing 4, Prime Number Tester, on page 103 of my November 1984 column. The following line should be added:

15 IF X = 2 OR X = 3 OR X = 5 OR
X = 7 OR X = 11 THEN 50

Thanks to John Perrotta of Corona, NY.

NEW RAMWORKS™ CARD BREAKS THE MEMORY BARRIER

We openly admit that one megabyte is probably more memory than you need TODAY, but what about TOMORROW? Let's look at the history. When the Apple first came out, 4K made most users happy but soon they wanted 16K, then 48K, then 64. When the IIe was introduced, Apple made it with 64K on board and another 64K on a plug-in card (the extended 80 column card) for a total of 128K. Now many programs require 128K minimum and still many are running out at 128K.

The answer? RAMWORKS—A card that plugs into the Apple IIe auxiliary slot and functions EXACTLY like Apple's extended 80 column card (in fact, a 128K RAMWORKS actually costs less than Apple's 64K extended card) but with RAMWORKS you get more memory, 80 column text and most importantly, room to grow without using more slots. If you have a IIc or an IBM, we suggest you do what everybody does, trade it in on a IIe.

Applied Engineering has solved the most common problem that computer owners have—running out of memory. RAMWORKS is the perfect solution because it offers the widest and biggest memory sizes available anywhere.

You can utilize this RAM memory to expand Apple Works** and VisiCalc. RAMWORKS can also be used as an ultra high speed RAM disk. Depending on the memory size of the RAMWORKS card, you can emulate up to 4 disk drives with one RAMWORKS card.* All at about 20 times faster than mechanical floppy drives and about 5 times faster than a hard disk.

RAMWORKS can be used as a solid state disk with DOS 3.3, PASCAL, CP/M, and PRO-DOS (up to 1,900 blocks free)!

RAMWORKS can be purchased in a wide range of sizes and is user upgradeable using either 64K RAMS or the new 256K RAMS. In fact, RAMWORKS is the only auxiliary slot card on the market that will allow the new 256K RAMS to be used. If you already have an extended 80 column card, no problem. Just unplug the 64K RAMS and plug them into the RAMWORKS for an additional 64K. A RGB option is also available, you can order it with your RAMWORKS card or add it on at a later date.

RAMWORKS saves you time, money, slots and hassle. You'll have additional memory NOW and in the future.

RAMWORKS memory expansion for today and tomorrow. Send check or money order to: APPLIED ENGINEERING, P. O. Box 798, Carrollton, TX 75006. Texas residents add 5 1/8% sales tax. Add \$10.00 if outside U.S.A.

Call 214/492-2027, 8 AM to 11 PM, 7 days a week. MasterCard, VISA & C.O.D. welcome. No extra charge for credit cards.

Ramworks™ with 64K Installed \$179

Ramworks™ with 128K Installed \$249

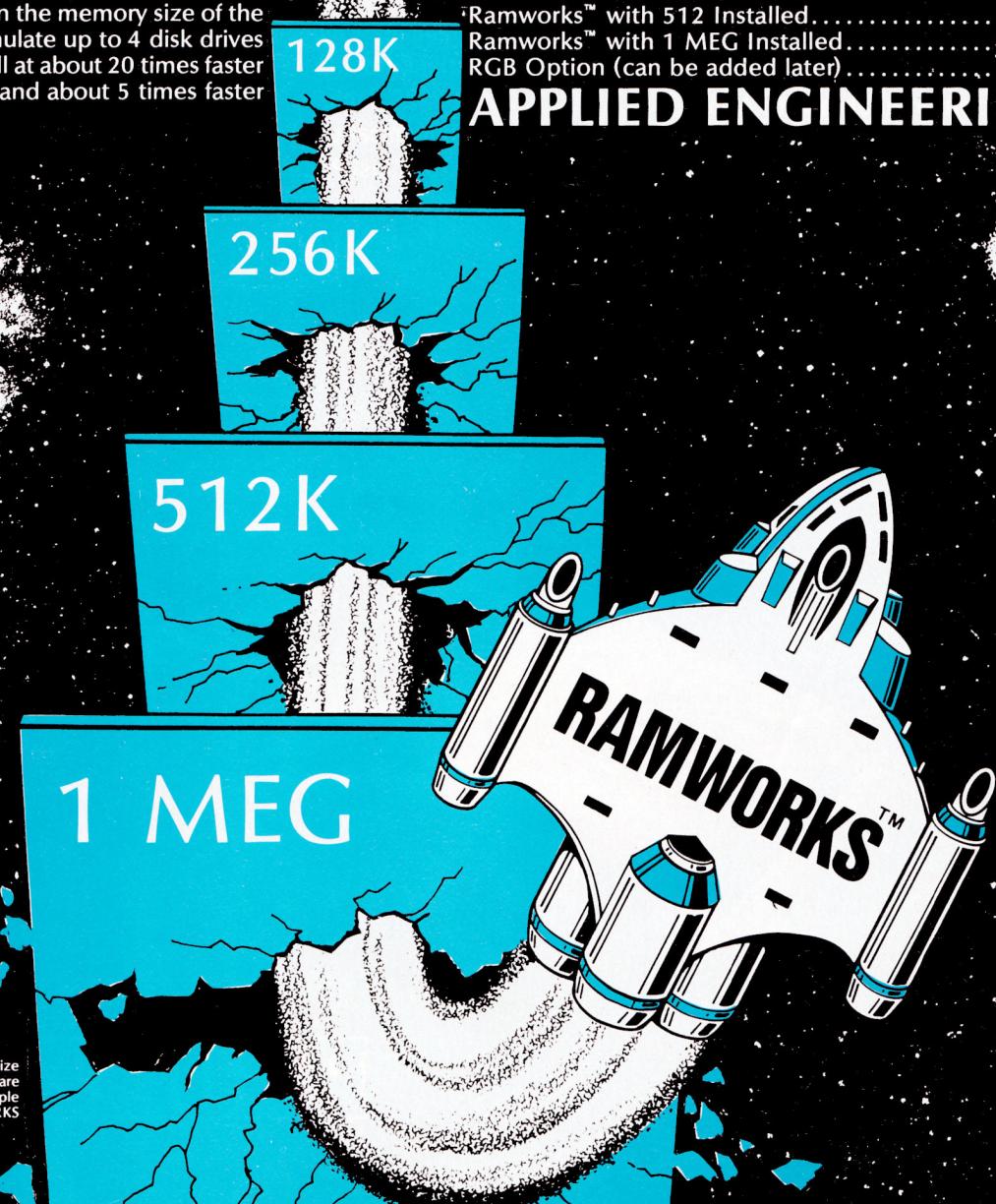
Ramworks™ with 256K Installed \$449

*Ramworks™ with 512 Installed \$799

Ramworks™ with 1 MEG Installed \$1499

RGB Option (can be added later) \$129

APPLIED ENGINEERING



*Requires optional low cost software.

Apple Works and VisiCalc will automatically recognize memory of the RAMWORKS card, low cost software is available from Applied Engineering so that Apple Works and VisiCalc will recognize all RAMWORKS memory.

Best Connection

ProModem™ 1200A Apple Card Pack



It's the best 300/1200 baud 212A telephone modem for your Apple® II, II+, and IIe. "Best" because it's the easiest to install and use, provides more useful modem features for your money, and lets you add software capabilities as your needs grow.

We really do mean easy. Just plug the ProModem Card Pack into any expansion slot and connect the telephone cord. On-board intelligent software in ROM includes a simple but powerful terminal program. With a few keystrokes, you'll be "on line" and communicating.

ProModem 1200A offers you the best price-to-performance modem available with Auto-Answer and Auto-Dial, Programmable Intelligent Dialing, Built-in Speaker with Volume Control, Help Commands, Extensive Diagnostics, and more.

And when you need more sophisticated capabilities like Terminal Emulation, you're all set.

The 1200A is fully Hayes compatible. You'll be able to use most of the Apple II communications programs available.

PRICE COMPARISON

PROMETHEUS

- (1) ProModem 1200A Apple Card Pack, complete with on-board software and all necessary hardware

List Price: \$449

HAYES

- (1) Smartmodem 1200 "standalone modem"
- (2) Serial Card
- (3) RS-232C Cable
- (4) Communications Software

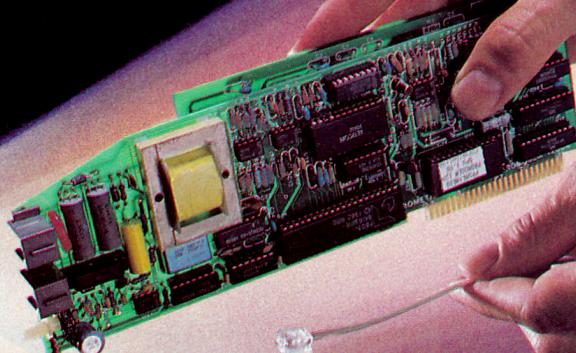
Total List Price: \$957

The "Help" Screen and "Auto redial if busy" functions make the 1200A convenient to use. The second phone jack for the telephone handset allows switching from voice to data. You get all of this, ready to use, complete with easy to understand documentation, and a telephone cord for only \$449.

See your local dealer for a demonstration. He'll show why ProModem 1200A is your best connection.

Prometheus Products, Inc.
45277 Fremont Blvd.
Fremont, CA 94538
(415) 490-2370

Apple is a registered trademark of Apple Computer, Inc.



PROMETHEUS®

Circle 268 on Reader Service card.

One Disk to Go Everything on it

SOFTYME the Magazine on a Disk. Packed with programs on a double sided floppy. Delivered to you and all the other members of the **SOFTYME** worldwide network. Imagine receiving **SOFTYME** every month. A new disk/issue delivered directly to you for about the price of a disk.

SOFTYME is challenging, listable, copyable and ...

SOFTYME'S fun too!

Disk/issues include games, adventure, utilities, pastime, financial, graphics and tutorial programs.

Save software dollars. Gain the network advantage. Be part of the world's fastest growing group of Micro-Enthusiasts.

**Byte Into a
Diskful this Month!**

Order by phone
or use coupon below

Send

7.50 one disk/issue (one month)
21.00 three disk/issues (three months)

30.00 six disk/issues (six months)

48.00 twelve disk/issues (one year)

to: **SOFTYME**, Box 299
Newport, RI 02840
or call 401-849-4925/4926
Mon.-Sat. 9 am to 10 pm
for M/C or VISA orders

SOFTYME is the registered trademark of Viking Data Based Technologies, Inc. **SOFTYME** requires DOS 3.3 and 48K of memory. **SOFTYME** runs on Apple II and the Apple is the registered trademark of Apple Computer, Inc.

**Enter my subscription to
SOFTYME the magazine on a disk**



Name _____

Address _____

City _____

State _____

Zip _____

Payment Enclosed VISA Mastercard

Card No. _____

Exp. Date _____

Add \$12.00 per year in foreign countries, except Canada and A.P.O.

SIGNATURE _____

please send my free programmers reference card.

One Month Three Months Six Months One Year

\$7.50 \$21.00 \$30.00 12 Disks

\$48.00



ELEPHANT DISKS
 SS/DD 14.95
 SS/DD 15.95
 DS/DD 19.95

VERBATIM
 SS/DD 16.95
 DS/DD 22.95
 Head Cleaning Kit 5.79

DISKETTE-70
 14.95

SILICON EXPRESS

SUPERSAVER SPECIALS...COPY II + 21.95 • ESSENTIAL DATA DUPLICATOR 48.95 • BEAGLE BROS. D-CODE 24.95

1-800-228-0755
 1-614-868-5007
 YOUR TOLL FREE ACCESS OUTSIDE OHIO
 CALL...FOR THE BEST PRICES...
 INSIDE OHIO
 We have hundreds of other
 programs in stock at
 Fantastic savings.

Dazzle Draw	41.95
DB Master	224.95
DB Master Utility Pk	89.95
DB Stat Pack	89.95
Deadline	29.95
Delta Drawing	31.95
Disk Arranger	20.95
Air-Sim 3	31.95
Algebra I thru IV	ea. 26.95
Algebra II Pro	81.95
ABC Alphabet Beasts	22.95
Add'l Fonts & Char	13.95
Addition Magician	22.95
Alpha Plot	24.95
Amazon	31.95
Apple Mechanic	18.95
Arcade Boot Camp	20.95
Archon	29.95
Axis Assassin	14.95
Bag of Tricks	27.95
Baltic '85	24.95
Bank Street Filer	43.95
Bank Street Mailer	43.95
Bank Street Writer	43.95
Bank Street Speller	45.95
Baron	34.95
Battle for Normandy	27.95
Battle of Shiloh	27.95
Beach Landing	27.95
Beagle Bag	18.95
Beagle Basis	22.95
Beagle Graphics	36.95
Beyond Cast. Wolf.	24.95
Blazing paddles	35.95
Bob Alley	41.95
Bookends	74.95
Bouncing Kamangas	19.95
Broadsides	27.95
Bruce Lee	24.95
Bumble Games	24.95
Bumble Plot	24.95
Calcstar	129.95
Carrier Force	41.95
Captain Goodnight	24.95
Cartels & Cutthroats	27.95
Castle Wolfenstein	19.95
Cat Graphics	20.95
Chshp. Load Runner	23.95
Chess	48.95
Chivalry	34.95
Chop Lifter	24.95
Cogito	23.95
Complete Graphics	55.95
Compu-Math Arithm.	32.95
Compu-Math Decimals	32.95
Compu-Math Frctns.	32.95
Computer Bismark	41.95
Computer Crtbck.	27.95
Computer Bal. I or II	27.95
Copy II+	21.95
Cosmic Balance II	25.95
Coveted Mirror	21.95
Creature Creator	27.95
Crossword Magic	33.95
Crypto Cube	27.95
Crypt of Medea	21.95
Cubit	25.95
Cut & Paste	35.95
Cytron Master	27.95
Data Capture	CALL
Datalife Analyzer	24.95
Elephant Disks	SS/DD 14.95 SS/DD 15.95 DS/DD 19.95
Essential Data Dup	48.95
FileMaster	24.95
Fontpaks 1 thru 7	ea. 11.95
Fontrix	44.95
Format II	94.95
Fortress	24.95
Fraction Factory	19.95
Fracton Fever	21.95
Flex Type	18.95
Fontworks	44.95
Fortpaks 1 thru 7	ea. 11.95
Fracton Fever	21.95
Fracton II	18.95
Fracton III	18.95
Fracton IV	18.95
Fracton V	18.95
Fracton VI	18.95
Fracton VII	18.95
Fracton VIII	18.95
Fracton IX	18.95
Fracton X	18.95
Fracton XI	18.95
Fracton XII	18.95
Fracton XIII	18.95
Fracton XIV	18.95
Fracton XV	18.95
Fracton XVI	18.95
Fracton XVII	18.95
Fracton XVIII	18.95
Fracton XVIX	18.95
Fracton XX	18.95
Fracton XXI	18.95
Fracton XXII	18.95
Fracton XXIII	18.95
Fracton XXIV	18.95
Fracton XXV	18.95
Fracton XXVI	18.95
Fracton XXVII	18.95
Fracton XXVIII	18.95
Fracton XXIX	18.95
Fracton XXX	18.95
Fracton XXXI	18.95
Fracton XXXII	18.95
Fracton XXXIII	18.95
Fracton XXXIV	18.95
Fracton XXXV	18.95
Fracton XXXVI	18.95
Fracton XXXVII	18.95
Fracton XXXVIII	18.95
Fracton XXXIX	18.95
Fracton XXXX	18.95
Fracton XXXXI	18.95
Fracton XXXXII	18.95
Fracton XXXXIII	18.95
Fracton XXXXIV	18.95
Fracton XXXXV	18.95
Fracton XXXXVI	18.95
Fracton XXXXVII	18.95
Fracton XXXXVIII	18.95
Fracton XXXXIX	18.95
Fracton XXXX	18.95
Fracton XXXXI	18.95
Fracton XXXXII	18.95
Fracton XXXXIII	18.95
Fracton XXXXIV	18.95
Fracton XXXXV	18.95
Fracton XXXXVI	18.95
Fracton XXXXVII	18.95
Fracton XXXXVIII	18.95
Fracton XXXXIX	18.95
Fracton XXXX	18.95
Fracton XXXXI	18.95
Fracton XXXXII	18.95
Fracton XXXXIII	18.95
Fracton XXXXIV	18.95
Fracton XXXXV	18.95
Fracton XXXXVI	18.95
Fracton XXXXVII	18.95
Fracton XXXXVIII	18.95
Fracton XXXXIX	18.95
Fracton XXXX	18.95
Fracton XXXXI	18.95
Fracton XXXXII	18.95
Fracton XXXXIII	18.95
Fracton XXXXIV	18.95
Fracton XXXXV	18.95
Fracton XXXXVI	18.95
Fracton XXXXVII	18.95
Fracton XXXXVIII	18.95
Fracton XXXXIX	18.95
Fracton XXXX	18.95
Fracton XXXXI	18.95
Fracton XXXXII	18.95
Fracton XXXXIII	18.95
Fracton XXXXIV	18.95
Fracton XXXXV	18.95
Fracton XXXXVI	18.95
Fracton XXXXVII	18.95
Fracton XXXXVIII	18.95
Fracton XXXXIX	18.95
Fracton XXXX	18.95
Fracton XXXXI	18.95
Fracton XXXXII	18.95
Fracton XXXXIII	18.95
Fracton XXXXIV	18.95
Fracton XXXXV	18.95
Fracton XXXXVI	18.95
Fracton XXXXVII	18.95
Fracton XXXXVIII	18.95
Fracton XXXXIX	18.95
Fracton XXXX	18.95
Fracton XXXXI	18.95
Fracton XXXXII	18.95
Fracton XXXXIII	18.95
Fracton XXXXIV	18.95
Fracton XXXXV	18.95
Fracton XXXXVI	18.95
Fracton XXXXVII	18.95
Fracton XXXXVIII	18.95
Fracton XXXXIX	18.95
Fracton XXXX	18.95
Fracton XXXXI	18.95
Fracton XXXXII	18.95
Fracton XXXXIII	18.95
Fracton XXXXIV	18.95
Fracton XXXXV	18.95
Fracton XXXXVI	18.95
Fracton XXXXVII	18.95
Fracton XXXXVIII	18.95
Fracton XXXXIX	18.95
Fracton XXXX	18.95
Fracton XXXXI	18.95
Fracton XXXXII	18.95
Fracton XXXXIII	18.95
Fracton XXXXIV	18.95
Fracton XXXXV	18.95
Fracton XXXXVI	18.95
Fracton XXXXVII	18.95
Fracton XXXXVIII	18.95
Fracton XXXXIX	18.95
Fracton XXXX	18.95
Fracton XXXXI	18.95
Fracton XXXXII	18.95
Fracton XXXXIII	18.95
Fracton XXXXIV	18.95
Fracton XXXXV	18.95
Fracton XXXXVI	18.95
Fracton XXXXVII	18.95
Fracton XXXXVIII	18.95
Fracton XXXXIX	18.95
Fracton XXXX	18.95
Fracton XXXXI	18.95
Fracton XXXXII	18.95
Fracton XXXXIII	18.95
Fracton XXXXIV	18.95
Fracton XXXXV	18.95
Fracton XXXXVI	18.95
Fracton XXXXVII	18.95
Fracton XXXXVIII	18.95
Fracton XXXXIX	18.95
Fracton XXXX	18.95
Fracton XXXXI	18.95
Fracton XXXXII	18.95
Fracton XXXXIII	18.95
Fracton XXXXIV	18.95
Fracton XXXXV	18.95
Fracton XXXXVI	18.95
Fracton XXXXVII	18.95
Fracton XXXXVIII	18.95
Fracton XXXXIX	18.95
Fracton XXXX	18.95
Fracton XXXXI	18.95
Fracton XXXXII	18.95
Fracton XXXXIII	18.95
Fracton XXXXIV	18.95
Fracton XXXXV	18.95
Fracton XXXXVI	18.95
Fracton XXXXVII	18.95
Fracton XXXXVIII	18.95
Fracton XXXXIX	18.95
Fracton XXXX	18.95
Fracton XXXXI	18.95
Fracton XXXXII	18.95
Fracton XXXXIII	18.95
Fracton XXXXIV	18.95
Fracton XXXXV	18.95
Fracton XXXXVI	18.95
Fracton XXXXVII	18.95
Fracton XXXXVIII	18.95
Fracton XXXXIX	18.95
Fracton XXXX	18.95
Fracton XXXXI	18.95
Fracton XXXXII	18.95
Fracton XXXXIII	18.95
Fracton XXXXIV	18.95
Fracton XXXXV	18.95
Fracton XXXXVI	18.95
Fracton XXXXVII	18.95
Fracton XXXXVIII	18.95
Fracton XXXXIX	18.95
Fracton XXXX	18.95
Fracton XXXXI	18.95
Fracton XXXXII	18.95
Fracton XXXXIII	18.95
Fracton XXXXIV	18.95
Fracton XXXXV	18.95
Fracton XXXXVI	18.95
Fracton XXXXVII	18.95
Fracton XXXXVIII	18.95
Fracton XXXXIX	18.95
Fracton XXXX	18.95
Fracton XXXXI	18.95
Fracton XXXXII	18.95
Fracton XXXXIII	18.95
Fracton XXXXIV	18.95
Fracton XXXXV	18.95
Fracton XXXXVI	18.95
Fracton XXXXVII	18.95
Fracton XXXXVIII	18.95
Fracton XXXXIX	18.95
Fracton XXXX	18.95
Fracton XXXXI	18.95
Fracton XXXXII	18.95
Fracton XXXXIII	18.95
Fracton XXXXIV	18.95
Fracton XXXXV	18.95
Fracton XXXXVI	18.95
Fracton XXXXVII	18.95
Fracton XXXXVIII	18.95
Fracton XXXXIX	18.95
Fracton XXXX	18.95
Fracton XXXXI	18.95
Fracton XXXXII	18.95
Fracton XXXXIII	18.95
Fracton XXXXIV	18.95
Fracton XXXXV	18.95
Fracton XXXXVI	18.95
Fracton XXXXVII	18.95
Fracton XXXXVIII	18.95
Fracton XXXXIX	18.95
Fracton XXXX	18.95
Fracton XXXXI	18.95
Fracton XXXXII	18.95
Fracton XXXXIII	18.95
Fracton XXXXIV	18.95
Fracton XXXXV	18.95
Fracton XXXXVI	18.95
Fracton XXXXVII	18.95
Fracton XXXXVIII	18.95
Fracton XXXXIX	18.95
Fracton XXXX	18.95
Fracton XXXXI	18.95
Fracton XXXXII	18.95
Fracton XXXXIII	18.95
Fracton XXXXIV	18.95
Fracton XXXXV	18.95
Fracton XXXXVI	18.95
Fracton XXXXVII	18.95
Fracton XXXXVIII	18.95
Fracton XXXXIX	18.95
Fracton XXXX	18.95
Fracton XXXXI	18.95
Fracton XXXXII	18.95
Fracton XXXXIII	18.95
Fracton XXXXIV	18.95
Fracton XXXXV	18.95
Fracton XXXXVI	18.95
Fracton XXXXVII	18.95
Fracton XXXXVIII	18.95
Fracton XXXXIX	18.95
Fracton XXXX	18.95
Fracton XXXXI	18.95
Fracton XXXXII	18.95
Fracton XXXXIII	18.95
Fracton XXXXIV	18.95
Fracton XXXXV	18.95
Fracton XXXXVI	18.95
Fracton XXXXVII	18.95
Fracton XXXXVIII	18.95
Fracton XXXXIX	18.95
Fracton XXXX	18.95
Fracton XXXXI	18.95
Fracton XXXXII	18.95
Fracton XXXXIII	18.95
Fracton XXXXIV	18.95
Fracton XXXXV	18.95
Fracton XXXXVI	18.95
Fracton XXXXVII	18.95
Fracton XXXXVIII	18.95
Fracton XXXXIX	18.95
Fracton XXXX	18.95
Fracton XXXXI	18.95
Fracton XXXXII	18.95
Fracton XXXXIII	18.95
Fracton XXXXIV	18.95
Fracton XXXXV	18.95
Fracton XXXXVI	18.95
Fracton XXXXVII	18.95
Fracton XXXXVIII	18.95
Fracton XXXXIX	18.95
Fracton XXXX	18.95
Fracton XXXXI	18.95
Fracton XXXXII	18.95
Fracton XXXXIII	18.95
Fracton XXXXIV	18.95
Fracton XXXXV	18.95
Fracton XXXXVI	18.95
Fracton XXXXVII	18.95
Fracton XXXXVIII	18.95
Fracton XXXXIX	18.95
Fracton XXXX	18.95
Fracton XXXXI	18.95
Fracton XXXXII	18.95
Fracton XXXXIII	18.95
Fracton XXXXIV	18.95
Fracton XXXXV	18.95
Fracton XXXXVI	18.95
Fracton XXXXVII	18.95
Fracton XXXXVIII	18.95
Fracton XXXXIX	18.95
Fracton XXXX	18.95
Fracton XXXXI	18.95
Fracton XXXXII	18.95
Fracton XXXXIII	18.95
Fracton XXXXIV	18.95
Fracton XXXXV	18.95
Fracton XXXXVI	18.95
Fracton XXXXVII	18.95
Fracton XXXXVIII	18.95
Fracton XXXXIX	18.95
Fracton XXXX	18.95
Fracton XXXXI	18.95
Fracton XXXXII	18.95
Fracton XXXXIII	18.95
Fracton XXXXIV	18.95
Fracton XXXXV	18.95
Fracton XXXXVI	18.95
Fracton XXXXVII	18.95
Fracton XXXXVIII	18.95
Fracton XXXXIX	18.95
Fracton XXXX	18.95
Fracton XXXXI	18.95
Fracton XXXXII	18.95
Fracton XXXXIII	18.95
Fracton XXXXIV	18.95
Fracton XXXXV	18.95
Fracton XXXXVI	18.95
Fracton XXXXVII	18.95
Fracton XXXXVIII	18.95
Fracton XXXXIX	18.95
Fracton XXXX	18.95
Fracton XXXXI	18.95
Fracton XXXXII	18.95
Fracton XXXXIII	18.95
Fracton XXXXIV	18.95
Fracton XXXXV	18.95
Fracton XXXXVI	18.95
Fracton XXXXVII	18.95
Fracton XXXXVIII	18.95
Fracton XXXXIX	18.95
Fracton XXXX	18.95
Fracton XXXXI	18.95
Fracton XXXXII	18.95
Fracton XXXXIII	18.95
Fracton XXXXIV	18.95
Fracton XXXXV	18.95
Fracton XXXXVI	18.95
Fracton XXXXVII	18.95
Fracton XXXXVIII	18.95
Fracton XXXXIX	18.95
Fracton XXXX	18.95
Fracton XXXXI	18.95
Fracton XXXXII	18.95
Fracton XXXXIII	18.95
Fracton XXXXIV</	

SAVE

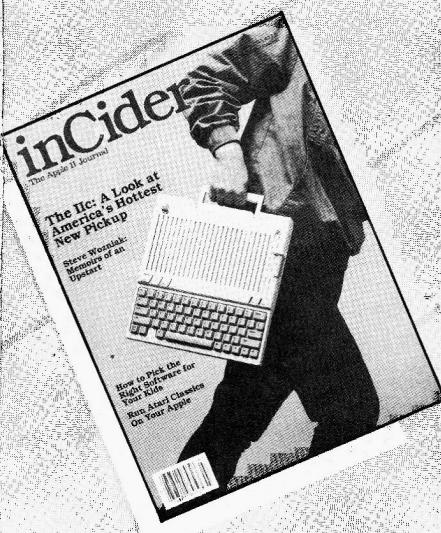
30%

ON

12

ISSUES

OF



inCider

YES!

Send me 12 issues of inCider for \$24.97.
I'll save 30% off the newsstand price.

Payment Enclosed

Please make checks payable to inCider.

Bill me

Name _____

Address _____

City _____ State _____ Zip _____

Canada & Mexico \$27.97, 1 year only US funds drawn on US bank.
Foreign Surface \$44.97, 1 year only, US funds drawn on US bank.
Foreign Airmail please inquire. Please allow 6-8 weeks for delivery.

351B5W

YES!

Send me 12 issues of inCider for \$24.97.
I'll save 30% off the newsstand price.

Payment Enclosed

Please make checks payable to inCider.

Bill me

Name _____

Address _____

City _____ State _____ Zip _____

Canada & Mexico \$27.97, 1 year only US funds drawn on US bank.
Foreign Surface \$44.97, 1 year only, US funds drawn on US bank.
Foreign Airmail please inquire. Please allow 6-8 weeks for delivery.

351B5W

YES!

Send me 12 issues of inCider for \$24.97.
I'll save 30% off the newsstand price.

Payment Enclosed

Please make checks payable to inCider.

Bill me

Name _____

Address _____

City _____ State _____ Zip _____

Canada & Mexico \$27.97, 1 year only US funds drawn on US bank.
Foreign Surface \$44.97, 1 year only, US funds drawn on US bank.
Foreign Airmail please inquire. Please allow 6-8 weeks for delivery.

351B5W



CW COMMUNICATIONS/PETERBOROUGH



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY CARD

First Class Permit No. 73 Peterborough, NH 03458

POSTAGE WILL BE PAID BY ADDRESSEE

CW Communications/Peterborough
inCider
P.O. Box 911
Farmingdale, NY 11737



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY CARD

First Class Permit No. 73 Peterborough, NH 03458

POSTAGE WILL BE PAID BY ADDRESSEE

CW Communications/Peterborough
inCider
P.O. Box 911
Farmingdale, NY 11737



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY CARD

First Class Permit No. 73 Peterborough, NH 03458

POSTAGE WILL BE PAID BY ADDRESSEE

CW Communications/Peterborough
inCider
P.O. Box 911
Farmingdale, NY 11737



SAVE

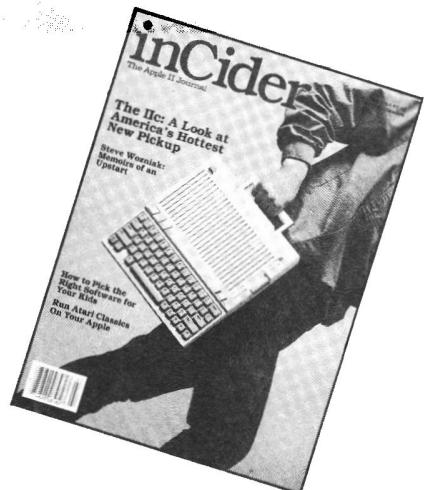
30%

ON

12

ISSUES

OF



inCider.



CW COMMUNICATIONS/PETERBOROUGH

Applesoft Shortcuts

by Jim Lazar

These one-liners are no jokes; rather, they're tools to simplify your programs.

Text Screen Routines

You can leave out a semicolon in a PRINT statement as long as it doesn't come between a numeric variable and any other variable. The semicolon is also necessary at the end of a PRINT statement to keep the cursor from dropping down a line.

To print numbers preceded by zeros or spaces, use the following formula, which prints a six-digit number:

PRINT RIGHT\$("00000" + STR\$(A),6)

You can replace the five zeros with up to eight zeros or spaces and the number 6 with the number of places in the numeral. The number of zeros or spaces must always be one less than the number of places in the numeral. In the example, "A" represents the number; you can replace it with a different variable if you need to.

On line 24 use a PRINT command to print the first 39 characters of the line (without scrolling), putting a semicolon at the end. Then POKE the last character into location 2039 with the value 128 plus the character's ASCII value for normal text; you'll have to

experiment to find the correct values for inverse and flashing text.

Force Applesoft to list program lines that don't end in spaces with POKE 33,33, which will cut the screen down to a width of 33 columns. (Note that this doesn't work with an 80-column card on the //e.) To reset the screen to its normal width you can use the TEXT command, press the reset key, or type POKE 33,40.

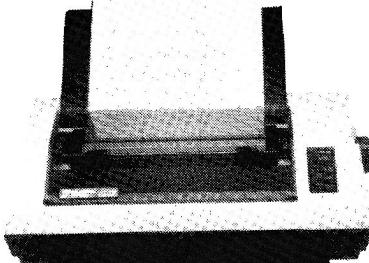
DOS Devices

To change the number of lines (*n*) DOS prints in the catalog, POKE that number into the following locations:

Circle 219 on Reader Service card.

A Printer For All Reasons!

The GP-550-AP is an extra high quality graphic printer that offers both standard Dot Matrix printing and Near Letter Quality printing all in a single unit.



FEATURES:

- Two print modes: Data Processing (DP) mode, Near Letter Quality (NLQ) mode.
- Lower noise level.
- High cost-performance.
- Two matrix configurations: 9 (H) x 8 (V) dots in DP mode; 9 (H) x 16 (V) dots in NLQ mode.
- Capable of printing 140 different characters: 96 ASCII characters plus 44 European characters and symbols.
- Various character modes for special effects: DP mode: Pica, Elite, Condensed NLQ mode: Pica, Elite, Italic Cursive, Superscript, Subscript and Proportional.
- Graphic printing of vertical 8-dot or 16-dot graphic data.

PRINTING MODE	DOT MATRIX (H X V) & SPACES	NUMBER OF COLUMNS	PRINT SPEED (CPS)	CHARACTER SPACING (CPI)	PASS
DP Mode:					
Pica	9 x 8 + 3	80	50	10	1
Elite	9 x 8 + 1	96	60	12	1
Condensed	5 x 8 + 2	136	86	17	1
NLQ Mode: NOTE: There is expanded (double-width) printing function in every character mode.					
Pica	9 x 16 + 3	80	25	10	2
Elite	9 x 16 + 1	96	30	12	2
Proportional	N x 16	—	—	—	2
Super/Subscript	5 x 8	136	43	17	2
Italic Cursive	12 x 16	80	25	10	2

Line Spacing	6, 8 1/2, 12, or N/120 (N = 0-99) lines per inch.
Paper Feed	Pin-feed and friction-feed (single sheet)
Paper Width	Adjustable from 4.5 to 10 inches (fanfold paper)
Paper Type	Fanfold or cutsheet paper
Ribbon	Single color, special self-inking cassette
Dimensions	12" (D) x 16.5" (W) x 4.5" (H) (including paper separator)
Printing Method	Two-hammer
Printing Format	9 x 8 (DP); 9 x 16 (NLQ)
Character Kinds	96 ASCII + 44 characters and symbols
Graphics	Arbitrary combination of 8 dots or 16 dots.
Multiple Copies	3 including original

1 year parts & labor warranty

only
\$299.95

DIRECT PLUG-IN AND PRINT ON
YOURAPPLE II OR IIe - NO OTHER
EQUIPMENT NEEDED.

FOR ORDERS CALL TOLL FREE:
1-800/962-5800 USA
1-800/962-3800 CALIF.

All Prices U.S. Dollars

CASH PRICES
CHARGE CARDS ADD 3%

15 Day Money Back Guarantee

APROPOS TECHNOLOGY

1071-A Avenida Acaso Camarillo, CA 93010 805/482-3604

POKE 44452,(n)
POKE 44605,(n)

The first location is the number of lines printed when the catalog is first displayed (the portion with the volume number in it). The second location is the number of lines printed after the computer waits for a keypress.

After loading a binary file from disk, you may need to know the file's starting address and length, which the following two commands return. The hexadeciml locations are listed after the commands, low byte first.

Starting address:

PEEK (43634) + PEEK (43635)*256
[\$AA72 and \$AA73]

Length:

PEEK (43616) + PEEK (43617)*256
[\$AA60 and \$AA61]

CALL 40383 reconnects DOS (if DOS commands don't work) only if DOS is in memory.

Graphics Tricks

You can clear the hi-res screen to any one of the eight Apple colors by using the following subroutine call:

HCOLOR = [color to clear screen]:
HPLOT 0,0: CALL 62454

The HPLOT must precede the CALL whenever it is used.

The following commands display the hi-res screen without clearing it:

POKE - 16304,0 [set graphics mode]
POKE - 16297,0 [set hi-res graphics mode]

The next two commands select which page is displayed, so use only one:

POKE - 16300,0 [set display to page 1]
POKE - 16299,0 [set display to page 2]

These two select either full or mixed graphics, so use only one:

POKE - 16302,0 [set display to full screen graphics]
POKE - 16301,0 [set display to mixed screen graphics]

Keyboard Magic

To get the computer to wait for a key to be pressed, use WAIT - 16384, 128. If the computer needs to do something else while waiting for a key to be pressed, read location - 16384. If it's greater than 127, a key was pressed. If the number is less, a key was not pressed and you can have the computer do whatever you want it to do. Use PEEK (- 16384) - 128 to find the ASCII value of the key that was pressed. To clear the keyboard from any previous input, use POKE - 16368,0.

Saving Memory

Don't exit from a FOR . . . NEXT loop with GOTO or GOSUB. You should set the variable you are using with the loop to the highest or lowest number to which the loop was to go up or down. The computer thus believes that the loop is done and will go on to the next instruction after the loop.

A = FRE(0) cleans up variables so you can get rid of all old numbers and data. Use any variable for A.

If you branch to a subroutine with a GOSUB and want to exit from it with a GOTO instead of a RETURN, execute a POP command first to clear the last GOSUB statement from memory.

These few lines have streamlined my programs and my programming technique. I hope you try them out and can use them in your own computing efforts. ■

Circle 361 on Reader Service card.

THE ULTIMATE APPLE BACKUP UTILITIES

COPY II PLUS

This is the most widely used backup program for the Apple and was rated as "one of the best buys of the year" by Incider Magazine. Its simple menu puts nearly every disk command at your fingertips. The manual with more than 70 pages, describes protection schemes, and our Backup Book™ lists simple instructions for backing up over 300 popular programs. The Backup Book is up-dated quarterly and available to COPY II PLUS owners for only \$3.00. Best of all—COPY II PLUS is still only . . .

\$39.95

(Plus \$3 Shipping & Handling)

WILDCARD 2

WILDCARD 2 was recently said to be "the simplest to use of all copy-cards" by Peelings II Magazine. Making backups of your total load software is as easy as pressing the button, inserting a blank disk, and hitting the return key twice. WILDCARD 2 copies 48K, 64K, 128K software, and unlike other cards is always ready to go. No preloading software into the card or special, preformatted disks are required. Your backups can be run with or without the card in place and can be transcribed to hard disks.

ONLY

\$139.95

(Plus \$3 Shipping & Handling)

Available at your local dealer or direct from:

CENTRAL POINT
Software, Inc.

9700 S.W. Capitol Highway, #100/Portland, OR 97219
(503) 244-5782   WELCOME
(Prepayment Required)

Backup Utilities Also Available For
IBM PC, MACINTOSH, and COMMODORE 64

These products are provided for the purpose of enabling you to make archival backups only.

Write to Jim Lazar at 1109 Niesen Road,
Port Washington, WI 53074.

McMill

The affordable & expandable 68000 software development system for your Apple II, IIe!



PO.Box 2342
Santa Barbara, CA 93120
805 569-3132

Circle 168 on Reader Service card.



A word for this Punch/Reader Combo is
.....
.....
.....
.....
Speed! Model 510 punches paper tape at 110cps, reads at 150cps. This rugged machine is computer compatible offering RS232C, current loop, parallel inputs. The ASCII-to-Baudot code conversion permits direct keyboard entry for Telex/TWX transmission. Plus: 256 character storage, 75-9600 baud rate, 5-8 level tape, stock. ADDMASTER CORP. 416 Junipero Serra Dr., San Gabriel, CA 91776 ★ 213/285-1121.

Circle 31 on Reader Service card.

wabash®

When it comes to
Flexible Disks, nobody
does it better than
Wabash.

MasterCard, Visa Accepted.
Call Free: (800) 235-4137



PACIFIC EXCHANGES

100 Foothill Blvd.
San Luis Obispo, CA
93401. (In Cal. call
(805) 543-1037.)

PRINT-QUICK™

takes the pain out of printing!

Frustrated trying to get all those fancy printer features to work? PRINT-QUICK - the high performance printer control program featuring:

- EXTREMELY EASY to use with PLAIN ENGLISH display of all print options.
- JOYSTICK or KEYBOARD selects options.
- PREVIEW SAMPLE TEXT with selected features.
- SET-UPS CAN BE EDITED AND SAVED in convenient EXEC files. Many frequently requested set-up EXEC files are supplied.
- POWERFUL ELECTRONIC TYPEWRITER EMULATION. No need to boot your word processor for a quick note. Supports Apple 80 column card.
- Detailed HELP SCREENS and ERROR DIAGNOSTICS allow immediate use of PRINT-QUICK.
- The coveted THIRD WAVE FREEBIES™ - substantial no charge software, including powerful GRAPPLER™ card support.
- All BASIC code is listable by the user.
- NO COPY PROTECTION.
- Apple approved CLOCK CARDS supported.
- DOS 3.3 and ProDOS versions for Apple II, II+, IIe, and IIc.

Third Wave believes in customer support - guarantees satisfaction. Ask your dealer for PRINT-QUICK or order direct, TOLL-FREE.

1-800-631-6973

PRINT-QUICK
MC, VISA, C.O.D.,
Mail Orders Welcome.
Ship same day

\$39.95
including postage!
(Continental U.S.A.)



PRINT-QUICK supports
the most
popular printers
and interfaces.

(Specify printer and interface with order)

PRO / DISK™ - Double-sided/double-density, reinforced hub, notched on both sides, lifetime guaranteed. Don't compromise on disk grade when you can afford the best. Mention this ad when ordering PRINT-QUICK and receive a free PRO / DISK™ or 10% discount towards a box of 10! Box of 10 PRO / DISKS - \$31.50. 10 Boxes (100 PRO / DISKS) - \$250.00.

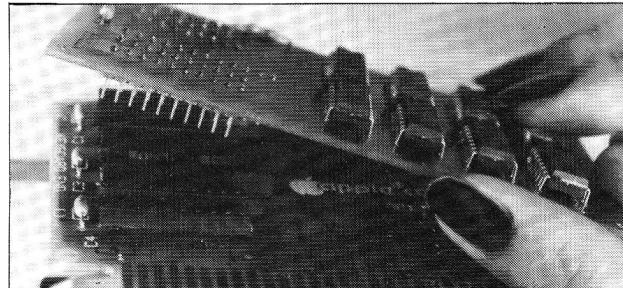
 **THIRD WAVE TECHNOLOGY INC** © 1984

16309 Elsienna Ave., Cleveland, OH 44135 216/671-8991

Circle 172 on Reader Service card.

*APPLEWORKS SAYS “55K Available”

WHEN YOU TRANSFORM YOUR 80 COLUMN CARD INTO THE “EXTENDED 64K VERSION”



ONE

YEAR

WARRANTY

*If you are not satisfied
you may return within ten
days for a Full Refund.
(Shipping not included)*

- Extend 80 plugs into your standard 80 column card to make your Apple //e* a 128K system.
- Extend 80 offers **Total Compatibility**.
- Extend 80 is a quality, thoroughly tested product.
- Extend 80 sells for just \$129.95 +
- Extend 80 offers **double resolution graphics capability**.
- Extend 80 can be used while programming under Apple computer's Pro Dos.

**Appleworks and
Apple //e
are trademarks of
Apple Computer, Inc.*

⁺ Add \$3.00 for shipping
(\$5.00 outside the U.S. -
Payment in U.S. dollars
only)

To order send check for \$129.95 + Mastercard Visa Am. Express
(FL residents add 5% sales tax)

OR CALL:

1-800-821-0208
(OUTSIDE FLORIDA)

CARIBBEAN COMPUTER SALES, INC.

221 EAST OSCEOLA - SUITE 110
STUART, FL 33494 **(305) 287-3336**

Listing continued.

```

12 NEXT : TEXT : HOME : FLASH : PRINT "PLEASE RECHECK MOUSE INS
TALLATION INSTRUCTIONS!": END
15 PRINT D$"BLOADALLCHAR,A2560"
20 GOTO 600
40 GOSUB 62000: RETURN
76 GOSUB 9: INPUT "";P0,P1,S0: GOSUB 8: IF P0 > 279 THEN P0 = 2
79
77 IF P1 > 191 THEN P1 = 191
78 RETURN
86 GOSUB 9: INPUT "";PX%,PY%,S0: GOSUB 8: IF PX% > 279 THEN PX%
= 279
87 IF PY% > 191 THEN PY% = 191
88 RETURN
98 PRINT "": TEXT : HOME : PRINT "MOVE CURSOR TO UPPER LEFT COR
NER OF THE ERASE BLOCK & HIT SPACE. THEN MOVE THE CURSOR T
O THE LOWER RIGHT CORNER OF THE ERASE BLOCK & HIT SPACE.": GOSUB
63000: POKE - 16304,0: POKE - 16297,0
91 GOSUB 96: XDRAW 2 AT X%,Y%: FOR QW = 1 TO 50: NEXT : XDRAW 2
AT X%,Y%
92 PK = PEEK (- 16384): IF PK > 127 THEN POKE - 16368,0: PRINT
"": GOTO 100
95 OO = PEEK (- 16336): GOTO 91
96 GOSUB 9: INPUT "";X%,Y%,S0: GOSUB 8: IF X% > 279 THEN X% = 2
79
97 IF Y% > 191 THEN Y% = 191
98 RETURN
100 GOSUB 86: XDRAW 2 AT PX%,PY%: FOR QW = 1 TO 50: NEXT : XDRAW
2 AT PX%,PY%
102 PK = PEEK (- 16384): IF PK > 127 THEN POKE - 16368,0: PRINT
"": GOTO 110
105 OO = PEEK (- 16336): GOTO 100
110 HCOLOR= 0:08 = PX%:01 = PY%:00 = X%:09 = Y%: FOR OO = 00 TO
08: HPLLOT OO,09 TO OO,01: NEXT : HCOLOR= C: RETURN
220 IF LEN (A$) = 0 AND A$ < > " " THEN RETURN
222 HCOLOR= 3
225 AA = ASC (A$) - 31: IF AA = - 4 THEN UP = NOT UP: GOTO 37
0
228 IF UP = 0 AND AA > 33 AND AA < 60 THEN J = AA + 32: GOTO 23
1
230 J = AA: GOTO 359
231 IF AA < 1 OR AA > 96 THEN 40
359 IF FX = 0 THEN DRAW J AT X,Y: HCOLOR= C: RETURN
360 XDRAW J AT X,Y: HCOLOR= C: RETURN
370 IF FV = 1 THEN Y = Y - 7: RETURN
380 X = X - 7: RETURN
600 GOSUB 6: TEXT : HOME : VTAB 2: INVERSE : HTAB 11: PRINT "ME
NU FOR CAD.PAINT": NORMAL : PRINT : POKE 232,0: POKE 233,8
605 HCOLOR= C: ROT= 64: SCALE= S: CALL 54915:FF = 1:FX = 0:FV =
0
606 ONERR GOTO 63990
609 PRINT "(0) GO TO MAIN MENU"
610 PRINT "(1) PAINT PICTURE"
611 PRINT "(2) DELETE PICTURE"
612 PRINT "(3) PRINT OUT PICTURE ON PRINTER"
613 PRINT "(4) SEE DISK CATALOG"
614 PRINT "(5) INSERT EXTRA LABELS"
615 PRINT "(6) SAVE PICTURE TO DISK"
616 PRINT "(7) GET STORED PICTURE FROM DISK"
617 PRINT "(8) ERASE & GIVE BACKGROUND COLOR": PRINT "(9) VIEW
SCREEN"
619 PRINT : INVERSE : PRINT "C": NORMAL : PRINT " = SEE COMMAN
DS": PRINT
620 FLASH : PRINT "(0-9 OR C)": NORMAL : GET AN$: IF LEN (AN
$) = 0 THEN 600
622 PRINT CHR$ (13): CALL 1002
624 IF ASC (AN$) = 67 THEN GZ = 1: GOSUB 9800
625 Q = VAL (AN$): IF AN$ = "0" THEN PRINT D$"RUNMENU"
626 IF Q < 1 OR Q > 9 THEN 600
630 ON Q GOTO 1000,900,13000,17000,30000,31000,33000,37000,3200
0
640 GOTO 600
900 PRINT : INVERSE : PRINT "HIT RETURN TO ABORT": NORMAL
902 PRINT : INPUT "FILE NAME TO DELETE: ";F$: IF LEN (F$) = 0 THEN
600
930 D$ = CHR$ (4): PRINT D$"DELETE";F$: GOTO 600
1000 POKE - 16304,0: POKE - 16297,0:D = 2
1009 GOSUB 7
1010 GOSUB 96
1015 XDRAW D AT X%,Y%:PK = PEEK (- 16384): IF PK > 127 THEN POKE
- 16368,0: XDRAW D AT X%,Y%: GOSUB 9000: GOTO 1010
1025 IF ABS (S0) < 3 THEN XDRAW D AT X%,Y%: GOSUB 1040: GOTO
1010
1030 XDRAW D AT X%,Y%: GOTO 1010

```

Listing continued.

Continued from p. 20

The second question that arises in mouse programming is how to create an algorithm that talks "Mousese." An answer appears in comparing lines 6-9, 76-88, 96-100, 600, 1009-1010, 1025, 30016, 30030, and 30035 of this mouse version of CAD.PAINT and the original paddle version (*inCider*, October 1984, p. 111). Most of these lines are additions to the original version. The original version of the lines that are actually changed appears in the Figure.

Now, examine line 1010 in each version. The paddle version stores the coordinate values of the current cursor position in X% and Y%. The mouse version GOSUBs to line 96, thence to line 9, where the peripheral in slot PS (the number ascertained earlier) is activated. Then the horizontal and vertical coordinates of the mouse (X% and Y%), as well as the status of the mouse button and keyboard (SO), are read. If SO is minus, a key has been pressed; if its absolute value is under 3, the mouse button has been pressed.

Next, a GOSUB 8 terminates input from the mouse to return to normal keyboard operation. Then lines 96-98 test to see if drawing has reached the edge of the screen, and if so, they prohibit passing beyond.

The routine at line 76 (GOSUB from 30030) and the routine at line 86 (GOSUB from 100) devolve upon line 9, as did the GOSUB in line 96. But now examine the old and new lines 1025. The IF PEEK (- 16287) > 127 has been replaced by IF ABS (SO) < 3, since, as already stated, the latter corresponds to a press of the mouse button.

You might think of line 1009 as saying, "Okay, turn on the mouse—we'll need it," while line 1010 says, "Take one reading of mouse status." Notice that line 1010 is included in a program loop—line 1030 keeps jumping back to it. What the program does is turn on the mouse once, but read the coordinates over and over again.

It's interesting to note that activating the mouse resets all mouse values back to zero, regardless of the position of the roller ball. That's why line 1009 absolutely cannot be part of the program loop, since it keeps moving the cursor to the upper left corner of the screen.

"Line 8910 erases the line and plots a new, precisely vertical, one."

The Line-Fix Algorithm

Let's look now at the line-fix algorithm that enables you to draw perfectly straight, horizontal, and vertical lines with an AppleMouse. Refer to lines 8900-8950, 9003, and 9320 in Listing 1. Line 9003 responds to a typed-in control-F (ASCII 134), after line 1015 has determined that a key has been pressed. This sequence leads to line 9000, which interprets the key hit. Line 9320 saves not only the old end-of-line coordinates (OX% and OY%), but the ones before that as well (X9% and Y9%). (The new coordinates are X% and Y%.) Line 8900 determines if the line-to-fix is more vertical than horizontal. If so, line 8910 erases it and plots a new, precisely vertical, one. Line 8950 does the same for horizontal lines.

Typing in the Programs

Use the old paddle version of CAD.PAINT from October, if you have it, as the basis for the new mouse version. The lines screened in gray in the new version are the ones that differ from the old. These are the ones that need to be changed or added.

ALLCHAR, Listing 2, is a binary file that provides upper- and lowercase characters for labeling CAD.PAINT pictures. You may already have this file from one of my previous columns, including October's. If not, its BSAVE parameters are BSAVE ALLCHAR, A2560,L1272. Should you not care about labeling your pictures, eliminate line 15 from CAD.PAINT, so it won't be looking for ALLCHAR.

PAINT, Listing 3, is a shape table that supplies "brushes" to use when "painting" with CAD.PAINT. It also appeared in my October column. If you still need to type it in, the BSAVE parameters are BSAVE PAINT,A2048,L502. Have fun "painting," and see you next time! ■

Send correspondence to Don Fudge at Avant-Garde, P.O. Box 30160, Eugene, OR 97403.

Listing continued.

```

1040 IF DR = 0 THEN 1060
1050 XDRAW D AT X%,Y%:OX% = X%:OY% = Y%: RETURN
1060 DRAW D AT X%,Y%:OX% = X%:OY% = Y%: RETURN
8900 IF ABS (OX% - X9%) > ABS (OY% - Y9%) THEN 8950
8910 HPLOT X9%,Y9% TO OX%,OY%: HPLOT OX% - 1,OY% TO X9% - 1,Y9%
    HPLOT OX% + 1,OY% TO X9% + 1,Y9%: HCOLOR= C: HPLOT X9%,Y9%
    Y TO X9%,OY%: OX% = X9%: RETURN
8950 HPLOT X9%,Y9% - (Y9% > 0) TO OX%,OY% - (OY% > 0): HPLOT X9%
    Y,Y9% + (Y9% < 191) TO OX%,OY% + (OY% < 191): HPLOT X9%,Y9%
    TO OX%,OY%: HCOLOR= C: HPLOT X9%,Y9% TO OX%,Y9%: OY% = Y9%:
    RETURN
9000 C = HC: IF PK = 141 THEN POP : GOTO 600
9001 IF PK = 192 THEN 90
9002 IF PK = 155 THEN 9100
9003 IF PK = 134 THEN HCOLOR= 0: GOTO 8900
9004 IF PK = 174 THEN D = 2: GOTO 9200
9005 IF PK = 173 THEN D = 2: GOTO 9300
9006 IF PK = 186 THEN 9030
9007 IF PK = 187 THEN D = 2: GOTO 9700
9008 IF PK > 175 AND PK < 184 THEN 9400
9009 IF PK < 193 THEN RETURN
9010 D = PK - 192: IF PK > 192 THEN RETURN
9020 GOSUB 62000: RETURN
9030 HOME : POKE - 16303,0: POKE - 16298,0:DR = NOT DR:X$ =
    "DRAW": IF DR = 1 THEN X$ = "XDRAW"
9040 VTAB 9: PRINT "YOU'RE NOW IN ";: FLASH : PRINT X$: NORMAL
    : PRINT " MODE.": GOSUB 63000: POKE - 16304,0: POKE - 162
    97,0: RETURN
9100 TEXT : GOTO 9800
9200 HPLOT X%,Y%:OX% = X%:OY% = Y%: RETURN
9300 HCOLOR= C: HPLOT OX%,OY% TO X%,Y%
9310 IF ABS (OX% - X%) < ABS (OY% - Y%) THEN IF C < > 3 AND
    C < > 7 THEN HPLOT OX% + 1,OY% TO X% + 1,Y%
9320 X9% = OX%:Y9% = OY%: OX% = X%:OY% = Y%: HCOLOR= HC: RETURN
9400 HC = PK - 176:C = HC: HCOLOR= HC: RETURN
9700 IF ABS (Y% - OY%) > ABS (X% - OX%) THEN 9750
9705 OY = OY%:YI = (Y% - OY%) / ((ABS (OX% - X%) / 3) + (ABS (
    OX% - X%) = 0))
9710 HCOLOR= C: FOR OX = OX% TO X% STEP 3 * (X% > OX%) - 3 * (X
    % < = OX%): HPLOT OX,OY:OY = OY + YI: NEXT
9720 OY% = Y%:OX% = X%: RETURN
9750 OX = OX%:XI = (X% - OX%) / ((ABS (OY% - Y%) / 3) + (ABS (
    OY% - Y%) = 0))
9760 HCOLOR= C: FOR OY = OY% TO Y% STEP 3 * (Y% > OY%) - 3 * (Y
    % < = OY%): HPLOT OX,OY:OX = OX + XI: NEXT : GOTO 9720
9800 HOME : INVERSE : VTAB 10: PRINT "COMMANDS": NORMAL : PRINT
    "- = LINE FROM LAST POINT PLOTTED": PRINT
9805 PRINT ", = DOTTED LINE FROM LAST POINT PLOTTED": PRINT : PRINT
    ". = BEGIN LINE HERE OR DRAW DOT": PRINT
9810 PRINT "@ = AREA ERASE": PRINT : PRINT ":" = DRAW/XDRAW TOGG
    LE SWITCH": PRINT : PRINT "0-7 = CHOOSE COLOR": PRINT : PRINT
    "ESC = SEE COMMANDS": PRINT : PRINT "RETURN = BACK TO PROGR
    AM MENU": PRINT
9820 PRINT "MOUSE BUTTON = PAINT WITH SHAPE"
9830 PRINT : PRINT "CTRL F = FIX NON-Straight LINE": GOSUB 6300
    0
9900 TEXT : HOME : PRINT "A = DOT": PRINT "B = 2X2 SQUARE C =
    3X3 SQUARE": PRINT "D = 4X4 SQUARE E = 5X5 SQUARE": PRINT
    "F = 6X6 SQUARE G = 7X7 SQUARE"
9910 PRINT "H = HORIZONTAL LINE": PRINT "I = VERTICAL LINE": PRINT
    "J = N.E. DIAGONAL": PRINT "K = N.W. DIAGONAL": PRINT "L =
    BALL (4 WIDE)": PRINT "M = BALL (5 WIDE)": PRINT "N = BALL
    (8 WIDE)": PRINT "O = CIRCLE (4 WIDE)"
9920 PRINT "P = CIRCLE (5 WIDE)": PRINT "Q = CIRCLE (8 WIDE)": PRINT
    "R = HORIZONTAL RECTANGLE": PRINT "S = VERTICAL RECTANGLE": PRINT
    "T = LARGE PAINTBRUSH": PRINT "U = LARGE TIPPED PA
    INBRUSH"
9930 PRINT "V = SMALL PAINTBRUSH": PRINT "W = SMALL TIPPED PA
    INBRUSH": PRINT "X = DARKER PATTERN": PRINT "Y = LIGHTER P
    ATTER": PRINT "Z = VERY LARGE SCATTERBRUSH"
9998 GOSUB 63010: IF GZ = 1 THEN GZ = 0: RETURN
9999 GOTO 1000
13000 HOME : VTAB 1: PRINT "NOW TYPE THE CTRL CHARACTERS YOU NE
    ED TO GET YOUR PRINTER TO PRINT OUT HI-RES PAGE 1 AS A GR
    APHICS PICTURE. MAKE SURE YOU HIT RETURN AFTER YOU'RE DONE
    TYPING ALL THE CTRL CHARACTERS": PRINT : A9 = 0
13005 FLASH : PRINT "DON'T FORGET TO TURN ON YOUR PRINTER!": NORMAL
    : PRINT
13010 A9 = A9 + 1
13020 GET CRS(A9): IF ASC (CRS(A9)) < > 13 THEN 13010
13021 PRINT CHR$ (13): CALL 1002
13022 PRINT CHR$ (4); "PR#1"
13025 FOR QW = 1 TO A9: PRINT CRS(QW);: NEXT
13028 PRINT CHR$ (4); "PR#0"

```

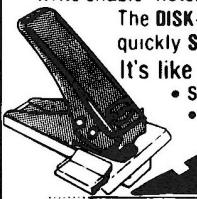
Listing continued.

FREE? DISKETTES

SAVE MONEY! Apple II series users can use the diskette flip side, if another "write enable" notch is correctly made.

The DISK-NOTCHER by QUORUM quickly SOLVES that PROBLEM. It's like FREE DISKETTES!

- Stainless Steel Guide
- Easy Leverage Handle
- Clippings Catcher
- Square Notch Cut
- Black Finish



Certifix™

BE SAFE! Your 'FREE' disk is CERTIFIED 100% ERROR FREE with CERTIFIX by QUORUM. It 'LOCKS OUT' DISK FLAWS and lets you use the rest. Displays status report & saves it to disk. Next, CERTIFIX automatically formats then offers to initialize with genuine Apple DOS 3.3 too. Great for testing economy disks. CERTIFY, FIX & INITIALIZE every disk with CERTIFIX!

FREE! 64 'Write Protect' Tabs if both ordered. 32 Diskette Labels.

Only \$29.95 for both!

DISK NOTCHER is \$14.95
CERTIFIX™ is just \$24.95
Add \$1.50 s/h CA add 6 1/2% tax

SEE YOUR APPLE DEALER!
OR ORDER DIRECT FROM QUORUM

1-800-227-3800

24 Hours a Day EXT:30
Orders only Visa/MC

QUORUM INTERNATIONAL, Unltd.
INDUSTRIAL STATION P.O. BOX 2134-1C
OAKLAND, CA 94614

Circle 16 on Reader Service card.

Software That Works For Generations

6 Types of Charts and Sheets
Indices
User Fields
Notes, Footnotes and Sources
No Limits
Adapts to Your Hardware
Comprehensive
Easy to Use
And Much, Much More

Send for brochure and sample printouts.

Family Roots includes detailed manual and 2 full diskettes of programs for your Apple II, IBM PC, Commodore 64 and CP/M.*

Other genealogy software also available.

Price \$185. Satisfaction Guaranteed.

American Express, Visa & Mastercard Accepted

*Trademarks for
Apple Computer,
Inc., International

Business Machines,
CBM, Inc., & Digital
Research.



QUINSEPT, INC.

P.O. Box 216, Lexington, MA 02173
(617) 641-2930

F U D G E I T !

Listing continued.

```

13030 GOTO 600
17000 PRINT : PRINT CHR$ (4); "CATALOG": GOSUB 63000: HOME : GOTO
600
30000 GOSUB 36000:FZ = 0
30001 AN$ = "":Z$ = "": PRINT "LABEL: ";
30002 GET Z$:AN$ = AN$ + Z$: IF ASC (Z$) = 13 THEN AN$ = LEFT$ (AN$, LEN (AN$) - 1): PRINT CHR$ (13): CALL 1002: GOTO 300
07
30003 IF ASC (Z$) = 8 THEN AN$ = LEFT$ (AN$, LEN (AN$) - 1): IF
LEN (AN$) > 0 THEN AN$ = LEFT$ (AN$, LEN (AN$) - 1)
30004 IF ASC (Z$) = 27 THEN FZ = NOT FZ: GOTO 30002
30005 IF FZ = 1 THEN INVERSE
30006 PRINT Z$: : NORMAL : GOTO 30002
30007 POKE 232,0: POKE 233,10: NORMAL
30010 HOME : VTAB 2: PRINT "USE PADDLES TO POSITION LABEL; PRES
S ANYKEY TO PRINT LABEL. USE ESC FOR UPPER AND LOWER CASE
SWITCH.": GOSUB 63000
30016 GOSUB 7
30020 POKE - 16304,0: POKE - 16297,0: HCOLOR= 3:UP = 0
30021 IF FV = 1 THEN ROT= 16
30022 FX = 1: GOTO 30030
30024 IF FV = 1 THEN X = P0:Y = P1: FOR Q = 1 TO LEN (AN$):A$ =
MID$ (AN$,Q,1): GOSUB 35000: GOSUB 220:Y = Y + 7: NEXT :X =
P0:Y = P1:UP = 0: FOR Q = 1 TO LEN (AN$):A$ = MID$ (AN$,Q
,1): GOSUB 35000: GOSUB 220:Y = Y + 7: NEXT : GOTO 30030
30025 X = P0:Y = P1: FOR Q = 1 TO LEN (AN$):A$ = MID$ (AN$,Q,1
): GOSUB 35000: GOSUB 220:X = X + 7: NEXT :X = P0:Y = P1:UP
= 0: FOR Q = 1 TO LEN (AN$):A$ = MID$ (AN$,Q,1): GOSUB 3
5000: GOSUB 220:X = X + 7: NEXT
30030 GOSUB 76
30031 UP = 0
30035 PP = PEEK (- 16384): IF PP > 127 THEN POKE - 16368,0: GOSUB
6: GOTO 30128
30040 GOTO 30024
30128 IF FV = 0 THEN X = P0:Y = P1: FOR Q = 1 TO LEN (AN$):A$ =
MID$ (AN$,Q,1): GOSUB 35000: GOSUB 220:X = X + 7: NEXT : GOSUB
63010: GOTO 600
30129 X = P0:Y = P1: FOR Q = 1 TO LEN (AN$):A$ = MID$ (AN$,Q,1
): GOSUB 35000: GOSUB 220:Y = Y + 7: NEXT : GOSUB 63010: GOTO
600
31000 HOME : VTAB 1: INVERSE : IF FS = "" THEN FS = "NONE"
31002 PRINT "CURRENT FILE NAME: "FS: NORMAL : PRINT
31005 PRINT : INVERSE : PRINT "HIT RETURN TO ABORT. DO NOT TRY
TO SAVE PICTURES ON THE PROGRAM DISK.": NORMAL : PRINT
31010 INPUT "PICTURE NAME: ";FS: IF LEN (FS) = 0 THEN 600
31040 PRINT CHR$ (4); "BSAVE";FS; ",A8192,L8192": GOTO 600
32000 POKE - 16304,0: POKE - 16297,0: GOSUB 63010: GOTO 600
33000 PRINT : INVERSE : PRINT "HIT RETURN TO ABORT.": NORMAL : PRINT
33010 INPUT "PICTURE NAME: ";FS: IF LEN (FS) = 0 THEN 600
33040 PRINT CHR$ (4); "BLOAD";FS; ",A8192": POKE - 16304,0: POKE
- 16297,0: GOSUB 63010: GOTO 600
35000 IF X > 273 THEN X = 273
35005 IF Y > 184 THEN Y = 184
35010 RETURN
36000 HOME : VTAB 1: INVERSE : PRINT "HIT RETURN TO ABORT"
36001 NORMAL
36002 PRINT "HORIZONTAL OR VERTICAL LABEL? (H/V): " : GET AZ$: PRINT
AZ$: PRINT CHR$ (13): CALL 1002
36004 IF ASC (AZ$) = 13 THEN POP : GOTO 600
36005 IF ASC (AZ$) < > 86 AND ASC (AZ$) < > 72 THEN 36000
36010 IF ASC (AZ$) = 86 THEN FV = 1
36020 RETURN
37000 HOME : VTAB 8: FLASH : PRINT "DANGER: THIS WILL ERASE ENT
IRE SCREEN!": PRINT : PRINT : INVERSE : PRINT "HIT RETURN T
O ABORT.": PRINT "SURE YOU WANT TO ERASE? (Y/N): " : NORMAL
: GET AN$
37005 PRINT AN$: PRINT CHR$ (13)
37010 IF ASC (AN$) < > 89 THEN 600
37020 PRINT : PRINT "GIVE COLOR (0-7): " : GET QS:AQ = VAL (QS
): IF AQ > 7 OR AQ < 0 THEN 37020
37030 PRINT QS: PRINT CHR$ (13): HGR : POKE - 16302,0: HCOLOR=
AQ: HPLOT 0,0: CALL 62454: HCOLOR= HC: GOTO 600
62000 FOR WQ = 1 TO 15:PK = PEEK (- 16336): NEXT : RETURN
63000 PRINT : PRINT "(PRESS SPACE TO CONTINUE): ";
63010 PH = PEEK (- 16384): IF PH > 127 THEN POKE - 16368,0: PRINT
CHR$ (13): RETURN
63020 GOTO 63010
63990 POKE 216,0:POQ = PEEK (222): PRINT "": PRINT "": PRINT ""
63991 ONERR GOTO 63990
63992 IF PQ = 254 THEN RESUME
63994 IF PQ = 6 OR PQ = 5 THEN PRINT : PRINT "FILE NOT FOUND!
TRY AGAIN...": GOSUB 63000
63999 C = 3: SCALE= 1: ROT= 64: GOTO 600

```

End of listing.

Listing 2. ALLCHAR,A2560,L1272.

0A00- 7E 00 FE 00 00 01 06 01	0B08- 00 29 2D 35 1E 1E 75 F6	0D50- 6E 09 E4 1C 0C 0C 24 00
0A08- 0C 01 1D 01 2B 01 37 01	0BB0- 3F 1C 04 00 49 31 36 0E	0D58- 31 0E 0E 36 2E 80 80 80
0A10- 44 01 48 01 50 01 58 01	0BB8- 37 3E 80 80 3F 64 0C 04	0D60- 80 0C 24 00 29 2D 35 1E
0A18- 66 01 6E 01 75 01 7A 01	0BC0- 00 29 2D B5 3B 3F B4 49	0D68- 1E 1E 2E 2D 2D 00 31
0A20- 7F 01 87 01 96 01 9E 01	0BC8- 31 F6 3F 1C 04 00 49 09	0D70- 36 36 2E 2D E5 1B 24 24
0A28- A9 01 B4 01 C1 01 CE 01	0BD0- 3F 1E 1E 36 76 2D 0C E4	0D78- 2C 2D 05 00 11 0E 0E 0E
0A30- DB 01 B4 01 F2 01 00 02	0BD8- 3F 07 00 29 2D 35 1E 1E	0D80- 0E 05 00 29 2D 35 36 36
0A38- 05 02 0C 02 15 02 1D 02	0BE0- 1E 36 06 00 09 2D 0E F6	0D88- 3E 3F 67 09 24 24 07 00
0A40- 26 02 2F 02 3D 02 4C 02	0BE8- 3F 1E 76 2D 0C 24 D8 1B	0D90- 91 12 0C 0C 0E 0E 05 00
0A48- 5A 02 66 02 72 02 7F 02	0BF0- 24 00 09 2D 0E 36 F6 1E	0D98- 91 92 12 2D 2D 05 00 09
0A50- 8A 02 96 02 A2 02 AB 02	0BF8- 3F 04 40 2D DC 23 04 00	0DA0- 0E 0E 06 00 91 29 35 36
0A58- B4 02 C1 02 C8 02 D5 02	0C00- 49 12 16 06 00 49 92 16	0DA8- 2E 2E 38 1C 0C 2D 00 31
0A60- E3 02 EF 02 FB 02 08 03	0C08- F6 06 00 49 49 F1 1E 1E	0DB0- 36 36 2E 70 65 24 1C F7
0A68- 17 03 24 03 2C 03 36 03	0C10- 0E 0E 0E 05 00 91 2D 2D	0DB8- 06 00 91 49 39 2F 1E 36
0A70- 40 03 4C 03 58 03 64 03	0C18- 16 3F 07 00 09 0E 0E	0DC0- 0E 2D 2D 00 49 09 36 36
0A78- 6F 03 7C 03 83 03 90 03	0C20- 0E 1E 1E 07 00 11 0C	0DC8- 36 1C 1E E7 24 0C 75 06
0A80- 98 03 9F 03 A4 03 AF 03	0C28- 2D 0E 1E 1E B6 06 00 09	0DD0- 00 91 29 75 3E 3F 1C 36
0A88- BA 03 C4 03 D1 03 DC 03	0C30- 2D 0E 36 96 3F E7 24 24	0DD8- 0E 2D 05 00 49 75 DF F6
0A90- E5 03 F2 03 FD 03 05 04	0C38- 8D 36 25 04 00 91 36 36	0DE0- 2D 1E 36 06 00 91 29 0D
0A98- 0D 04 17 04 1F 04 2A 04	0C40- 4D 21 3C 3F 04 80 80 0C	0DE8- 1E F5 35 F6 3F 04 08 E7
0AA0- 36 04 40 04 4C 04 59 04	0C48- 0E 0E 36 00 29 2D 0E F6	0DF0- 24 00 31 36 36 2E 80 80
0AA8- 64 04 70 04 77 04 7F 04	0C50- 3F 04 18 36 36 2E 2D 0C	0DF8- 60 75 36 36 00 49 16 77
0AB0- 88 04 92 04 9D 04 A9 04	0C58- 24 00 49 89 1C 3F 1E 36	0E00- 36 1E 2D 05 00 49 16 77
0AB8- B4 04 BF 04 C8 04 D2 04	0C60- 36 0E 2D 0C 04 00 29 2D	0E08- 36 F6 1C 04 00 31 36 36
0AC0- D9 04 2D 25 2D 25 2D 2D	0C68- 0E 36 36 1E 3F 27 24 24	0E10- 6E E1 1C 0C 0C 04 00 09
0AC8- 14 65 2B 27 FD 0E 22 E7	0C70- 04 00 29 2D B5 1A 3F 04	0E18- 35 36 36 1E 2D 05 00 91
0AD0- 24 1E ED 1E 2A 75 12 1C	0C78- 18 36 36 2E 2D 2D 00 29	0E20- 36 36 0D 24 E4 0D 0E 36
0AD8- 6D 0E 6B 0E 6B 0E 12 07	0C80- 2D B5 1A 3F 04 18 36 36	0E28- 36 00 91 36 36 0D 18 80
0AE0- 24 3F 22 66 6B 05 45 1C	0C88- 36 00 09 2D F5 DB 36 36	0E30- 80 0C 75 36 36 00 91 29
0AE8- 24 1E 2A 0C 12 2E 12 0E	0C90- 0E 2D 25 3C 07 00 31 36	0E38- 75 36 1E 3F 1C 24 04 00
0AF0- 14 E7 24 1E 24 1E 24 1E	0C98- 36 6E 09 24 3C 3F 4C 21	0E40- 91 36 36 2E 80 80 2D 0C
0AF8- 6A 1C 07 75 0A 00 01 00	0CA0- 24 00 09 2D 1E 36 36 0E	0E48- E4 3F 07 00 91 29 35 36
0B00- 49 36 36 16 06 00 09 36	0CA8- 3F 07 00 49 09 36 36 F6	0E50- 36 F5 03 80 80 38 1C 24
0B08- 0D 24 04 00 09 36 36 36	0CB0- 3F 1C 04 00 31 36 36 E6	0E58- 00 91 36 36 0D 18 80 80
0B10- 0D 24 24 24 8D 13 16 1F	0CB8- 09 1C 1C 0C 0C 0C 0C 0C	0E60- 0C 75 06 00 49 89 3A 3F
0B18- 04 F8 16 06 00 49 2E B5	0CC0- 00 31 36 36 2E 2D 2D 00	0E68- 1E 0E 2D 0E 1E 3F 3F 00
0B20- F2 37 1C 67 61 3F 1C 0C	0CC8- 31 36 36 6E 09 24 24 24	0E70- 49 F6 2D 1E 36 36 00 91
0B28- 0E 05 00 31 25 4D F2 1E	0CD0- 1E 1E 1C 04 00 31 36 36	0E78- 36 76 2D 0C 24 24 00 91
0B30- 1E 1E 4B 29 3C 07 00 09	0CD8- 6E 09 24 24 24 9F 13 0E	0E80- 36 0E 0E 0C 0C 24 04 00
0B38- 0E F6 0E 0D 1E 0E 1F E7	0CE0- 0E 06 00 09 2D 0E 36 36	0E88- 91 36 76 8C 24 95 62 24
0B40- 24 20 04 00 49 36 06 00	0CE8- 1E 3F 1C 24 24 04 00 31	0E90- 24 00 91 0E 16 1E 4D E1
0B48- 49 1E 1E 36 0E 0E 05 00	0CF0- 36 36 2E 80 80 28 65 E4	0E98- 1C 0C 0C 0C 00 91 36 0E
0B50- 49 0E 36 1E 1E 1E 00	0CF8- 3F 04 00 09 2D 0E 36 FE	0EA0- 2D 25 24 95 D2 1E 3F 07
0B58- 49 36 36 0D 0E 04 60	0DD0- 0E 01 F7 24 24 04 00	0EA8- 00 91 2D 2D 1E 1E 1E
0B60- DF 73 16 1E 1E 00 49 32	0D08- 29 2D 0E F6 3F 04 18 36	0EB0- 2D 2D 05 00 49 2D DE 73
0B68- 36 2E 40 FF 3F 00 49 92	0D10- 36 6E 09 1C 1C 05 00 09	0EB8- 1E 77 F1 0E 2D 05 00 09
0B70- 12 F6 06 00 2D 91 2A 2D	0D18- 2D 0E FD 33 0E 2D 0E F6	0EC0- 0E 0E 0E 1E 1E 1E 00
0B78- 2D 00 49 92 06 00 91	0D20- 3F 1C 04 00 29 2D F5 33	0EC8- 29 75 1E 0E F5 73 1E 3F
0B80- 92 0C 0C 0C 0C 05 00 09	0D28- 36 36 06 00 31 36 36 0E	0ED0- 07 00 11 0C 0E 0C 05
0B88- 2D 0E 36 36 1E 3F 1C 24	0D30- 2D 0C 24 24 24 00 31 36	0ED8- 00 29 2D 2D 35 3F 3F 3F
0B90- 24 4E F1 1E 06 00 49 1E	0D38- 76 0E 0C 0C 24 24 04 00	0EE0- 2E 2D 2D 35 3F 3F 2E
0B98- 35 36 76 3F 07 00 11 0C	0D40- 31 36 36 66 0C AC 72 24	0EE8- 2D 2D 35 3F 3F 2E 2D
0BA0- 2D 0E F6 F7 1E 2E 2D 2D	0D48- 24 24 04 00 31 0E 16 1E	0EF0- 2D 35 3F 3F 07 00 00

Listing 3. PAINT,A2048,L502.

0800- 1A 00 36 00 38 00 3B 00	08A8- 3F 17 36 06 00 2D 25 27	0950- 8E 31 8E B1 F3 3A DE FA
0808- 41 00 4A 00 58 00 6B 00	08B0- 27 3F 37 37 37 36 35 35	0958- FB 1B 4C DF 1B 1C 18 04
0810- 85 00 89 00 8D 00 93 00	08B8- 2D 25 25 25 3F 3E 3E 3C	0960- 80 80 04 00 95 DF DC 04
0818- 99 00 A6 00 AD 00 C9 00	08C0- 3C 2C 2C 2C 0E F7 2E 05	0968- 08 4C 4D 8E 95 BA 1B DF
0820- CF 00 D9 00 E7 00 F3 00	08C8- 00 21 1C F7 76 2D 00 09	0970- 3B 00 35 3F 24 2D 0E 95
0828- FF 00 27 01 64 01 72 01	08D0- E4 3F 1E 36 0E 2D 0C 04	0978- DF 1F 20 60 4C 8D DF DB
0830- 84 01 99 01 B0 01 04 00	08D8- 00 49 E4 1C 3F F7 1E 36	0980- B3 56 06 00 4D 69 09 8D
0838- 25 3F 00 3C 36 2D 24 04	08E0- 76 0E 2D 65 0C 24 00 38	0988- DF FB 1B 9F 4D 69 09 55
0840- 00 65 3F 37 36 25 35 25	08E8- 3F 36 2E 2D 2D 24 3C	0990- DF FB 1B 9F 4D 69 09 05
0848- 24 00 25 3F 36 2D 25 24	08F0- 3F 07 00 21 24 3F 37 36	0998- 00 2D 0D 2D 0D 2D 5E 1F
0850- 3F 3F 36 36 2D 2D 05 00	08F8- 36 36 2D 25 24 04 00 04	09A0- 3F 1F 3F 1F 2E 6D 2D 0D
0858- 25 3F 36 36 2D 25 24 3F 3F	0900- 08 DC DF 1A 16 4E FA 1B	09A8- 2D FE 3F 1F 3F 1F 07 00
0860- 36 36 2D 2D 25 24 24 3F	0908- 04 C0 04 40 4D B1 0A 4D	09B0- 29 48 A9 12 97 1B DF FB
0868- 3F 3F 00 25 3F 36 2D 25	0910- 49 D6 D6 DE FB 1B DF D8	09B8- 18 18 04 18 18 18 DF F3
0870- 24 3F 3F 36 36 2D 2D 25	0918- 04 18 20 80 80 0C 80 80	09C0- D3 1A 4E 09 8E FA DB 8E
0878- 24 24 3F 3F 3F 36 36 36	0920- 4D 09 4D 51 4D 2A 00 35	09C8- 51 11 4D 01 08 08 96 0A
0880- 2D 2D 2D 05 00 2D 2D 05	0928- E7 2C 55 D6 DF E0 60 69	09D0- 4D 08 08 8D 51 05 08 80
0888- 00 24 24 04 00 0C 0C 0C	0930- 8D 16 D6 1F 18 1F 04 18	09D8- 80 68 8A 61 80 80 20 80
0890- 0C 0C 00 1C 1C 1C 1C 1C	0938- 04 60 69 69 95 15 16 D7	09E0- 80 C0 04 80 80 18 DF 1B
0898- 00 25 27 37 37 35 2D 00	0940- 1E 1F F0 07 F0 1F E0 38	09E8- 18 DF 9A 23 C0 1B DF DB
08A0- 25 3F 36 2E 2C 2E 20 E4	0948- 80 80 60 60 09 4D 69 09	09F0- DF D3 9A 31 00 E0 AA AA

EDUCATIONAL SOFTWARE!

\$1.00 credit for phone orders over \$100.00

We specialize in Educational Software. We also carry a full line of business, recreational and utility software.

All of our software is discounted, most discounted at least 26%.

LIST SPECIAL LANGUAGE ARTS

Alphabet Circus.....	29.95	21.66
Crossword Magic.....	49.95	35.96
Fact or Fiction Tool Kit.....	39.95	28.56
Grammar Examiner.....	44.95	32.26
Reader Rabbit.....	39.95	28.56
Snoopy's Skywriter Scrambler.....	39.95	28.56
Speed Reader II.....	69.95	50.76
Spell It!.....	49.95	35.96
That's My Story.....	59.95	43.36
Webster: The Word Game.....	29.95	21.66
Word Attack!.....	49.95	35.96
Word Spinner.....	34.95	25.86
Writing Skills I.....	39.95	28.56

MATH

Addition Magician.....	34.95	25.86
Algebra Arcade.....	49.95	35.96
Early Games.....	34.95	25.86
Fraction Action.....	39.95	28.56
Fraction Factory.....	29.95	21.66
Math Blaster.....	49.95	35.96
Mission: Algebra.....	44.95	32.26
Sweet Shoppe.....	39.95	28.56

Ask for FREE price list

Educators: ask for special educational catalog

OTHER

Agent USA.....	39.95	28.56
Bank Street Speller.....	69.95	50.76
Bank Street Writer.....	69.95	50.76
Dinosaur Dig.....	49.95	35.96
Financial Cookbook.....	50.00	35.96
Master Type.....	49.95	35.96
Operation Frog.....	39.95	28.56
Peanuts Maze Marathon.....	39.95	28.56
Robot Odyssey.....	49.95	35.96
Rocky's Boots.....	49.95	35.96
SAT (Krell - Gold).....	299.95	249.96
States & Traits.....	44.95	32.26
Terrapin Logo.....	99.95	71.96
The Print Shop.....	49.95	35.96
Tranquility Base.....	29.95	21.66

UTILITIES

Ess. Data Dup (EDD).....	79.95	58.16
Gibson Light Pen.....	249.95	194.96
Koala Pad.....	124.95	90.46
Locksmith 5.0.....	99.95	77.96
Muppet Learning Keys.....	79.95	58.16
Think Tank (II + or IIe).....	150.00	108.96
Wildcard 2.....	139.95	110.19

MACINTOSH

D.B. Master.....	195.00	139.00
Dollars & Sense.....	149.95	108.00
Helix.....	395.00	285.00
Microsoft Word.....	195.00	139.00
Suspects.....	44.95	32.26

We Accept School Purchase Orders.

Apple & Macintosh are trademarks of Apple Computer, Inc.

C.O.D. • M.O. • Cert. Checks • School P.O.

• VISA • MasterCard • Checks Allow 2 Weeks

• N.Y.S. Res. Add Sales Tax • U.S. Orders

Under \$150. Add \$2.50 P & H • All Canadian,

U.S. Funds \$3.00 P & H • Foreign. Charges Only.

Min. P & H \$7.00

Source TCP 637, CompuServe 72135.1710



Box 525, Dept. J
East Setauket, N.Y. 11733
(516) 751-2535

Continued from p. 70.

```

220 B1 = 30: B2 = Y - 20
230 XDRAW 1 AT X,Y: XDRAW 2 AT V,W: XDRAW 7 AT B1,B2
240 IF FS > 0 THEN 270
250 HOME : VTAB 22: PRINT " PRESS PADDLE BUTTON TO SERVE B
      ALL"
260 FS = 1
270 IF DIR = 1 AND PEEK (- 16286) > 127 THEN HOME : GOTO
      300
280 IF DIR = 0 AND PEEK (- 16287) > 127 THEN HOME : GOTO
      300
290 GOTO 270
300 REM ****
301 REM * MOVEMENT *
302 REM * OF BALL *
303 REM ****
310 NBR = INT ( RND ( 1 ) * 175): IF RND ( 1 ) < .5 THEN NBR =
      - NBR
320 IF SB > 1 THEN 360
330 IF DIR = 1 AND B2 = 60 OR DIR = 0 AND B2 = 100 THEN IF
      NBR < - SP OR NBR > - SQ GOTO 310
340 IF DIR = 1 AND B2 = 100 OR DIR = 0 AND B2 = 60 THEN IF
      NBR < SQ OR NBR > SP GOTO 310
350 GOTO 390
360 IF DIR = 1 AND NBR < - (160 - W) OR DIR = 1 AND NBR >
      W - 20 THEN 310
370 IF DIR = 1 THEN 390
380 IF NBR > (160 - Y) OR NBR < - (Y - 20) THEN 310
390 INCR = NBR / ST
400 IF SB > 0 THEN HOME
410 FOR J = 1 TO ST
420 BX = B1: BY = B2: IF DIR = 1 THEN B1 = B1 - 200 / ST: B2 =
      B2 - INCR: GOTO 440
430 B1 = B1 + 200 / ST: B2 = B2 + INCR
440 GOSUB 700
450 IF J = INT ( ST * .7 ) AND SB < 2 THEN 1700
460 IF B2 < 0 THEN B2 = 0
470 IF B2 > 179 THEN B2 = 179
480 IF J = INT ( ST * .7 ) THEN FOR K = 1 TO 3: CLICK = PEEK
      (- 16336): NEXT K: IF B2 > 142 OR B2 < 38 THEN XDRAW
      7 AT BX, BY: XDRAW 7 AT B1, B2: GOTO 1000
490 IF J = INT ( ST * .5 ) AND RND ( 1 ) > .8 THEN INCR = IN
      CR / 4: GOTO 510
500 IF J = INT ( ST * .5 ) AND RND ( 1 ) < .2 THEN INCR = -
      INCR / 4
510 IF B2 < 0 THEN B2 = 0
520 IF B2 > 179 THEN B2 = 179
530 XDRAW 7 AT BX, BY: XDRAW 7 AT B1, B2
540 IF B1 = 120 AND RND ( 1 ) > .9 THEN 1000
550 IF DIR = 0 AND B1 < > 210 THEN 630
560 IF DIR = 1 AND B1 < > 30 THEN 630
570 FOR C = - 7 TO 4
580 IF DIR = 0 THEN 610
590 IF INT ( B2 ) = Y + C THEN 900
600 GOTO 620
610 IF INT ( B2 ) = W + C THEN 900
620 NEXT C
630 NEXT J: HOME : VTAB 22: PRINT "
      MISSED SHOT
      !": FOR L = 1 TO 30: CLICK = PEEK (- 16336): NEXT L:
      FOR L = 1 TO 200: NEXT L
640 XDRAW 1 AT X,Y: XDRAW 2 AT V,W: XDRAW 7 AT B1, B2
650 GOTO 1100
700 REM ****
701 REM * MOVEMENT *
702 REM * OF PLAYERS *
703 REM ****
710 Y1 = Y
720 IF PDL ( 0 ) < Y - 6 OR PDL ( 0 ) > Y + 6 THEN Y = PDL
      ( 0 ): GOTO 740
730 GOTO 770
740 IF Y < 20 THEN Y = 20
750 IF Y > 150 THEN Y = 150
760 XDRAW 1 AT X, Y1: XDRAW 1 AT X, Y
770 W1 = W
780 IF PDL ( 1 ) > W + 6 OR PDL ( 1 ) < W - 6 THEN W = PDL
      ( 1 ): GOTO 800
790 RETURN
800 IF W < 20 THEN W = 20
810 IF W > 150 THEN W = 150
820 XDRAW 2 AT V, W1: XDRAW 2 AT V, W: RETURN
900 REM ****
901 REM * BALL IS *
902 REM * RETURNED *
903 REM ****
910 HOME : SB = 2: VTAB 23: HTAB 13: PRINT " NICE RETURN !
920 XDRAW 7 AT B1, B2

```

Listing continued.



New From

APPLEWARE, INC.

Improved Programs • Lower Prices
Expanded Selection

One-Of-A-Kind Apple User's Group Disk Program Library Service

Featuring: 60 State-of-the Art packed disks (Up to 40 programs per disk)
not available from any other service, including, at no extra cost:

- Guaranteed fully operable
- Completely copyable & listable
- 3 kinds of documentation
- No duplications
- Toll free member hotline
- 5 year disk replacement guarantee
- Any single disk (30 or more programs) for \$19.95 each, less than 70¢ per program.

**BUY ONE-AT-A-TIME
or**

The entire disk library @ 50% off, for 15,000 + Program Files
Plus a FREE bonus of 40 blank disk sides, if ordered direct from this ad.

MEMBERSHIP-ADDITIONAL DISCOUNTS

Members are entitled to an additional 15% discount above and beyond other discounts. Simply send a one-time membership fee (WITH NO ANNUAL DUES!) of \$15 Domestic, \$28 Foreign, [INSTITUTIONS FREE]. Fees include perpetual up-dates, a monster catalog and eventual access to 15,000 + programs; guaranteed, tried, true, and tested.

All categories included, for any age group or skill level.

Recognized purchase orders gladly accepted

**Join 92,000 other Appleware enthusiasts
spanning 31 countries!**

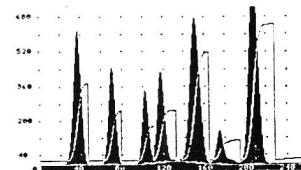
For orders only call now
1-800-327-8664

Program disks operable on Apple II, II+, IIe, IIc, III Emul., Clones, Franklin and IBM Quad Link.

Or write: Appleware, Inc.
6400 Hayes Street
Hollywood, FL 33024

Circle 12 on Reader Service card.

Scientific & Graphic Software For Your Apple* II Computer



VIDICHART II—Enhanced data acquisition, processing and display of spectra, chromatograms, rate curves, etc. Fast plots, scrolling and zoom scaling on 4 data sets. Includes analog, digital and timer I/O (using ADALAB), fast math package, integrate, differentiate, auto commands. \$100

VARICALC—Powerful equation solver for numerical modeling of complex physical, chemical and math processes. Solves for any variable in an equation with up to 19 variables, LOG, EXP and TRIG functions. Also evaluates 3 dependent equations and plots graphs. Interactively change variables via a joystick, arrow keys or loops. Supports IMI's ADALAB data acquisition card. \$100

QUICK-DRAFT—Design slides, diagrams, flowcharts, etc. Easily draw lines, arrows, arcs, ellipses, rectangles, polygons. Also features 19 text fonts, 22 colors, object macros, multi-screen scroll and print feature. \$50

QUICK-SHAPE—Create shape tables from any hi-res picture, edit enlarged images. Includes 18 shape tables for large text, different fonts, math, music and electronic symbols. \$25

Add \$2.50 shipping on all U.S. orders. VISA or MASTERCARD accepted.

CALL OR WRITE FOR FREE BROCHURE about these products and other IMI software and hardware for laboratories and businesses.

*Trademark of Apple Computer, Inc.

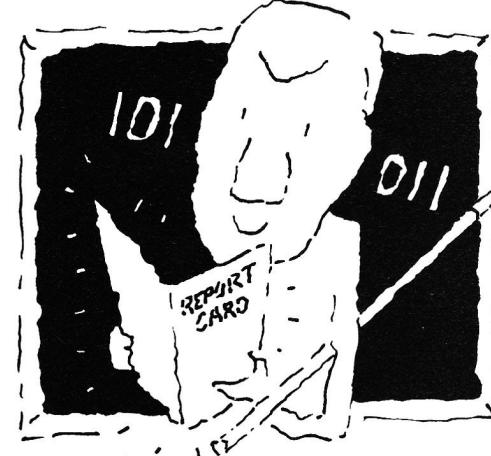


INTERACTIVE MICROWARE, INC.

P.O. Box 139, Dept. 52

State College, PA 16804

Phone: (814) 238-8294 • Telex: 705250



The Visible Computer. The machine language teacher that gets good grades.

Users and experts alike are giving The Visible Computer straight A's for making machine language understandable.

InCider magazine: "TVC is excellent". *Learning Computing*: "Best Educational Software of 1983." *Peelings* magazine: "AA rating... The explanations are truly excellent, being that rare combination: correct and intelligible." *Basic Programmer*, Rockford, Illinois: "Wow!"

With The Visible Computer's graphic 6502 simulator, thirty sample programs, and 160 page tutorial-style manual, you'll find that the only mystery about machine language is why no one ever taught it this way before.

Special Offer: For a limited time, get a free copy of the Assyst Editor/Assembler with the purchase of Visible Computer: 6502.

The Visible Computer: 6502 for Apple II Plus and IIe (includes Assyst Editor/Assembler) \$49.95. From your dealer or direct from Software Masters, 3330 Hillcroft, Suite BB, Houston, Texas 77057. (713) 266-5771.



The Visible Computer lets you see into a 6502 as it executes programs.

The Visible Computer: 6502
The Visible Computer: 6502
The Visible Computer: 6502

Software Masters

January 1985 inCider 105



25 Pack
Complete*

BEST BUY!

\$1.54

\$1.59

Single Sided
Double Density

\$2.94

\$1.89

Double Sided
Double Density

*Complete with hub reinforcing rings, Tyvek sleeves, color coded user labels, and write protect tabs.

Quality you expect at a price you don't.

Proven quality at a great price. BECK offers you a full satisfaction money-back guarantee - you can't lose! If you like the quality of 3M, Dysan, Verbatim, et al, you'll like BECK.

- Satisfaction, Money-Back Guarantee
- 100% Certified, 100% Error-Free
- Full 7-Year Warranty
- Tested and Retested 21 Times to 42 Rigid Specifications
- Meets or Exceeds ANSI Standards

For IBM, Apple, TRS, and 97% of popular computers.

Order Toll Free 1-800-232-5634.

Available in 25-Pack only plus freight.

Bulk product inquiries welcome.

COD's CASH ONLY
Corp. Accts Welcome
No personal checks accepted.



**Order Now Toll Free
Door to Door in 48 hrs.**

1-800-BECK-MFG

(In New Hampshire call 924-3821)

Listing continued.

```

930 DIR = DIR + 1: IF DIR > 1 THEN DIR = 0
940 IF DIR = 1 THEN 960
950 XDRAW 1 AT X,Y: XDRAW 3 AT X,Y: FOR L = 1 TO 20: NEXT
L: XDRAW 3 AT X,Y: XDRAW 5 AT X,Y: FOR L = 1 TO 5: CLIC
K = PEEK (- 16336): NEXT L: FOR L = 1 TO 20: NEXT L:
XDRAW 5 AT X,Y: XDRAW 1 AT X,Y: GOTO 970
960 XDRAW 2 AT V,W: XDRAW 4 AT V,W: FOR L = 1 TO 20: NEXT
L: XDRAW 4 AT V,W: XDRAW 6 AT V,W: FOR L = 1 TO 5: CLIC
K = PEEK (- 16336): NEXT L: FOR L = 1 TO 20: NEXT L:
XDRAW 6 AT V,W: XDRAW 2 AT V,W
970 XDRAW 7 AT B1,B2: GOTO 300
1000 REM ****
1001 REM * BALL HIT NET *
1002 REM ****
1010 IF CR = 0 THEN SB = SB + 1
1020 IF SB < 2 THEN 1040
1030 DIR = DIR + 1: IF DIR > 1 THEN DIR = 0
1040 FOR L = 1 TO 3: BX = B1: BY = B2: XDRAW 7 AT B1,B2: B2 =
B2 + 2
1050 CLICK = PEEK (- 16336): CLICK = PEEK (- 16336): XDRAW
7 AT B1,B2
1060 FOR M = 1 TO 150: NEXT M
1070 NEXT L
1080 XDRAW 1 AT X,Y: XDRAW 2 AT V,W: XDRAW 7 AT B1,B2: IF
SB < 2 THEN 180
1100 REM ****
1101 REM * CHANGE SCORE *
1102 REM ****
1110 XC$ = GC$ = BC$ = XS = GG: YG = BG: XS = GS: YS = BS: SC
= 0: IF DIR = 0 THEN 1130
1120 FOR L = 1 TO 5: W = W + 2: XDRAW 6 AT V,W: CLICK = PEEK
(- 16336): CLICK = PEEK (- 16336): FOR M = 1 TO 20: NEXT
M: XDRAW 6 AT V,W: NEXT L: W = W - 2: GOTO 1170
1130 FOR L = 1 TO 5: Y = Y + 2: XDRAW 5 AT X,Y: CLICK = PEEK
(- 16336): CLICK = PEEK (- 16336): FOR M = 1 TO 20: NEXT
M: XDRAW 5 AT X,Y: NEXT L: Y = Y - 2
1170 IF DIR = 1 THEN XC$ = BC$ = YC$ = GS = BG = GG = X
S = BS = YS = GS
1180 IF XC$ = "ADD" THEN 1260
1190 IF XC$ = "DEUCE" THEN XC$ = "ADD": YC$ = "40": GOTO
1300
1200 IF XC$ = "40" THEN 1240
1210 IF XC$ = "30" THEN XC$ = "40": GOTO 1300
1220 IF XC$ = "15" THEN XC$ = "30": GOTO 1300
1230 IF XC$ = "00" THEN XC$ = "15": GOTO 1300
1240 IF YC$ = "40" THEN XC$ = "ADD": GOTO 1300
1250 IF YC$ = "ADD" THEN XC$ = "DEUCE": YC$ = "DEUCE": GOTO
1300
1260 XG = XG + 1: PT = 1: IF XG > = 6 AND XG > YG + 1 THEN
XS = XS + 1: XG = 0: YG = 0
1270 XC$ = "00": BC$ = "00": YC$ = "00": GS = "00"
": IF SV = 1 THEN SV = 0: GOTO 1290
1280 SV = 1
1290 IF XS > 1 THEN FS = 3
1300 IF DIR = 1 THEN BC$ = XC$ = BG = XS = GS = YC$ = G
G = YG: GS = YS
1310 IF DIR = 0 THEN GS = XC$ = GG = XG = GS = XS = BC$ = YC$ = B
G = YG = BS = YS
1320 HOME : VTAB 21
1330 PRINT TAB(10); "SCORES GAMES SETS"
1340 PRINT "LEFT "; GS; " "; GG; " "; GS
1350 PRINT "RIGHT "; BC$; " "; BG; " "; BS
1360 IF FS = 3 THEN 1400
1370 DIR = SV: GOTO 150
1400 REM ****
1401 REM * MATCH OVER *
1402 REM ****
1410 VTAB 21: PRINT " ";: FLASH : PRINT "GAME
OVER";: NORMAL : PRINT " ";: REM 13SPACES I
N EACH
1420 GOSUB 1640
1440 FOR L = 1 TO 3: X = - 5: Y = 10
1450 FOR J = 8 TO 17: IF J = 13 THEN X = X + 20
1460 X = X + 20: XDRAW J AT X,Y: CLICK = PEEK (- 16336): CL
ICK = PEEK (- 16336): XDRAW J AT X,Y
1470 NEXT J
1480 NEXT L
1490 FOR M = 1 TO 1000: NEXT M
1500 HOME
1510 FOR J = 1 TO 18
1520 POKE 49232, 1
1530 FOR M = 1 TO J: CLICK = PEEK (- 16336): NEXT M
1540 POKE 49235, 1
1550 POKE 49239, 1
1560 POKE 49236, 1

```

Listing continued.

Circle 17 on Reader Service card.

THE WORLD'S LARGEST COMPUTER MAIL ORDER FIRM

CONROY-LA POINTESM

LOW PRICES TO PROFESSIONALS WHO KNOW WHAT THEY WANT AND KNOW HOW TO USE IT!

ALL MAIL: Conroy-LaPointe, Inc. 12060 SW Garden Place, Portland, OR 97223

All Rights Reserved

© 1984 by Conroy-LaPointe, Inc.

HARDWARE for your APPLE

COMPUTERS



APPLE IIc CALL
APPLE IIe, STARTER SYSTEM BY APPLE CALL
LIMITED WARRANTY—100% Parts & Labor for 90 days by us

DISK DRIVES

*CENTRAL PT, Fier, Utility & Apple DOS LIST OUR
\$ 20 \$ 15

CONCORDE

C1214 Dual Drives, 1/2 Height, flat pack
(like Apple Duodisk™) NEW \$ 589 \$ 425
C130 Controller (DOS & ProDOS) NEW \$ 89 \$ 65

μ-SCI * A2, 143K Disk Drive \$ 345 \$ 199
A2 Controller Card \$ 100 \$ 79

MICRO-SCI

TEAC TEAC, T40, Direct Drive, 163K \$ 349 \$ 239
Controller Card by ComX \$ 110 \$ 49
1/2 HIGH TEAC, T80, Double Sided, 326K \$ 449 \$ 329
TEC, Controller Card \$ 85 \$ 59

Rana Elite 1, 163K, 40 Track \$ 379 \$ 239
Elite 2, 326K, 80 Track \$ 649 \$ 389
Elite 3, 652K, 160 Track \$ 849 \$ 499
Elite Controller \$ 145 \$ 89

RAM EXPANSION

*ComX, 80 col. +64K RAM for Ile, 1 Yr. wty. \$ 199 \$ 89
* RAM Card, 1 Yr. Wty. (II+) \$ 179 \$ 39
* Microsoft, RAM Card (II+) \$ 16K \$ 100 \$ 69
* Titan / Saturn RAM Card (II+) \$ 32K \$ 249 \$ 139
RAM Card (II+) \$ 64K \$ 425 \$ 229
RAM Card (II+) \$ 128K \$ 599 \$ 329
Software Call

VIDEO CARDS

*ComX, 80 col. +64K RAM (IIe) 1 Yr. wty. \$ 199 \$ 89
* Videx, VideoTerm 80 col. (+ or e) \$ 279 \$ 175
* UltraTerm (+ or e) \$ 379 \$ 229
Soft Video Switch (II+) \$ 35 \$ 22
Enhancer II (II+) \$ 149 \$ 95
Function Strip (II+) \$ 39 \$ 25
Up to 35% off.

MISCELLANEOUS

ASTAR, RF Modulator, to TV \$ 35 \$ 25
**CCS, Serial Interface 7711 (Set BAUD) \$ 150 \$ 95
**CP5/Easitrade, Wild Card 2 (cooper, + or e) \$ 140 \$ 99
Chalkboard, Power Pad (Requires Kit) \$ 100 \$ 73
Digital Res., CP/M Gold Card (w/64K) \$ 495 \$ 359
* Expand 64K Gold Card to 192K \$ 325 \$ 239

DISKETTES

★ CONROY-LAPOINTE™ DISKETTES
We guarantee these top quality products with the Conroy-LaPointe name. 5 YEAR LIMITED WARRANTY.

10 ea, SS/SD, 35 Track (Apple, etc) \$ 14
100 ea, SS/SD, 35 Track (Apple, etc) \$ 120
1000 ea, SS/SD, 35 Track (Apple, etc) \$ 999
10 ea, DS/DD, 40 Track (IBM, H/P) \$ 17
100 ea, DS/DD, 40 Track (IBM, H/P) \$ 140
1000 ea, DS/DD, 40 Track (IBM, H/P) \$ 1190
CDC, 100 ea SS/SD, 40T (Apple, IBM) \$ 550 \$ 195
10 ea SS/SD, 40T (Apple, IBM) \$ 55 \$ 21
100 ea, DS/DD, 40T (IBM, H/P) \$ 750 \$ 295
10 ea DS/DD, 40T (IBM, H/P) \$ 75 \$ 32
DYSAN, 10 ea SS/SD (Apple, etc) \$ 40 \$ 27
10 ea DS/DD 48T (IBM/H/P/etc) \$ 69 \$ 35
MAXELL, 10 ea, SS/DD, 31/3" (MAC) NEW \$ 80 \$ 35
10 ea, DS/DD, 1024 (IBM/AT) NEW \$ 90 \$ 55
10 each, MD1, SS/DD \$ 55 \$ 15
10 each, MD2, DS/DD \$ 75 \$ 26
VERBATIM, 10 each, MD515-01, SS/DD \$ 49 \$ 27
10 each, MD34, DS/DD \$ 84 \$ 32

GENERIK™ DISKETTES

AS LOW AS \$1
W/Jackets,
no labels, top quality.

NO HASSLE
MONEY BACK
GUARANTEE
ON GENERIK'S

100 ea, SS/SD, 35 Track (Apple, Atar) \$ 415 \$ 85
250 ea, SS/SD, 35 Track (Apple, Atar) \$ 1038 \$ 229
1000 ea, SS/SD, 35 Track (Apple, Atar) \$ 4150 \$ 750

ORDERING INFORMATION AND TERMS:

you figures for Shipping, Insurance and Handling. SHH All items usually in stock. NO C.O.D. Cashiers checks, money orders, Fortune, 1000 checks and government checks—we immediately honor. Personal and other company checks—allow 20 days to clear. Prices reflect 3% cash discount, so add 3% to above

orders. Fortune, 1000 checks and government checks—we immediately honor. Personal and other company checks—allow 20 days to clear. Prices reflect 3% cash discount, so add 3% to above

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

orders for VISA, MasterCard or American Express. Add SHH

Solutions

to

inSidious inSolubles

page 76

Solution to Caught Off Base:

This program contains two interesting bugs which Wayne discovered in his programming class. Wayne tells us the first is a problem of computer hierarchy; since the first digit in any number has been raised to the "zero power," 1 must be subtracted from "X" raised to a power. The second problem is a matter of multiplying the beginning powers with the ending digits, and vice versa. Change line 100 to:

```
100 S=S+B^(X-1)*(VAL(MID$(  
    (N$,L-X+1,1)))
```

Solution to Disappearing DOS:

Although the PR# command can be used as shown in the program, you will run into problems when operating under DOS if you do not precede it with a control-D. Change lines 60 and 100 to:

```
60 PRINT D$;"PR#1"  
100 PRINT D$;"PR#0"
```

Another solution that works, but is not as good, is to insert an INPUT command after the PR#0. For example:

```
100 PR# 0: INPUT "PRESS ANY  
    KEY";I$
```

Correction

There is an error in the Screen Saver program on page 65 of "Capturing Big Games" in the November 1984 issue. Part of line 610 was cut off. Line 610 should read:

```
610 HOME : X = PEEK(Z) + PEEK  
    (Z) + PEEK(Z) + PEEK(Z)
```

Listing continued.

```
1570 IF J = 16 THEN 1600
1580 POKE 49233,1: POKE 49236,1
1590 NEXT J
1600 HOME : VTAB 21: HTAB 9: PRINT "R)ESTART OR Q)UIT":
    GET GOS
1610 IF GOS = "R" THEN 30
1620 IF GOS < > "Q" THEN 1600
1630 TEXT : HOME : END
1640 IF GS = 2 THEN VTAB 22: INVERSE : PRINT "WINNER!": NORMAL
    : VTAB 23: PRINT "LOSER": RETURN
1650 VTAB 23: INVERSE : PRINT "WINNER!": NORMAL : VTAB 22:
    PRINT "LOSER": RETURN
1700 REM ****
1701 REM * CHECK FAULTS *
1702 REM ****
1710 SB = SB + 1:CR = 1
1720 IF DIR = 1 THEN 1810
1730 IF PT / 2 = INT (PT / 2) AND B2 > 91 THEN 1780
1740 IF PT / 2 = INT (PT / 2) AND B2 < 39 THEN 1780
1745 IF PT / 2 < > INT (PT / 2) AND B2 < 89 OR PT / 2 <
    > INT (PT / 2) AND B2 > 141 GOTO 1780
1750 IF PT / 2 < > INT (PT / 2) AND B2 < 89 OR PT / 2 <
    > INT (PT / 2) AND B2 > 141 GOTO 1780
1760 GOTO 480
1780 HOME : VTAB 22: HTAB 16: FLASH : PRINT "FAULT!": NORMAL
    : PRINT CHR$(7)
1790 XDRAW 7 AT BX,BY: XDRAW 7 AT B1,B2: IF SB < 2 THEN 10
    40
1800 GOTO 1000
1810 IF PT / 2 = INT (PT / 2) AND B2 < 89 THEN 1780
1820 IF PT / 2 = INT (PT / 2) AND B2 > 141 THEN 1780
1830 IF PT / 2 < > INT (PT / 2) AND B2 > 91 OR PT / 2 <
    > INT (PT / 2) AND B2 < 39 THEN 1780
1840 GOTO 480
```

End of listing.

Listing 2. Machine-language coding for Match Point.

6000- 11 00 24 00 61 00 9C 00	6168- 96 92 92 18 18 18 18 18
6008- D6 00 0D 01 47 01 87 01	6170- 18 08 3C 38 38 36 0E 0E
6010- 8A 01 B4 01 DE 01 F3 01	6178- 75 24 96 92 1A 1E 0E 3E
6018- 10 02 2C 02 53 02 74 02	6180- 04 40 49 F1 2D 26 00 2E
6020- 8F 02 BB 02 37 36 36 2E	6188- 24 00 24 24 24 24 2C 36
6028- 07 40 18 18 3F 48 0E 08	6190- 36 36 36 26 50 4A 49 09
6030- CE 2D F5 0E 36 3D 18 18	6198- 24 24 24 24 3C 36 36 36
6038- 40 18 4F 1C 0C 3F 27 2D	61A0- 36 FE 03 40 18 40 18 05
6040- 1C 2C 24 2C F5 5A C4 33	61A8- 28 F8 DB 0E 0E DC 0E 0E
6048- F6 24 F4 26 40 29 9F F3	61B0- 2D 28 20 00 24 24 2C
6050- 76 04 40 18 71 8A 91 92	61B8- 28 28 2D 2D 0E 36 36 36
6058- 71 54 65 2D 0E 1E 3F 04	61C0- 36 3E 24 24 3C 38 3F
6060- 00 DB 05 28 75 1E 3F 4C	61C8- 3F 1E 36 36 36 26 40 18
6068- 49 2B 05 28 28 28 2D 0E	61D0- 40 18 69 49 19 9F 12 2D
6070- 36 C4 0B 3F 77 1E 2D	61D8- 3E 3F 2C 25 00 49 21
6078- 35 3F 37 1E 0E 04 80 69	61E0- 24 24 24 3C 3F 27 2D 2D
6080- 35 36 2E 07 80 DB 0B 1E	61E8- 2D 2D 35 3F 3F 36 36 36
6088- 04 40 18 40 18 40 18 49	61F0- 36 04 00 09 2D 2D 2D 25
6090- D9 2C 24 3C 37 35 37 1C	61F8- 3F 3F 3F 07 20 24 24 24
6098- 4C 09 26 00 24 37 36 3E	6200- 05 28 28 2D 2D 2D 3E 3F
60A0- 67 0D 40 18 70 36 3E 2E	6208- 3F 3F 3E 36 36 2E 04 00
60A8- 05 30 F5 0B 1E 0E 35 04	6210- 24 24 24 24 2C 36 36 2E
60B0- C0 DB 1E 0E 24 40 18	6218- 2D 2D 2D 25 24 24 37 36
60B8- 40 18 40 03 BC 24 2C F5	6220- 36 36 36 25 24 1F 3F 3F
60C0- 35 26 98 DB 03 30 0E 3E	6228- 3F 36 26 00 24 24 24 24
60C8- 2C B0 72 04 40 18 30 4C	6230- 2C 2D 2D 0E 0E B6 D2
60D0- 09 B6 FA 1B 00 00 49 09	6238- 03 38 3F 3F 27 2D 2D 2D
60D8- 40 03 D2 F5 3F 2E 35 3F	6240- 05 30 0C 1C E4 3F 3F 3F
60E0- 2E 2D B4 15 0E 3E 04 C0	6248- 36 B6 32 66 08 08 08 48
60E8- DB 1E 2D 26 40 18 40 18	6250- 04 20 00 40 03 24 24 64
60F0- 20 27 2C F5 35 04 40 03	6258- 0C 2D 2D 75 0E 36 36 F6
60F8- 3F 56 09 DC 1B 6E 49 01	6260- 1E 3F 3F 3F 20 24 24 2C
6100- 30 36 1E 1E 04 40 18 08	6268- 2C 2D 2D 2E 36 36 3E 3E
6108- 2C 3C 96 02 00 27 A4 31	6270- 3F 3F 24 00 2D 2D 2D 2D
6110- 0C 36 0E 0E 3F 3F 0C	6278- 25 3F 3F 24 24 24 2C 2D
6118- 2D F5 DA 42 1E 36 5F 04	6280- 25 3F 3F 3F 3F 37 2D 2D
6120- 40 49 15 15 2E 04 40 18	6288- 36 36 3E 3F 27 00 24
6128- 40 18 C0 DB 1C 24 2C 36	6290- 24 24 24 74 36 36 36 36
6130- 2E 24 74 E6 DB B6 4A 49	6298- 04 40 18 40 18 71 0E 0E
6138- 40 03 05 28 28 36 1E 1E	62A0- 0E 0E 0E 0E 24 24 24 24
6140- 27 9E DC 1B 77 04 00 49	62A8- 3C 36 36 3E 38 38 38 38
6148- 41 08 28 2D 1E FD 37 2D	62B0- 38 38 38 70 89 91 51 4A
6150- 3E 3F 2E 2D 2E DF 3B 04	62B8- 92 23 00 49 21 24 24 24
6158- 40 18 40 09 3C 24 2C 2D	62C0- 3C 3F 27 2D 2D 2D 2D 35
6160- 17 36 07 20 D7 84 49 31	62C8- 3F 3F 36 36 36 04 04 04

Back Up Your Software

	Our Price
E.D.D. III (Best Nibble Copier!)	49.00
CIA Files (Best Disk Utilities!)	49.00
Copy II Plus - Central Point	29.00
Locksmith 5.0 - Omega	49.00
Back-It-Up III - Sensible	47.00
Copy Master II 64K w/G. Dump	95.00
Copy Master II 124K w/G. Dump	109.00
Wildcard II - Central Point	29.00
Replay II - MicroAnalyst	80.00

Entertainment Our Price

	Our Price
ELECTRONIC ARTS	
Hard Hat Mack	25.00
Axion Assassin	25.00
The Last Gladiator	25.00
The Standing Stones	29.00
Pinball Construction Set	29.00
One-On-One	29.00
SkyFox	29.00
Amazon	29.00
Seven Cities of Gold	29.00
Murder on the Zinderneuf	29.00
OTHER HITS	
Flight Simulator II	37.00
Lode Runner	24.00
Choplifter	24.00
Spare Change	24.00
Beyond Castle Wolfenstein	24.00
Ultima III: Exodus	36.00
Ultima III	23.00
Night Mission Pinball	23.00
Zaxxon	23.00
Summer Games	23.00
Flak	26.00
The Quest	22.00
Transylvania	22.00
The Coveted Mirror	22.00
Expedition Amazon	22.00
Xyphus	22.00
Arcade Boot Camp	19.00
Wizardry	32.00
Knight of Diamonds	22.00
Legacy of Lylagymn	22.00
Crypt of Medea	22.00
Rescue Raiders	22.00
Wizprint	17.00
Zork I, II, or III	24.00
Deadline	30.00
Starcross	24.00
Suspended	30.00
Witness	30.00
Planefall	30.00
Enchanter	30.00
Sorcerer	30.00
Seastalker	24.00
Time Zone	62.00
Questron	33.00
Ringside Seat	26.00
Pro Tour Golf	26.00
Broadsides	26.00
Geopolitique 1990	26.00
EDD	26.00
North Atlantic '86	39.00
Bomb Alley	39.00
Germany 1985	39.00
Objective Kurk	26.00
50 Mission Crush	26.00
War in Russia	52.00
Cosmic Balance II	26.00
Millionaire	34.00
Tycoon	34.00
Baron	34.00
Fax	20.00
Miner 2049'er	25.00
The Heist	25.00
Odestra Chess 7.0	45.00
Ken Uston's Blackjack	46.00

Hobby

	Our Price
Fat Cat	23.00
Beagle Graphics	39.00
Triple Dump	26.00
Silicon Salad	16.00
Disk Quick	19.00
Beagle G.P.L.E.	33.00
Beagle Basic	23.00
Double Take	23.00
Pronto Dos	19.00
Typefaces	13.00
Frame Up	19.00
Flex Text	19.00
Apple Mechanic	19.00
Tip Disk	13.00
Alpha Plot	25.00
Dos Bos	16.00
Utility City	19.00
Bag of Tricks	26.00
Applesoft Compiler (Microsoft)	110.00
Einstein Compiler	89.00
Compiler Plus (Hayden)	42.00
Orca/M	65.00
Lisa V2.6	57.00
Lisa Educational System	95.00
Merlin Assembler	42.00
Merlin Pro	55.00
Merlin Combo Pack	74.00
Visible Computer 6502	32.00
The Graphics Magician	30.00
New Complete Graphics Sys.	50.00
Parc II	35.00
Take I	42.00
Zoom Graphics	33.00
Sideways	39.00
Fontrix	45.00
Font Pak 1, 2, 3, 4, 5	14.00
Photographer	25.00
Font Downloader	29.00
Paper Graphics	32.00
Cat-Graphics	22.00

Blank Media

	Our Price
Elephant SS/DD (10)	17.00
BASF SS/DD (10)	17.00
Fiji SS/DD (10)	17.00
Verbatim SS/DD (10)	19.95
Maxell SS/DD (10)	19.95
Maxell SS/DD (10)	20.20
3M SS/DD (10)	20.50
Generic SS/DD (100)	145.00

PROGRAMS Plus

429 Honeyspot Road • Stratford, Connecticut 06497

Corporate and School Purchase Orders Accepted

Mon.-Fri. 9-6; Sat. 10-6

ORDERS ONLY TOLL FREE 1-800-832-3201

Inquiries & Conn. residents call (203) 378-3662 or 378-8293

Up to 50% off retail**MACINTOSH COMPUTERS** Call**APPLE //c, //e COMPUTERS** Call**KNOW DRIVE 128K RAM w/Play-Back & Back-to-Back 375.00****Business**

Our Price

	Our Price
ADVANCED LOGIC SYSTEMS	
T-Maker	195.00
APPLE	
Apple Works	215.00
Apple Writer II //e, //c)	128.00
Quick File //e, //c)	79.00
Access //e, //c)	65.00
APPLIED SOFTWARE TECHNOLOGY	
Versaform	180.00
ARKTRONICS	
Jane (II+ or //e)	189.00
Jane (II)	119.00
ARTSCI	
Magic Office System	189.00
Magic Window II	95.00
MagiCalc	95.00
ASHTON TATE	
dBase II	289.00
Friday	199.00
BLUE BUSH	
Speed File	71.00
BPI SYSTEMS (II+ or //e)	249.00
CONTINENTAL SOFTWARE	
The Tax Advantage	43.00
F.C.M./FL	62.00
G/L, A/R, A/P, Payroll ea.	149.00
Home Cataloger	31.00
CREATIVE PERIPHERALS	
Time Trax	69.00

DECISION SUPPORT

Our Price

	Our Price
DOW JONES SOFTWARE	
The Market Analyzer	219.00
Market Manager	189.00
HAYDEN	
Pie Writer V2.2	95.00
HOWARDSTOFT	
Tax Preparer 1984	172.00
Real Estate Analyzer II	155.00
KENSINGTON MICROWARE	
Format II Enhanced	93.00
LIVING VIDEO/TEXT	
Think Tank II+ or //e	92.00
MICROLAB	
Data Factory 5.0	199.00
Payroll Manager	199.00
MICROPRO	
Worldstar	219.00
InfoStar	259.00
CalcStar	110.00
Wordstar w/Z-Card	269.00
MICROSOFT	
Multiplan	129.00
A.L.D.S.	79.00
PRACTICOR	
Practical II	45.00
QUARK	
Word Juggler Lexicheck //e	139.00
Catalyst //e	119.00
Terminus //e	72.00

SENSIBLE SOFTWARE

Our Price

	Our Price
The Sensible Speller	78.00
Bookends	78.00
Report Card	37.00
Graphics Department	79.00
Image Printer II	32.00
SIERRA ON-LINE	
The General Manager II	135.00
The Screenwriter //e	79.00
SILICON VALLEY	
The Word Handler II (II+ //e, //c)	49.00
The List Handler (II+ //e, //c)	49.00
The Handlers (II+ //e, //c)	105.00
SOFTWARE PUBLISHING	
PFS File	75.00
PFS: Graph	75.00
PFS: Report	75.00
PFS: Write //e, //c)	75.00
PFS: Access //e, //c)	45.00
STONWARE	
DB Master Version Four Plus	219.00
DB Master Utility 1 or 2	79.00
DB Master (Corvus)	319.00
SUNDEX	
Certified Personal Accountant	71.00
Certified Personal Investor	71.00
VISICORP	
FlashCalc II+ //e, //c	65.00
Advanced VisiCalc //e	255.00
Visischedule	98.00
Visitrend/Visiplot	65.00

Educational Software

Our Price

	Our Price
APPLE	
Apple Logo // (II, //e, //c)	85.00
CBS	
Mastering the SAT	95.00
Mastering the GRE	95.00
Success w/Math (ea.)	16.00
Goren's Bridge	50.00
Micro Speed Reading	79.00
CONTROL DATA CORP.	
Plato Series	Call
COUNTERPOINT	
Early Games	22.00
Make a Match	19.00
Piece of Cake	22.00
Fraction Factory	19.00
DAVIDSON & ASSOCIATES	
Speed Reader II	43.00
Word Attack!	31.00
Math Blaster	31.00
Spell-It	31.00
DESIGNWARE	
Spellicopter	25.00
Crypto-Cube	25.00
Math Maze	25.00
Spelakazam	25.00
EINSTEIN CORP.	
Einstein Memory Trainer	56.00

DLM

Our Price

	Our Price
PSAT Word Attack Skills	32.00
SAT Word Attack Skills	32.00
Spelling Bee w/Reading Primer	25.00
Spelling Bee Games	21.00
Compu-Read	18.00
Compu-Math: Arithmetic	32.00
Compu-Math: Fractions	32.00
Compu-Math: Decimals	32.00
Algebra 1, 2, 3, or 4	25.00
Algebra 5 or 6	32.00
Hands-on BASIC Programming	50.00
Computer SAT	49.00
LEARNING COMPANY	
Robot Odyssey I	31.00
Word Attack!	31.00
Bumble Bee	25.00
Bumble Plot	25.00
Gertrude's Puzzles	28.00
Gertrude's Secrets	28.00
Rocky's Boots	31.00
Word Spinner	22.00
Addition Magician	22.00
Reader Rabbit	25.00
MECA	
Basic Building Blocks	52.00
Basic Building Blocks ProDOS	52.00

MICROLAB

Our Price

	Our Price
English SAT	21.00
Math SAT	21.00
SCARBOROUGH SYSTEMS	
Pattern Maker	25.00
Phi Beta Filer	25.00
Run for the Money	31.00
SCHOLASTIC WIZWARE	
Fact and Fiction Tool Kit	25.00
Story Tree	25.00
Turtle Tracks	25.00
SPINNAKER	
Trains	25.00
Grandma's House	21.00
President's Choice	21.00
Kidwriter	21.00
Fraction Fever	28.00
Sniper Tropics 1 or 2	25.00
In Search of	25.00
Kindercomp	21.00
Alphabet Zoo	19.00
Hey Diddle Diddle	19.00
Facemaker	21.00
Delta Drawing	31.00
TERRAPIN	
Terrian Logo	82.00
XEROX	
Stickybear ABC	25.00
Stickybear Numbers	25.00
Stickybear Shapes	25.00
Stickybear Opposites	25.00
Stickybear Reading	25.00
Stickybear Math	25.00

For fast delivery send cashier's check, certified check or money order. Personal and company checks allow 3 weeks to clear. Shipping - Software (\$2.50 min.) C.O.D. add an additional \$1.75. Shipping - Hardware (please call). Alaska, Hawaii, Canada, PO, APO and FPO \$5.00 min. Foreign orders - \$15.00 min. and 15% of all orders over \$100. Mastercard & Visa (include card # and expiration date). Connecticut residents add 7.5% sales tax. We ship same day for most orders. PRICES SUBJECT TO CHANGE WITHOUT NOTICE. All returns must have a return authorization number. Call 203-378-3662 to obtain one before returning goods for replacement. NOT RESPONSIBLE FOR TYPOGRAPHICAL ERRORS.

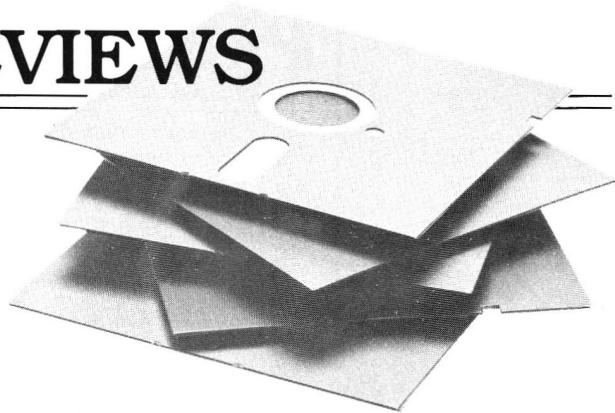
Advertisement prepared October 23, 1984

Printers

Our Price

	Our Price
APPLE	
ImageWriter	495.00
ImageWriter (Wide Carriage)	575.00
Scribe Printer	249.00
BROTHER	
HR-25	675.00
HR-35	935.00
DYNAX	
DX-15	399.00
EPSON	
RX-80	249.00
RX-80 F/T	308.00
FX-80	449.00
FX-100	645.00
LO-1500	1125.00
IDS	
Prism 80 (Basic)	1065.00
Prism 80 (Full)	1435.00
Prism 132 (Basic)	1225.00
Prism 132 (Full)	1655.00
P-480 Microprism	425.00
JUKI	
6100	425.00
OKIDATA	
Microline 82A	325.00
Microline 83A	565.00
Microline 92P	389.00
Microline 93P	619.00
Microline 84P	699.00
PANASONIC	
KPX-1090	299.00
KPX-1091	325.00
KPX-1092	469.00
PROWRITER (C. Ith)	
ProWriter 8510 AP	329.00
ProWriter 1550 AP	529.00
ProWriter 8510 SP	

SOFTWARE REVIEWS



inCider's Ratings

- ★★★★ Superlative
- ★★★ Above average
- ★★ Good
- ★ Not recommended
- Stay away

The Graphics Department

Sensible Software

24011 Seneca
Oak Park, MI 48237
Business Graphics
\$124.95

★★★

From Sensible Software, Inc. comes a graphics package to delight any public speaker in search of a visual prop. The Graphics Department is an integrated set of four modules designed to prepare graphics and illustrations for presentations. The modules include a Charting Kit, a Lettering Kit, Graphics Tools, and a Slide Projector. You may use the modules separately, but the best presentation results draw upon the qualities of each.

The Charting Kit produces three basic chart types: bar, line, and pie charts. Aesthetic refinements, such as stylized type fonts, subtle coloring, or decorative symbols are not included in the Charting Kit, but are available in other modules. These refinements add to those charts selected from a larger number of prototype graphics initially

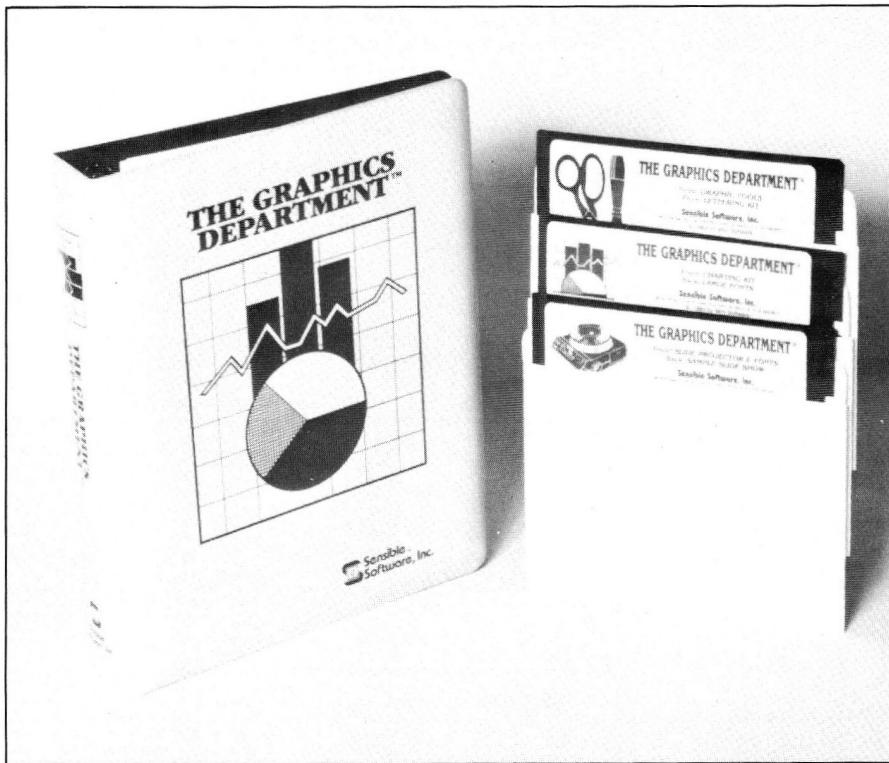
prepared using only the Charting Kit.

Prototype graphics provide you with a "quick look" at the data and an opportunity to examine alternative graphics formats or numerous sets of data using a consistent graphics format.

Bar and line charts produced with the Charting Kit module contain a maximum of 99 data points per topic. It is possible to display multiple topics as stacked bar or line charts. The X and Y axes may be labeled and scaled with a single line title included. The Charting Kit module computes and displays basic statistics including a mean, standard deviation, slope, Y-in-

tercept, R-squared, and regression line. An optional feature adds or deletes grid lines from a chart. Pie charts may contain up to 18 sectors.

The Charting Kit module offers five colors, but more than 100 colors are available in subsequent modules. Data is entered by keyboard with menu prompts or by using any two rows or columns from data interchange format (DIF) files, which are produced by VisiCalc or similar programs. Save data sets as text files and save pictures as Apple high-resolution DOS 3.3 binary files for subsequent retrieval or printing. The module prints pictures



Prepare graphics and illustrations with *The Graphics Department*.

with any commercial screen dump program that accepts such disks. A software interface allows Apple's Silentype dot-matrix printer to print pictures in black and white from the screen.

The Lettering Kit module creates lettering that may be placed either on charts produced by the other modules, or used in text displays. More than 30 type font styles, ranging from 70 to 20 characters per line, are provided and each may be magnified up to five times. Upper- and lowercase are available with nine levels of kerning (spacing between letters), eight colors, and five orientations (right, left, up, down, and columnar).

The Graphics Tools module adds graphics designs to an image produced by another module or creates a graphics design from scratch. The screen serves as a work space where variable-sized, rectangular windows are defined and their contents manipulated. Similar to Etch-a-Sketch, you can draw straight lines, circles, ellipses, and rectangles. Images from standard Apple shape tables also may be used. Forty such shapes are included.

A valuable feature of the Graphics Tools module is its ability to work with two pictures stored at different memory locations and to move graphics between them. For example, the Transfer command copies a windowed region from one picture and places it anywhere on the second picture. Similarly, two pictures may merge into a single picture or one picture may be reduced 25 percent and placed into a selected quadrant of the second picture.

Consult the Slide Projector module to create a slide show where a formatted slide disk stores up to 16 slides. You can include a maximum of 99 possible slide frames in a presentation of one or two slide disks with some slides shown more than once, if desired. The slide show presentation is controlled manually by keyboard or paddles, or automatically with timing predefined for each slide.

The Graphics Department is an attractive software package for presenting slide shows on an Apple computer. The features make maximum use of the Apple's graphics potential. The program allows high-resolution, binary picture files that are produced with other software (and stored as files on DOS 3.3 disks) to be used as input

for subsequent modification by The Graphics Department.

Unfortunately, the program does not offer provision for output to a higher resolution drawing device, such as a pen plotter. All cursor movement is controlled via the H, I, J, K, L, and M keys, but "speed" settings and X-Y coordinate indicators allow for precise addressing of individual pixels and rapid movement.

The Graphics Department requires 48K memory, Applesoft BASIC, and one disk drive. The software and graphics data are provided on three disks in a padded three-ring binder. ■

Allan H. Schmidt
Concord, MA

Sweet Shoppe

Eric Software Publishing

1713 Tulare
Fresno, CA 93721

Basic number skills
\$39.95



To the child learning basic number skills, the computer keyboard itself can be a formidable obstacle. The Sweet Shoppe, a new math package from Eric Software, makes input easier for the beginner by implementing only a joystick for answering program prompts—no hunting and pecking for numbers, no fumbling for the space bar and the return key.

Sweet Shoppe's single disk holds three early numbers programs: Jelly Bean (a counting/number recognition program), Ice Cream (a subtraction program), and Popcorn (an addition program).

Once the program is running, the child will find a jelly-bean character visiting a "sweet shoppe." Each shoppe window displays one of three treats: jelly beans, ice cream cones, or popcorn. Using the joystick, the child moves Mr. Jelly Bean to a window; selection is automatic as soon as Mr. Jelly Bean is close enough to the chosen window.

In Jelly Bean, five balloons, each surrounding a number, appear at the top of the screen. From screen left, Mr. Jelly Bean enters and knocks over a jar of jelly beans. The child uses the joystick to maneuver the character to the balloon whose number corre-

sponds with the amount of jelly beans spilled. And down he floats, balloon in tow. A correct choice fills the screen with smiling jelly bean faces, accompanied by a rewarding tune.

For addition problems, the child moves Mr. Jelly Bean to the popcorn window to add boxes of popcorn while a popping machine merrily pops away. Again, the child selects the correct answer by positioning Mr. Jelly Bean with the joystick. Correct responses result in three rewards: The selected box of popcorn tumbles from the top of the screen and falls into place next to the problem; the popcorn machine "pops out" the appropriate number of popcorn kernels, and the screen fills with "popping" happy faces.

Selecting the ice cream option displays subtraction problems. Possible answers are embedded in five ice cream bars. When Mr. Jelly Bean moves to the correct answer, not only is the bar slurped up, but an empty ice cream cone at the bottom of the screen fills with the corresponding number of ice cream scoops. As a final reward, an ice cream sundae is created before the next problem.

A child can operate all programs on disk without pressing a key, though to switch programs before completing ten problems he or she can hit the escape key at any point to return to the Sweet Shoppe menu. Because young computer users have a hard enough time finding the escape key, Eric Software provides a bright, red and white "ERIC" sticker that fits on the key. The company also includes a card with complete operating instructions and a "Message to Parents."

Eric Software understands the classroom environment. Wrong answers are not met with clangling bells or obnoxious buzzers, but with Mr. Jelly Bean dropping into position for another attempt. (All program sounds can be eliminated.)

Finally, my hat is off to any software company offering an "unlimited lifetime warranty. Even a disk clogged with peanut butter and jelly will be cheerfully replaced."

The Sweet Shoppe requires any Apple II with at least 48K and a joystick. A new version for the //c is equipped with a keyboard option. ■

Bill Rowland
Glen Ellyn, IL

OMNIS 2

Organizational Software Corp.

2655 Campus Drive

Suite 150

San Mateo, CA 94403

Data base

\$195

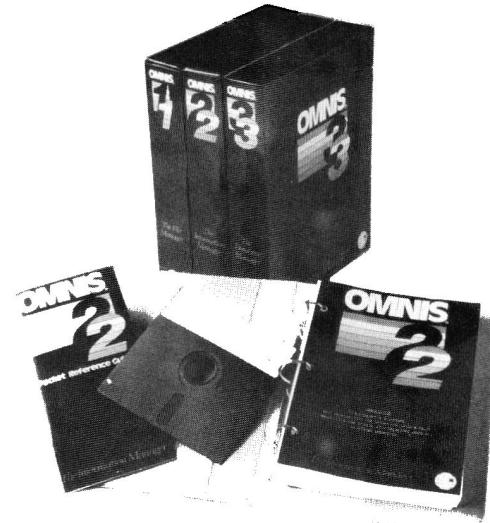
★★★

OMNIS 2, a complete, workable data manager, includes among its unique functions a text editor that lets you create form letters in much the same way as you create reports. You can pull names and addresses from customer files, then insert them into business correspondence, thank-you notes, and so forth, much more easily than is possible with most database programs.

OMNIS 2's indexed, 396-page manual thoroughly covers the program's operation. Unfortunately, the manual is generic: a paragraph outlining how to perform some function on your Apple //e will be followed by two others explaining the same thing for the II Plus and the Apple //. Every so often, you'll find a reference to the IBM PC or the DEC Rainbow—evidently to keep you on your toes. Hard disk instructions are intermingled with those for floppies. None of this really detracts from the manual's quality, though. A 106-page tutorial precedes another 113-page advanced tutorial, but you can probably learn to operate OMNIS 2 from the extensive chapter summaries alone.

OMNIS 2 allows up to 120 fields per record, with a maximum of 79 characters per field, and searches and sorts up to ten indexed fields. You can specify up to 50 selection criteria, and can implement the full power of an AND search (find this AND this AND that) and an OR search (select this OR this OR that). The system can update your data files globally. For records that require about 175 characters of information, OMNIS 2 allows roughly 400 records per data disk.

While more than one data disk can store the same basic file format and records, the program can't go from disk to disk to collect summary information; it considers each disk to be separate. Each file you create requires two disks to run the system—a data



OMNIS data managers share a common file structure.

disk (for your information) and a library disk (which stores the record format, report designs, and other format information).

To position fields, simply move the cursor and then enter the field information. OMNIS 2 provides some limited data-input checking, and can calculate between fields. You can also fill in sections of each form with your choice of characters. You can move a field or a group of fields from one spot to another on your screen, or even to another page of your record (12 pages maximum per record).

OMNIS 2, menu-driven for its major functions, provides a command line as you work within files. Press the ? key to display brief explanations of available commands. OMNIS 2 can combine fields and use a function similar to the BASIC MID\$ command to examine the interior details of words. Error explanations are displayed in English. OMNIS 2 provides up to four levels of password protection that you can structure to control user access.

You create reports as you would make a screen display—you're already familiar with the commands and format. Your reports can be up to 240 columns wide and 240 lines deep, with subtotals and page breaks exactly where you want them.

OMNIS 2's handling of field names is a bit weak. Let's say you want to keep a warranty record list, including a field called CUSTOMER ADDRESS. Since OMNIS 2, for its report designs and search patterns, can't work with

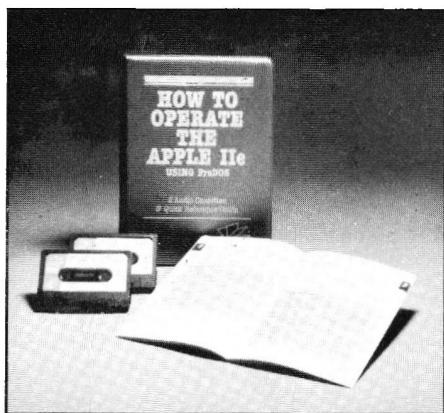
names longer than seven characters, or with two-word field names, you must assign a code name to each field. In this example, you can't use your field name (CUSTOMER ADDRESS) because it's too long and comprises two words, so you might code it as ADDRESS.

When you position the code name on your report design, OMNIS 2 converts it to a numeral representing its location on your report. What started as CUSTOMER NAME appears as a number—502, for instance. The program does this conversion automatically and keeps track of it all, but working with report formats that use code numbers in place of field names is difficult.

Because the system is written in Pascal, disk drive 1 is (sometimes, but not always) called drive 4; drive 2 is called drive 5; and if you have three drives, 3 is called 9. OMNIS 2 can convert information into data interchange format (DIF) files, but it's a two-step process.

None of these criticisms should discourage you from buying OMNIS 2. It's a powerful and functional program whose data is compatible with the other two programs in the OMNIS family. The manufacturer lets you upgrade for the difference in price between programs, plus a handling charge—a good deal. ■

Gregory R. Glau
Prescott, AZ



FlipTrack's complete instruction package for the new //e owner.

How to Operate the Apple //e

FlipTrack Learning Systems

999 Main Street
Glen Ellyn, IL 60137

Tutorial
\$57 DOS 3.3 version
\$39.95 ProDOS version

★ ★

Anyone suffering from computerphobia recognizes the tingling sensation that runs up the spine or the cold sweat that breaks out upon spotting that gem of modern technology, the computer. But FlipTrack Learning Systems has concocted a cure. *How to Operate the Apple //e*, by Howard Manthei and Lee McFadden, is an audio tutorial of three cassette tapes for the first-time computer user.

Instruction begins at square one. It assumes that you have no technical background or hands-on experience. The system lets you learn at your convenience without the embarrassment inflicted by condescending placating instructors or co-workers looking over your shoulder.

The course takes about six hours to complete (two hours for each cassette tape). Although computer familiarity isn't required, you do need a tape recorder, an Apple //e, Disk II drive, monitor or television set, and both the System Master 3.3 disk and the Sample Programs disk. Optional system components include a color monitor, second disk drive, printer, and 80-

column card. A blank practice disk would also be valuable.

If you have the optional hardware, fine, but if you don't, that's fine too. FlipTrack's branching format allows you to flip the tape at key points in the lesson for optional topics or reinforcement.

From turning the computer on to running a program, lesson 1 takes you by the hand and leads you through the basics. "Getting Acquainted" covers keyboard skills, error messages, and edit functions. The section touches on arithmetic operations, with an explanation of the symbols used (+ to add, - to subtract, * to multiply, / to divide, ^ to raise a power, and () to control order of operations).

Lesson 2, "Using Disk Storage," teaches you how to interpret a disk's catalog. The catalog tells you which programs are on the disk, whether they are locked or protected, the number of sectors of storage occupied, the language the program is written in, and if it's a data or text file. Initializing, or preparing, a disk is discussed, as are copying and saving programs from one disk to another. The tape's flip side streamlines these procedures for two disk drives.

After completing lesson 2, some procedures become second nature, such as pressing the return key after each command to tell the computer the instruction is complete, or running a program from a disk.

The third cassette continues the copying technique, but instead of copying one program at a time, your instructor has you duplicate disks with the Copy program on your System Master. You must follow the computer's prompts with this method to swap the original and duplicate disks through several cycles as each file is copied. To copy files without copying the entire disk, the lesson has you use the FID (or FILEM) program on the System Master disk. Merely follow the prompts for source slot and drive number, followed by destination slot and drive number, and your files are copied on the duplicate disk.

You'll wonder why you were afraid of the computer after you routinely use the List command to display a program listing—line by line, a line range, or a single line—and modify screen displays. By typing new line in-

structions, you can control the speed at which characters are displayed, cause an inverse display with dark characters on a light background, and flash characters on the screen.

You need the tape recorder at your side during the lessons. Pauses are recorded to give you time to type commands, so you're often starting and stopping the tape. It's a minor point, but it beats having your stereo system on one side of the living room and the computer on the other.

At the end of each lesson, a short quiz gives you the chance to test yourself and try procedures on your own. Answers are provided by the instructor, but you can rewind the tape to the section in question for further guidance.

The only problem involves listing new lines in lesson 3. The tape tells you to interrupt a listing by pressing control-C and then to type in the new lines. It works fine, but the instructor never tells you how to start the listing again to continue.

Unlike other recorded tutorials, the instructor's voice isn't irritating or syrupy, so it doesn't grate on your nerves. It keeps a good pace for listeners to follow directions. The instructor asks prompting questions to reinforce key points and even congratulates you upon mastering a new function.

There is no need to worry about jotting down notes to remember what does what. The Operator's Guide lists the important points, terms, and procedures of each lesson. FlipTrack options are covered in the manual, also. ■

Cynthia K. Carr
inCider staff

Xyphus

Penguin Software

P.O. Box 311
Geneva, IL 60134
Role-playing game
\$34.95

★ ★

Tough hardly comparable in sophistication to popular role-

NORTHEASTERN SOFTWARE

88 Ryders Lane, Stratford, Connecticut 06497

- Up to 50% off software purchases over \$300 an additional 2% off
- New larger facilities to serve you better
- School & corporate purchase orders accepted
- No additional charges for credit card orders

Entertainment

Sega Star Trek	20.00
Sega Buck Rogers	29.00
Sega Congo Bongo	29.00
Sorcerer	29.00
Suspended	29.00
Zork I, II, III	23.90
Witness	29.00
Deadline	29.00
Planetfall	29.00
Enchanter	29.00
Infidel	29.00
Sea Stalker	24.00
Ultima III	35.90
Lode Runner	23.90
Choplifter	23.90
Spare Change	23.90
Eagles	25.00
Objective Kurk	25.00
President Elect	25.00
Questron	34.90
Rails West	25.00
Queen of Hearts	22.90
Fortress	22.90
Pro Tour Golf	29.00
Ring Side Seat	29.00
Cosmic Balance II	25.00
Computer Baseball	25.00
Geopolitique 1990	25.00
Epidemic	22.90
North Atlantic 86	38.00
Germany 1985	36.00
War In Russia	57.00
Flight Simulator II	34.00
Night Mission Pinball	22.90
Wizardry I	31.90
Wizardry II (Night of Diamonds)	21.90
Wizardry III (Legacy of Llylgamyn)	25.00
Wizprint	17.00
Crypt of Media	21.90
Rescue Raiders	20.00
Cubit	25.00
Zaxxon	24.90
Pooyan	20.90
The Spy Strikes Back	17.90
The Quest	17.90
Mint Man	17.90
Bouncing Kamangas	17.90
Coveted Mirror	21.90
Xyphus	21.90
Transylvania	21.90
Frogger	22.90
Championship Boxing	19.00
BGS Quest for Tires	21.90
The Dark Crystal	25.00
Wizard of Id Touch Type	19.00
Fax	19.00
Summer Games	27.90
Stellar 7	23.90
Ken Uston's Blackjack	45.00
Caverns of Frietag	18.00
Castle Wolfenstein	19.00
Intellectual Decathlon	25.00
Millionaire	37.00
Spitfire Simulator	25.00
Air Sim III	26.90
Sargon II	21.90
Sargon III	31.90
Miner 2049er	24.40
Death in the Caribbean	21.90
The Heist	24.40
Critical Mass	26.90
How about a nice game of Chess	21.90
Computer Gin Rummy	22.90
Hard Hat Mack	24.90
The Last Gladiator	14.90
Pinball Const. Set	26.90
Music Con. Set	26.90
The Standing Stone	28.00
One-on-One	28.00
Archon	28.00
Skyfox	28.00
Seven Cities of Gold	28.00
Murder on the Zinderneuf	28.00
Sundog	31.90
Crossword Magic	33.90

Blank Media

Elephant SS/DD	16.00
Verbatim SS/DD	19.00
Maxell SS/DD	23.00
Memorex SS/DD	20.00
Wabash SS/DD	19.00
BASF SS/DD	17.00
Maxell (Mac 3 1/2")	39.00

Educational

APPLE Logo II	84.90
BARRONS Computer SAT	57.90
CBS	23.90
Mastering the SAT	96.90
Murder by the Dozen	21.90
DAVIDSON AND ASSOCIATES	44.00
Speed Reader II	44.00
Word Attack	31.50
Math Blaster	31.50
DESIGNWARE	25.90
Spellicopter	25.90
Crypto Cube	25.90
Creature Creator	25.90
DLM	25.90
Allen Addition	21.90
Median Multiplication	21.90
Demolition Division	21.90
Alligator Mix	21.90
Dragon Mix	21.90
EDU-WARE (PEACHTREE)	17.00
Compu-Read	17.00
Compu-Math	31.90
SAT Word Attack Skills	31.90
FSAT Word Attack Skills	31.90
Spelling B w/Reading Primer	24.90
Algebra 1 2 3 or 4	24.90
Algebra 5 & 6	31.90
Hands on Basic	49.90
Fractions	31.90
Decimals	31.90
HARCOURT BRACE JOVANOVICH	50.00
SAT	59.90
HAYDEN SOFTWARE	20.90
Micro Math (Add-Sub)	20.90
Micro Math (Multi-Div)	20.90
LEARNING COMPANY	21.90
ROCKY'S BOOTS	31.90
Number Stumper	25.90
Addition Magician	22.90
Reader Rabbit	25.90
Magic Spells	22.90
Juggie's Rainbow	18.90
Bumble Games	24.90
Bumble Plot	24.90
Gertrude's Puzzles	27.90
Gertrude's Secrets	27.90
MECA	49.90
Basic Building Blocks	49.90
The Running Program	49.90
MICROLAB English SAT	19.40
Math SAT	19.40
PROGRAM DESIGN	73.90
The New Step by Step	73.90
Step By Step II	73.90
Step By Step III	73.90
SCARBOROUGH SYSTEMS	25.00
Songwriter & Picturewriter	25.00
Phi Beta Philer	31.90
Master Type	25.90
STHOLASTIC WIZWARE	21.90
Fact & Fiction Tool Kit II	25.90
Microzine (1-6)	25.90
Story Tree	25.90
Turtle Tracks	25.90
SPINNAKER SOFTWARE	21.90
Fraction Fever	21.90
Trains	21.90
Facemaker	21.90
Sniper Tropics 1 & 2	27.90
Story Machine	21.90
Kindercamp	18.90
Delta Drawing	31.90
Kids on Keys	18.90
Alphabet Zoo	18.90
Hey Diddle Diddle	17.90
In Search of	25.90
Aerobics	27.90
Grandma's House	21.90
Kidwriter	21.90
SPRINGBOARD	19.90
Early Games For Young Children	19.90
Matchmaker	19.90
Piece of Cake	19.90
Fraction Factory	19.90
SUNBURST	31.90
The Factory	31.90
Teasers by Tobbs	31.90
TERRAPIN Logo	62.90
XEROX	24.90
Sticky Bear ABC	24.90
Sticky Bear Numbers	24.90
Sticky Bear Bop	24.90
Sticky Bear Opposites	24.90
Sticky Bear Shapes	24.90

Business

APPLE	Call
Appleworks	124.90
Apple Writer IIe	259.00
ARTSCI	94.90
Magic Calc	94.90
Magic Window II	94.90
ASHTON-TATE DB II	285.00
BPI	149.00
General Accounting	259.00
GL, AR, AP, PR or INVEA	253.00
CONTINENTAL	149.00
Home Accountant	47.90
Tax Advantage	44.90
FCM/FL	64.90
G/L, A/R, A/P	149.00
DICKENS DATA SYSTEMS	224.90
The Silver Plotter	52.90
DOW JONES SOFTWARE	224.90
The Market Analyzer	194.90
Market Manager	158.00
Real Estate Analyzer II	91.00
KENSINGTON	94.90
Format II Enhanced	94.90
LIVING VIDEO Think Tank II/Ile	91.00
MEGAHAUS	104.90
MegaFinder	44.90
MegaSpell	66.90
MegaWriter	66.90
MICROPRO	258.00
Wordstar	110.00
Wordstar W/Z Card	129.90
MICROSOFT Multiplan	129.90
MID WEST SOFTWARE	114.90
Write Away	91.90
PEACHTREE Peach Calc	114.90
PEACHTREE Peach Calc	91.90
LEXICHECK WORD	138.90
Juggler IIe Combo	138.90
SENSIBLE SOFTWARE	78.90
Sensible Speller	74.90
Bookends	41.90
Report Card	41.90
SIERRA ON-LINE	138.00
The General Manager II	44.90
Homework	79.00
SCREENWRITER IIe	44.90
SILICON VALLEY	104.90
The Handlers Package	46.90
List Handler	46.90
The Word Handler II	46.90
SOFTWARE PUBLISHING	218.00
PFS: Access	74.90
PFS: Write	74.90
PFS: File	74.90
PFS: Graph	74.90
PFS: Report	74.90
STONEWARE	218.00
DB Master Version 4 Plus	218.00
VISICORP	199.90
Advanced Visicalc IIe	163.90
Visicalc IIe 8.1	64.00
VisiText/Visiplot	64.00

Macintosh

PFS: File	75.00
PFS: Report	75.00
PFS: File/Report	120.00
Typing Tutor III	32.00
Millionaire	Call
Transylvania	20.00
Covert Mirror	20.00
The Quest	20.00
Main Street Filer	153.00
HELL	Call
Sargon III	31.00
McPic!	30.00
Click Art	29.00
Home Accountant	Call
Microsoft Multiplan	125.00
Microsoft Basic	90.00
Microsoft Chart	75.00
Microsoft Word	Call
Mac the Knife	Call
Zork I	24.00
Zork II & III	30.00
Filevision	125.00
1st Base	135.00
DaVinci (series)	ea2. 35.00
DB Master (Mac)	135.00
Microsoft Word	135.00
Mac the Knife	130.00
SC-100 Color	245.00
SC-200 RGB Color	455.00
STS-1 Stand	35.00
TAXAN	120.00
Green (Hi-Res)	135.00
Amber (Hi-Res)	135.00
TR 120 Green	Call
TR 120 Amber	Call
DTD 1300 RGB	Call
SAKATA	147.00
SC-100 Color	147.00
SC-200 RGB Color	147.00
STS-1 Stand	147.00
TAXAN	147.00
Green (Hi-Res)	147.00
Amber (Hi-Res)	147.00
TR 120 Green	Call
TR 120 Amber	Call
DTD 1300 RGB	Call
SAKATA	147.00
SC-100 Color	147.00
SC-200 RGB Color	147.00
STS-1 Stand	147.00
TAXAN	147.00
Green (Hi-Res)	147.00
Amber (Hi-Res)	147.00
TR 120 Green	Call
TR 120 Amber	Call
DTD 1300 RGB	Call
SAKATA	147.00
SC-100 Color	147.00
SC-200 RGB Color	147.00
STS-1 Stand	147.00
TAXAN	147.00
Green (Hi-Res)	147.00
Amber (Hi-Res)	147.00
TR 120 Green	Call
TR 120 Amber	Call
DTD 1300 RGB	Call
SAKATA	147.00
SC-100 Color	147.00
SC-200 RGB Color	147.00
STS-1 Stand	147.00
TAXAN	147.00
Green (Hi-Res)	147.00
Amber (Hi-Res)	147.00
TR 120 Green	Call
TR 120 Amber	Call
DTD 1300 RGB	Call
SAKATA	147.00
SC-100 Color	147.00
SC-200 RGB Color	147.00
STS-1 Stand	147.00
TAXAN	147.00
Green (Hi-Res)	147.00
Amber (Hi-Res)	147.00
TR 120 Green	Call
TR 120 Amber	Call
DTD 1300 RGB	Call
SAKATA	147.00
SC-100 Color	147.00
SC-200 RGB Color	147.00
STS-1 Stand	147.00
TAXAN	147.00
Green (Hi-Res)	147.00
Amber (Hi-Res)	147.00
TR 120 Green	Call
TR 120 Amber	Call
DTD 1300 RGB	Call
SAKATA	147.00
SC-100 Color	147.00
SC-200 RGB Color	147.00
STS-1 Stand	147.00
TAXAN	147.00
Green (Hi-Res)	147.00
Amber (Hi-Res)	147.00
TR 120 Green	Call
TR 120 Amber	Call
DTD 1300 RGB	Call
SAKATA	147.00
SC-100 Color	147.00
SC-200 RGB Color	147.00
STS-1 Stand	147.00
TAXAN	147.00
Green (Hi-Res)	147.00
Amber (Hi-Res)	147.00
TR 120 Green	Call
TR 120 Amber	Call
DTD 1300 RGB	Call
SAKATA	147.00
SC-100 Color	147.00
SC-200 RGB Color	147.00
STS-1 Stand	147.00
TAXAN	147.00
Green (Hi-Res)	147.00
Amber (Hi-Res)	147.00
TR 120 Green	Call
TR 120 Amber	Call
DTD 1300 RGB	Call
SAKATA	147.00
SC-100 Color	147.00
SC-200 RGB Color	147.00
STS-1 Stand	147.00
TAXAN	147.00
Green (Hi-Res)	147.00
Amber (Hi-Res)	147.00
TR 120 Green	Call
TR 120 Amber	Call
DTD 1300 RGB	Call
SAKATA	147.00
SC-100 Color	147.00
SC-200 RGB Color	147.00
STS-1 Stand	147.00
TAXAN	147.00
Green (Hi-Res)	147.00
Amber (Hi-Res)	147.00
TR 120 Green	Call
TR 120 Amber	Call
DTD 1300 RGB	Call
SAKATA	147.00
SC-100 Color	147.00
SC-200 RGB Color	147.00
STS-1 Stand	147.00
TAXAN	147.00
Green (Hi-Res)	147.00
Amber (Hi-Res)	147.00
TR 120 Green	Call
TR 120 Amber	Call
DTD 1300 RGB	Call
SAKATA	147.00
SC-100 Color	147.00
SC-200 RGB Color	147.00
STS-1 Stand	147.00
TAXAN	147.00
Green (Hi-Res)	147.00
Amber (Hi-Res)	147.00
TR 120 Green	Call
TR 120 Amber	Call
DTD 1300 RGB	Call
SAKATA	147.00
SC-100 Color	147.00
SC-200 RGB Color	147.00
STS-1 Stand	147.00
TAXAN	147.00
Green (Hi-Res)	147.00
Amber (Hi-Res)	147.00
TR 120 Green	Call
TR 120 Amber	Call
DTD 1300 RGB	Call
SAKATA	147.00
SC-100 Color	147.00
SC-200 RGB Color	147.00
STS-1 Stand	147.00
TAXAN	147.00
Green (Hi-Res)	147.00
Amber (Hi-Res)	147.00
TR 120 Green	Call
TR 120 Amber	Call
DTD 1300 RGB	Call
SAKATA	147.00
SC-100 Color	147.00
SC-200 RGB Color	147.00
STS-1 Stand	147.00

playing adventures like Wizardry and Ultima, Xyphus combines a logical plot and balanced challenge that should entertain the novice role-player.

Penguin's new game pits you against the demon lord Xyphus who, confined beneath Arroya, keeps your people from inhabiting the land. Up to four characters (elves, dwarfs, or humans) may embark on the quest to destroy Xyphus. Each possesses advantages and disadvantages: Elves, for example, are nimble yet tire quickly while wielding heavy weapons. While an elf makes a capable spellcaster, humans and dwarfs are best suited to combat. But such a limited selection of character races and professions lacks the thoroughness of other Apple fantasy games. Whereas Wizardry offers eight colorful professions, Xyphus offers only two of the most mundane.

After selecting your characters you begin the first of six scenarios. Each requires three to 12 hours of playing time, but you can save the game at any point. Your first objective is to locate an outpost where you can purchase armor, weapons, and up to 12 spells.

A secondary objective is to procure a xiphoid amulet—a necessity for your spellcaster's incantations. A map near the first outpost indicates an amulet hidden toward the northwest. Unfortunately, a pack of ferocious rodents called toothpaws guard the treasure. The toothpaws are but one of more than 50 types of monsters you can face in the game.

A hi-res aerial view shows your characters amid various terrains. Rivers appear in textured aqua, marshes in indigo, grassy areas in green, and mountains in a rocky pattern. These attractive graphics constitute one of the game's most appealing features.

To move a character, simply select a direction from the keys surrounding G on the keyboard. To attack, direct a character to the targeted terrain hexagon. Long marches become ungainly despite your ability to move characters as a unit by pressing the appropriate direction and control keys.

The game's plot proceeds through an almost programmatic series of encounters. Often you must defeat one monster to gain the means to fight

the next. The werefalcons in the first scenario, for example, protect an attack spell essential for surviving an encounter with a demon captain. Unpreparedness is tantamount to doom. Thus, the game steers players toward their goal.

Your exploration of Arroya consists mainly of whomping monsters and periodically visiting outposts to heal wounds and purchase improved weapons, armor, and spells with uncovered gold. The game appeals to "hack-and-slash" enthusiasts in this respect.

Nevertheless, Xyphus maintains a demanding challenge. After slaying each monster, characters enter higher experience levels and face stronger monsters. When three of my characters advanced from level zero to level one, I felt a genuine sense of accomplishment. ■

Steven E. Williams
Chester, NJ

FlashCalc

VisiCorp
2895 Zanker Road
San Jose, CA 95134

Spreadsheet
\$99

★ ★ ★

VisiCorp expects FlashCalc to replace VisiCalc as the standard in low-cost electronic spreadsheets. Its faster speed is one of its biggest advantages.

FlashCalc runs on any Apple II with at least 64K of memory and supports an 80-column card. If you have additional memory in your system, FlashCalc makes full use of it, up to 512K. Any changes you make to the program's default display and configuration settings can be stored on the program disk and loaded automatically.

ProDOS, Apple's new disk operating system, is responsible for much of the "Flash" in FlashCalc. ProDOS lets a program store and retrieve disk data faster than would be possible under DOS 3.3. The new DOS also enables you to use FlashCalc with Apple's Pro-File hard disk.

Designing and using a worksheet is fairly simple. If you've used VisiCalc, you'll soon be comfortable with FlashCalc. Most of the commands either duplicate or improve upon VisiCalc's.

The Replicate command is much more versatile under FlashCalc than with VisiCalc. For example, you can copy a large block of information from one part of the worksheet to another in a single step. VisiCalc allows only cells, or sections of a single row or column, to be copied. FlashCalc also permits variable column widths, a feature sorely lacking in VisiCalc.

Format commands are enhanced. In addition to right and left justification, FlashCalc lets you center entries or set them to a specific number of decimal places.

FlashCalc's Attribute command controls or limits the type of data contained in a cell. Use this command to enter only labels in certain cells, only values in others. A cell's attributes can protect it from changes, and can even make the entry invisible.

When loading or saving a file, FlashCalc displays a listing of current files on the data disk. You can select a file by typing its name or corresponding number. Files can be saved as a worksheet or in data interchange format (DIF), which allows information to be transferred to and from other programs. Since the program is based on ProDOS, data files are not directly compatible with DOS 3.3 files.

The program's manual is clearly written and informative, but the quality of its illustrations is poor, and its screen photos are totally unreadable. Along with the main manual, VisiCorp supplies two smaller booklets. Entitled "QuickStart" and "Getting Started," these guide you through set-up and provide a quick and effective tutorial.

To get an idea of how FlashCalc performs, I ran it against the latest version of VisiCalc in a few tests. I used them both on a two-drive Apple //e with 128K of RAM and an 80-column display.

VisiCalc allowed a slightly larger worksheet overall—64 columns by 137 rows, compared to FlashCalc's 64 columns by 130 rows. (It's unlikely that you'd need this large a spreadsheet in even the most exotic applications.)

SCRG PRODUCTS FOR THE APPLE COMPUTER

SWITCH-A-SLOT



\$179.50

The **SWITCH-A-SLOT** is an expansion chassis, which allows the user to plug in up to four peripheral cards at one time. One of these cards is selected for use, and only that card draws power.

This product is especially useful where the software requires the printer to be in a particular slot, and the user wishes to choose between two or more printers.

- Allows up to four peripheral cards to be plugged into one peripheral slot.
- User selects desired card by front panel rotary switch.
- Only selected card draws power.
- Plugs into any peripheral slot.
- Saves wear and tear on delicate connectors.
- 18" cable connects Switch-a-slot to computer.

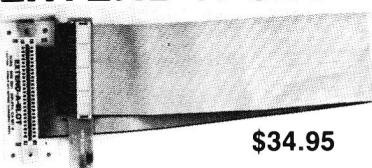
New—resistive terminations for better response



SWITCH-A-SLOT and **EXTEND-A-SLOT** work well with all slow to medium speed cards, such as **Modems**, **Printers**, **Clock**, **80 Column**, **Music**, etc. They are not recommended for high speed data transfer devices such as **disk drive controllers**, **alternate processor**, and **memory cards**. These products may be incompatible with some alternate processor cards.



EXTEND-A-SLOT



\$34.95

The **EXTEND-A-SLOT** brings a slot outside your **APPLE II**, allowing an easy change of cards. The 18" flex cable is long enough to allow placement of the card in a convenient location. The high quality connectors are gold plated for reliability.

The perfect accessory for:

Owners of large numbers of I/O expansion cards—keep your frequently used cards installed. Use the **EXTEND-A-SLOT** for the others.

Technicians—easy access to test points on accessory cards under actual operating conditions.

Experimenters—make easy changes to cards while card is installed.

EASY TO USE—just plug it in as you would any expansion card, then plug your card in. When you want to change cards, do it easily outside the computer, without the wear and tear on the computer expansion slot.

OTHER PRODUCTS

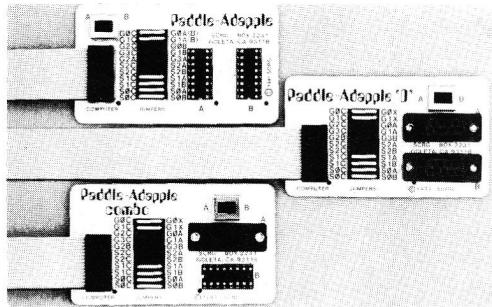
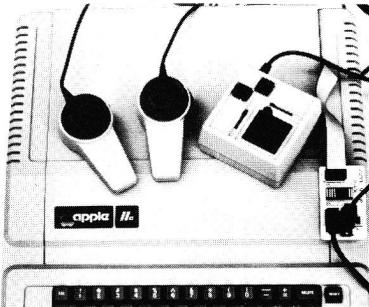
D Manual controller. Gives complete control over the \$2000 through \$COFF range in hardware. Can be switched while program is running. \$89.50.

MAGIC KEYBOARD (for **II** or **II+** only). Re-encodes the keyboard to give alternate keyboards, such as DVORAK, ASK, 10-KEY, HEXIDEIMAL KEYPAD, etc. \$49.50.

Available at your local dealer or direct from:
So. Calif Research Group
P.O. Box 2231-R
Goleta, CA 93118
(805) 685-1931
TELEX 658340 ATTN: SCRG
Answer Back INTERTEL SNC
VISA, MASTERCARD accepted

Paddle-Adapple

GAME I/O ADAPTER AND EXTENDER



The **Paddle-Adapple** has two 16 pin sockets. The **Paddle-Adapple "D"** works with the subminiature D connectors.

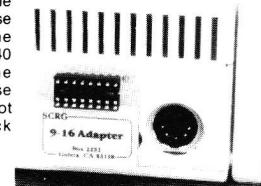
The **Paddle-Adapple Combo** has one 16 pin socket and one subminiature D connector.

NEW 9-16 Adapter

For Apple **IIe** and **IIc**

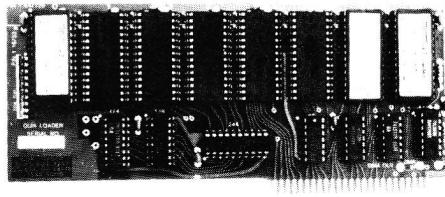
This product permits the use of most 16-pin I/O devices with the **APPLE IIc** or **IIe**. By plugging this adapter into the sub-miniature D connector, you can plug in a 16-pin device, such as the **Paddle-Adapple**, paddles, joystick, **KOALA PAD**, etc. The only limitations are those devices that use the annunciators or the C040 strobe, such as the **POWER PAD**. Please note that the **IIc** does not support four joystick inputs.

\$29.95



\$14.95

quikLoader™



FAST AND CONVENIENT

The quikLoader is the **fastest** way to load programs. **BAR NONE!** Programs can be loaded in fractions of a second. More importantly, DOS is instantly loaded every time the computer is turned on. Integer is even loaded in the language card. This process takes less than a second, saving valuable time. Frequently used programs are available **instantly** when you need them, without having to look for the disk or hoping that the lengthy disk loading procedure goes smoothly.

To run a program from the quikLoader, bring up the quikLoader catalog (Q-reset), and the names of the programs will be displayed, along with an index letter. Pressing the index letter will instantly load and run the program.

Up to 23 programs on the quikLoader can be displayed on the screen at one time. If you have more programs, you may scroll through the catalog in either direction.

The quikLoader is **ideal** for applications requiring a dedicated computer. Your program can be automatically loaded and run at "power-up".

PROGRAMMING EPROMS

Putting your own programs on the quikLoader is easily done, using a separate EPROM programmer such as the **PROmGRAMER**. For **APPLESOFT**, **INTEGER**, or single machine language files, no programming knowledge is necessary. You **will** need experience if you want to save copy-protected or complex programs. The amount of experience necessary depends on the complexity of the program.

COMMERCIAL PROGRAMS

If you have a program that is valuable, it will become **more** valuable when it is instantly available to you. We are actively seeking licenses from software publishers to allow their popular programs to be made available for the quikLoader. Independent authors are encouraged to write programs suitable for the quikLoader. If the author wishes, we will market the program (with appropriate royalties), or the author can take care of all marketing. In either case, we will make known to our customers the availability of these programs.

SIX MONTH WARRANTY TEN DAY RETURN PRIVILEGE TOLL-FREE ORDER LINES

in CA (800) 821-0774

(800) 635-8310

Add \$2.50 shipping, \$5.00 outside U.S.A.
all other states (including AK, HI, VI & PR)

Information & technical questions: (805) 685-1931

We start your library of programs with the most popular utilities on the card, **FID** and **COPYA**. Now, if you have to copy a disk, you don't have to search for the master disk. You can start copying within 3 seconds after turning on the computer.

We are currently licensed to sell several very popular programs on EPROM. **DOUBLE-TAKE** by BEAGLE BROS., and **COPY II PLUS** by CENTRAL POINT SOFTWARE. The introductory price for **DOUBLE-TAKE** is \$45.00. This includes the program exactly the same as you would buy it at your dealer for \$34.95 (including disk and documentation), and a programmed 27128 EPROM (worth about \$25.00). **COPY II PLUS** cost \$65.00. This includes the original program (worth \$39.95) and two programmed 27128's.

Other programs available directly from us or the publishers are, **BARKOVITCH I/O TRACER AND SINGLE STEP TRACE**, **MICRO/TYPOGRAPHER** from TIDBIT SOFTWARE, **ECHO** speech synthesizer software from STREET ELECTRONICS, and **MERLIN** assembler, from ROGER WAGNER PUBLISHING. More commercial programs are now in the works.

MEMORY CAPACITY

The quikLoader has eight sockets for EPROMs. These sockets can accommodate standard EPROMs from 2716 to 27512. These types can be freely intermixed. The memory capacity of the quikLoader depends on the EPROMs used. For example, the 2716 can hold 2K of programs, and the 27512 can hold 64K. (Frankly, the current costs of the 27512 is prohibitive, but should come down drastically in the next year.) At this writing, the least cost-per-bit is provided by the 2764, which can hold an 8K program. Using these "chips", the quikLoader becomes a 64K ROM. Using larger capacity EPROMs allows it to become a 128K, 256K, or even a 512K card. If more memory capacity is needed, the quikLoader operating system supports multiple quikLoaders.

INCREASED DISK CAPACITY

Since DOS is loaded from the quikLoader every time the computer is turned on, it is not necessary to take up valuable disk space with DOS. This will give you more than 5% additional space for programs and data on your disks.

ABOUT THE DESIGNER

The quikLoader was designed by Jim Sather, author of **UNDERSTANDING THE APPLE II** (forward by Steve Wozniak), published by **QUALITY SOFTWARE** (21601 Marilla Street, Chatsworth, CA 91311 (818) 709-1721).

SYSTEM REQUIREMENTS

The quikLoader plugs into any slot of the **APPLE II+** or **IIe**. If used in a **II+**, a slightly modified 16K memory card is required in slot O. A disk drive is required to save data.

DOS, **INTEGER**, **BASIC**, **FID**, and **COPYA** are copyrighted programs of **APPLE COMPUTER, INC.** licensed to Southern California Research Group to distribute for use only in combination with quikLoader.

\$179.50

PROmGRAMER™

The **PROmGRAMER** will read or program any of the standard single-volt EPROMs from the 2708 to the 27512. Features include:

- Slot independent operation for the **APPLE II** family of computers.
- Zero insertion force sockets accept 24 or 28 pin devices.
- Disk based software allows easy customization of software.
- Complete instructions for loading software into quikLoader.

\$149.50

SOFTWARE REVIEWS

For speed measurements, I set up a 50-row by 50-column spreadsheet containing a simple formula in each cell that adds one to the value in the previous cell. I then measured the time it took for the programs to recalculate all 2500 entries. FlashCalc was a bit faster, doing the task in 26 seconds; VisiCalc took 34.

Moving across 50 cells with the arrow keys gave VisiCalc a big edge. FlashCalc required 45 seconds to make the trip; VisiCalc took only 13. FlashCalc is painfully slow in scrolling through a worksheet. The programs moved the cursor with a direct GOTO command in the same amount of time.

Saving and reloading this large worksheet from disk gave a good indication of the effect ProDOS has on the system. Surprisingly, VisiCalc with DOS 3.3 saved the file in less time; one minute 14 seconds, versus one minute 32 seconds. FlashCalc was the clear winner in file-loading, however, bringing 2500 entries into the computer in two minutes 36 seconds as opposed to four minutes 18 seconds with VisiCalc.

Like many business programs, FlashCalc carries a 90-day warranty against disk failure. The manufacturer will send you a single back-up for \$10. After the warranty expires, a replacement disk will cost you \$50—half the price of an entire new package. ■

W. Charles Doherty
South Dartmouth, MA

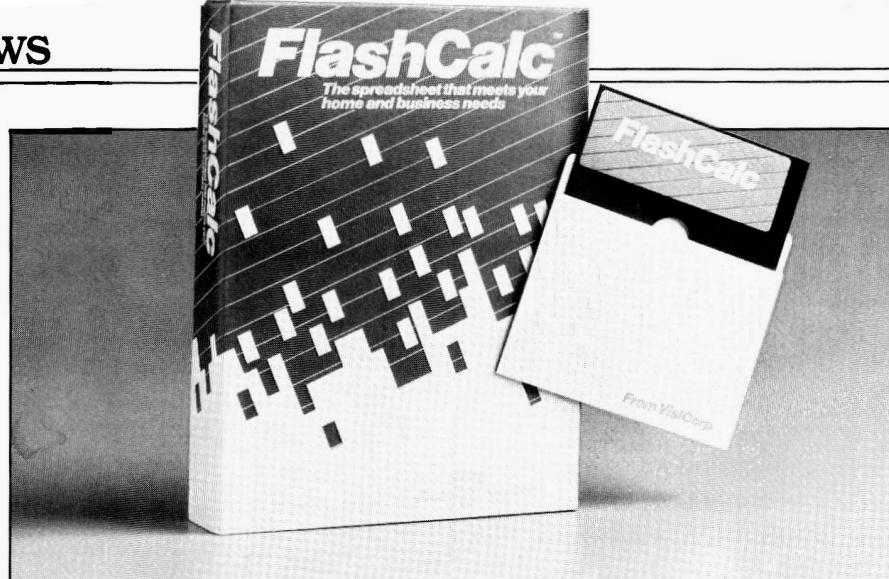
Story Maker

Scholastic Software
730 Broadway
New York, NY 10003
Graphics and data base
\$39.95

★★★

Story Maker is the electronic equivalent of a pad of paper, box of colored pencils, lettering kit, scissors, sheet of clip art, and pot of paste. The program, one of two in Scholastic Software's Fact and Fiction Tool Kit, is designed to make authors and artists out of children ages 8 and up.

The 32-page instruction manual



FlashCalc speeds spreadsheet forecasting.

and reference cards, one for the Apple //e, the other for the //c, make learning and using the program a snap, and it's even easier for those who've used a mouse. Although the program works with either a mouse or a joystick, the mouse is preferred.

After booting Story Maker, children can "make," "edit," "read," or "print" a story, or "do disk work." The last choice lets them list or erase stories on a data disk or initialize a fresh disk to save stories.

Creating a story is easy. The program provides about three-quarters of the screen, with the background in inverse color, as the work area. A row of icons in the bottom quarter represent available functions. Positioning the cursor on top of an icon and clicking the mouse or joystick button activates each function. Choose the typewriter icon to type text (eight stencil-like fonts are available), the picture gallery to select illustrations, the pencil to draw pictures, the eraser to rub out unwanted text and artwork, the book pages to store a finished page and start another, or the exit sign to return to the main menu.

To write, select the typing function and choose a font. Then position the cursor where the words are to appear, click the mouse or joystick button, and start typing. Typing functions are limited; this is not a word processor. Letters are lost if you type too quickly, and words don't wrap. The left-arrow key deletes letters only within the typing function. Be careful with the erase function; a few times, I erased a picture near the words I was trying to remove.

Go into the picture gallery (on a separate disk) to see what illustrations are available. To lift a picture from the gallery, position the cursor on it and click the mouse or joystick button. After you return to the work area, you can paste the picture onto the page in small or large size and flip it to face either left or right. Create new pictures with the program's drawing utility. The program provides a variety of colors and line widths.

Once you've created and saved a story, you can call it up onto the screen and read a page at a time or print it. Edit a story by clearing the entire page and starting fresh, or erasing the page and adding new things.

Fact and Fiction Tool Kit runs on the Apple //e with an extended 80-column card, or on the Apple //c. The ProDOS program requires a mouse or joystick. ■

Bruce S. Trachtenberg
Port Chester, NY

Pascal Utility Pack

Mach 2 Software
106 Fairfax Building
43rd and Locust Streets
Philadelphia, PA 19104
UCSD Pascal utilities
\$24.95

★★★

The Pascal Utility Pack (a two-sided disk and 40-page reference manual) includes a number of

library units for Apple Pascal that enhance the usefulness of the UCSD Pascal System as implemented on the Apple II or //e. Some of these units should interest anyone writing programs in Pascal, no matter what his or her level of expertise.

This set of utilities should be attractive to BASIC programmers who are reasonably comfortable with Applesoft and find that they miss certain features when they start working in Pascal. For instance, the Loresgraphics unit provides most of the low-resolution graphics commands found in Applesoft. (Apple Pascal provides only hi-res graphics in the turtle graphics unit.)

The PUP presents an impressive range of items for \$24.95, including four library units already compiled and ready to install in your System.Library, three Pascal system programs, and two unit demonstration programs. Text files for two assembly-language programs used by the library units are included for informational purposes. These text files are assembled and linked into the appropriate units, so you don't have to know anything about such processes to use the library units.

Two of the units make Pascal seem more like BASIC. Unit Loresgraphics includes the familiar GR, PLOT, HLIN, VLIN, SCRN procedures as well as the SETLOWCOLOR, TEXTWHOLE, and GRWHOLE procedures that parallel the Applesoft COLOR, TEXT, and POKE -16302.0 commands. The Videostuff unit includes PEEK, POKE, NORMAL, INVERSE, and FLASH (the latter three usable in only 40-column display), and also provides CURSX and CURSY, SYSTEMVERSION, and KEYTYPED utilities. (Having searched unsuccessfully to find the memory location for the X,Y coordinates of the cursor position in Pascal on the //e, I was impressed that Mach 2 could read them.)

With Pascal, the only way to get a 40-column display (and thus use INVERSE and FLASH) is to remove the 80-column card. Mach 2 solves this problem with Program NO80CARD that toggles System.Apple to either use or ignore the 80-column card.

The other two units make the Pascal Operating System more accessible to a programmer. One unit, Directory, does what it implies by listing a directory for

any Pascal disk from within a program without invoking the Filer, particularly useful when a program—a printer formatter, for example—requires that you enter file names.

The Mach2stuff unit provides a number of I/O utilities useful in interactive programs to: keep user responses within the bounds anticipated by the programmer (and thus avoid catastrophic disruption of the program); clear parts of the screen; check the presence, name, and status of disks in specified drives; change the system date; and use special characters such as controls A, Z, W, E, K, S, and F in ways not normally possible in Pascal.

Program Diskrunch and Program Diskdemo perform other Pascal System actions. The first mimics the Filer Krunch command. You can incorporate it within a program when there isn't enough contiguous space on a disk to save the graphics screen. Diskdemo includes a fast Transfer program that also duplicates a Filer function.

This is the only instance where I found an error in the programs and units. The Transfer program ends with the error message "Better luck next time"—even though the transfer has been completed successfully.

Documentation consists of a typewritten, stapled, 40-page softcover booklet. It is clearly printed (daisy wheel, not dot-matrix) and explains the units and programs quite well. Instructions help incorporate these units into your System.Library: this leads to a rather large library (61 blocks), but it is worth the space on disk.

The text files documentation is superb. At least 60 percent comments, the text files explain each step of the program. Mach 2 was wise to separate the unit instructions from the how-to explanations. Careful perusal of these text files could teach a beginner a great deal about programming in Pascal. The PUP package is worth its price for introducing the inner workings of the UCSD Pascal System through these comments. Best of all, everything is completely open and copyable so you can modify it to suit your needs. ■

James R. Florini
Syracuse, NY

Circle 318 on Reader Service card.

CALL OR WRITE TODAY!

Elephant Disks
SS/DD \$15.50
SS/DD 17.00
DS/DD 21.00
Bulk SS/DD
100+ct \$154.95

Verbatim
SS/DD \$19.00
DS/DD 23.00
Head Cleaning
Kit \$5.95

**CALL FOR MORE SOFTWARE
VALUES AND OUR NEW FREE
CATALOG, TOO!!**

		Business
Recreation/ Education		Think Tank \$105.00 Market Analyzer 235.00 PFS Access 49.00 PFS File 80.00 PFS Graph 80.00 PFS Proof 49.00 PFS Report 80.00 PFS Write 80.00 Solutions ea. 14.00 The Accountant 90.00 Multiplan 135.00 The Accountant 90.00 Incredible Jack 127.00 Sensible Speller 81.00 T K Solver 210.00 VisualCalc "E" 210.00 WordJuggler w/check 155.00 Tax Preparer 1984 175.00 Supercalc 130.00 Supercalc II 200.00 D B Master ver 4 205.00
		Utilities
		Copy II + \$22.00 Ess. Data. Dup. 49.00 Alpha Plot 25.00 Apple Mechanic 20.00 Beagle Bag 20.00 Beagle Basic 24.00 Beagle Graphics 35.00 Disc Quick 20.00 Dos Boss 16.00 Double Take 23.00 Fat Cat 23.00 Flex Type 20.00 Frame Up 20.00 G.P.L.E. 33.00 Pronto Dos 20.00 Silicon Salad 17.00 Tip Disc #1 14.00 Triple Dump 25.00 Type Faces 14.00 Utility City 20.00 ORC A/M 72.00 Side Ways 37.00 Zoom Graphit 36.00 Terrapin Logo 72.00 ASCII Pro 90.00 Lisa 2.6 58.00 Visible 6502 34.00
		Home
Hardware/Misc.		Home Accountant \$48.00 Homework 34.00 Bank Street Writer 46.00 Bank Street Spell 46.00 Dollars & Sense 69.00 Micro Cookbook 29.00 Practical II 49.00
		Graphics
		Fontrix 45.00 Fontpak 1-5 ea. 12.00 Graphics Magician 42.00 Pixit 40.00 Printshop 38.00 Complete Graphics 55.00

Personal checks allow 2 week's credit & MasterCard is add 3% for handling fee. Send order # B, name, date, U.S. A. 10% B/F, F.O.B. Inc. \$1.00 for shipping. UPS add \$1.00 add \$1.00 + \$3.00 for shipping. Printers & monitors add \$10.00 + \$5.00 for shipping. (thus res. to "U.S." sales tax). We accept purchase orders from qualified organizations. Prices subject to change without notice.

FAS-RACK
COMPUTER PRODUCTS

MasterCard 5360 N. High Street
Columbus, OH 43214
(614) 436-1124

OR TOLL-FREE OUTSIDE OHIO
1-800-272-1600


EASTCOAST SOFTWARE
ECS...inflation-fighting prices.
No hidden charges! No credit card fees!
APPLE

CAT #	LIST	SALE
0080 Adam & Eve Paddles	39.95	27.50
1298 Adventure Writer	70.00	53.85
0560 Algebra I	39.95	27.60
0723 Algebra V & VI (2-Disk)	49.95	34.50
1142 Alien Addition (Home)	34.00	23.55
0013 Alpha Plot	39.50	27.25
2598 Alphabet Zoo	29.95	20.70
0434 Apple Cat 2 Modem	319.00	244.95
0151 Apple Mechanic	29.50	20.35
0490 Apple Users Guide 2/E	17.95	14.50
1580 Applesoft Compiler Plus	59.95	41.50
0309 Applewriter 2 Pre-Boot	24.00	16.95
0536 Assembly Lines (Book)	19.95	15.35
2905 Axis Assassin	35.00	26.95
1446 Back to Basics Acct. 2E	195.00	123.75
0042 Bag of Tricks	39.95	27.65
0501 Bank Street Writer	69.95	48.35
1204 Bank St. Writer 2C/E-128K	69.95	48.35
0211 Barron's Computer Sat	89.95	62.30
0277 Battle for Normandy	39.95	27.65
0278 Beagle Bag	29.50	20.35
0126 Beagle Basic	34.95	24.20
1192 Beagle Graphics	59.95	41.50
0658 Beneath Apple DOS	19.95	13.85
1395 Beneath Apple Prodos	19.95	14.95
1136 Beyond Castle Wolfenstein	34.95	24.20
0111 Book of Apple Software '85	24.95	16.00
0096 Bookends	125.00	86.40
2599 Broadsides	39.95	27.70
1682 Buffered Grappler+ (16K)	239.00	178.00
0448 Bumble Games	39.95	27.65
2805 Business Accountant 2/E	255.00	196.15
0228 Castle Wolfenstein	29.95	20.70
0459 Cat Graphics	34.95	26.65
0734 CDEX How to Use Apple IIE	59.95	41.50
0733 CDEX Visicalc Training	59.95	41.50
1417 Charles Brown's ABC's	39.95	27.65
0386 Chess	69.95	48.35
2612 Chivalry	49.95	34.60
1432 Codewriter	200.00	141.05
0740 Compu-Math/Arith. Skills	49.95	34.50
0654 Compu-Read	29.95	20.70
0734 Compu-Spell System	29.95	20.70
0416 Compuserve Starter Kit	39.95	24.35
1138 Computer Sat (Harcourt)	79.95	62.85
1731 Copy 2 Plus	39.95	25.65
2910 Cut & Paste	50.00	38.50
1265 DB Master Version 4	350.00	242.35
0052 Deadline	49.95	34.50
0189 Decathlon	29.95	20.70
0630 Delta Drawing	39.95	27.65
1143 Demolition Division (Home)	34.00	23.55
1166 Disk Bank (50)	19.95	11.00
1722 Disk Boxes (5 Color Coded)	25.00	12.50
2886 Disk Drive Ext. Cable	19.75	16.70
2833 Disk Quik	29.50	20.45
1205 Dollars & Sense-2C	119.95	83.05
0409 Dollars & Sense	100.00	69.25
0216 DOS Boss	24.00	16.60
0983 Double Take	34.95	24.15
2600 Eagles	39.95	27.70
0360 Early Games Young Children	29.95	20.75
1384 Echo 2 Speech Synthesizer	149.95	125.60
0661 Elementary Apple	14.95	10.35
0092 Elephant Disks SS/DD (10)	20.55	18.20
1137 Elephant Disks SS/DD (10)	34.00	17.95
0107 Epson Mx-80 Ribbon	14.00	6.30
0029 Essential Data Duplicator	79.95	52.00
0314 EZ Port II	34.95	24.20

EASTCOAST SOFTWARE

49 Derrytown Mall

Hershey, PA 17033

MAIL YOUR ORDER OR CALL

(717) 533-8125

800-233-3237

We Ship UPS—Shipping 1% (\$2.50 min.)

C.O.D. Add An Additional \$2.50

Hardware (Printers/Monitors)

Shipping Is \$2.50 + 4% (U.P.S.)

For Air Mail, Canadian, APO/FPO Orders,

Shipping \$2.50 + 4% of Total Order (US Funds)

PA Residents Add 6% Tax

No Minimum Order

Visa-Mastercard-C.O.D.-Check

Prices Subject To Change

Sorry, No Foreign Orders

This Ad Prepared October, 1984

CAT #	LIST	SALE
1206 Sensible Speller-Pro DOS	25.00	86.50
0447 Sideways	60.00	40.00
0400 Silicon Salad	24.95	17.25
1340 Sky Fox	40.00	30.75
1373 Smartmodem 2C W/Smartcom I	399.00	265.60
1416 Smith Corona TPI Ribbon	7.95	6.35
0465 Snooper Troops I	44.95	31.15
0271 Software Automouth	124.95	86.35
0250 Spellagraph	39.95	27.65
1291 Spellcopter	39.95	27.65
0631 Spelling Bee Games	39.95	27.70
2906 Standing Stones	40.00	30.75
1277 Starwriter Film Ribbon	5.50	4.50
0435 Step-By-Step	99.95	69.20
1447 Step-By-Step II	99.95	69.20
0100 Sticky Bear A B C	39.95	27.65
0099 Sticky Bear Numbers	39.95	27.65
0292 Story Machine	34.95	24.20
1326 Sundog	40.00	30.75
1374 Sup'r Mod — Universal	69.95	53.05
1445 Supertext Pro (40/80)	99.00	68.55
0524 Switch-A-Slot	179.50	161.10
0001 System Saver	89.95	69.20
1259 Taxan 12 in Amber Monitor	189.00	138.65
1258 Taxan 12 in Green Monitor	179.00	131.60
1528 Taxan Color Mtrn. W/Audio	399.00	305.50
0236 Terrapin Logo	99.95	69.20
0137 TG Game Paddles	39.95	27.65
0136 TG Joystick W/Toggle	59.95	41.50
1330 TG Joystick W/Toggle IIE	64.95	45.00
1730 The Accountant	99.00	64.10
2597 The Accountant — V Calc. Inf.	20.00	15.40
0844 Think Tank/E	150.00	103.85
2897 Thunderclock Plus	150.00	121.80
2899 Time Master II	129.00	107.50
0462 Tilt Disk #1	20.00	13.85
1193 Triple Dump	39.95	27.65
0544 Typefaces	20.00	13.85
0155 Typing Tutor 2	24.95	17.30
1237 Typing Tutor 3	49.95	34.60
2936 Ultima 3 (Exodus)	54.95	40.00
0559 Ultimate	379.00	284.30
0062 Utility City	29.50	20.35
2992 Verbatim DS/DD (10)	46.50	25.90
1721 Verbatim SS/DD Hardpack	35.00	23.35
0093 Verbatim SS/DD Softpack	34.00	18.00
0063 Versaform	389.00	263.00
0648 Videotex W/SS & Inverse	319.00	247.05
2900 Viewmaster 80 Column	169.00	140.80
2152 Visible Computer-6502	49.95	32.70
0422 Visicalc Pre-Boot	49.00	33.95
1480 Wico Analog Joystick	49.95	38.40
0145 Wizard & Princess	32.95	22.75
0144 Wizardry	49.95	34.60
1532 Wizprint	24.95	17.30
0284 Word Handlers Pkg.	169.95	117.65
1223 Word Juggler/C	189.90	157.50
0342 Word Juggler IIE W/Leixcheck	189.00	157.50
1336 Z Engine With CP/M 2.2	199.00	166.65
0249 Z-80 Plus Board	139.00	115.85
0521 Zaxxon	39.95	27.60
0296 Zork I	39.95	27.60
0141 Zork II	44.95	29.95
0379 Zork III	44.95	29.95

MACINTOSH

0656 Chart (MAC)	125.00	86.55
0523 Da Vinci — Building	49.95	34.60
1151 Dollars & Sense	149.95	103.80
1362 Financial Cookbook	50.00	38.50
1082 Graphics Magician	49.95	34.60
1388 Hababex	199.00	134.70
1099 Helix	395.00	273.45
1083 Home Accountant	99.95	64.10
1357 Mac Tool	39.95	25.65
1207 Main Street Filer	249.95	173.05
1322 Megaflier	195.00	132.00
2787 Memorex 3.5-In Disks (10)	60.00	44.40
0627 Microsoft Basic (MAC)	150.00	103.85
0655 Multiplan (MAC)	195.00	135.00
0076 Murder by the Dozen	34.95	24.20
1078 PTS File	125.00	85.95
1077 PTS Report	125.00	85.95
1363 Pinball Construction Set	40.00	30.75
0869 Sales Edge	250.00	166.70
1244 Sargon III	49.95	34.60
1239 Typing Tutor 3	49.95	34.60

CHECK ONE: VISA MASTERCARD

Card # _____ Exp. _____

Telephone _____

Name _____

Address _____

City _____

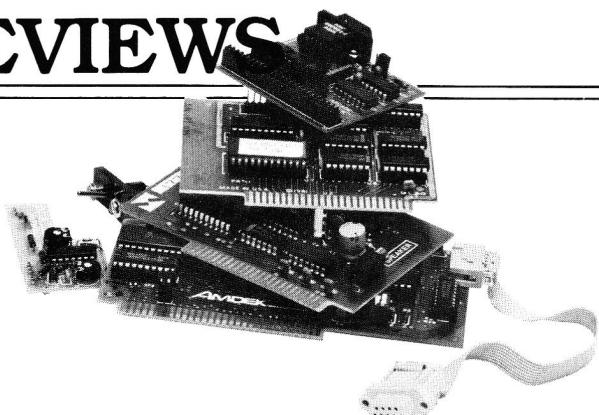
State _____ Zip _____

Please enter my order for: _____

Please specify machine: _____

 Please send free catalog.

HARDWARE REVIEWS



inCider's Ratings

- ★★★★★ Superlative
- ★★★★ Above average
- ★★ Good
- ★ Not recommended
- Stay away

Voice Box III

The Alien Group
27 West 23rd Street
New York, NY 10010
Speech synthesizer
\$129
★★

speaker connectors. Alien chose the new Votrax SC-02 speech chip for the Voice Box. This latest version promises to be more intelligible than other modules.

The board materials aren't of high quality, nor was the physical design thought out well: The bottom edge of the board is too large for the slot, making it a tight squeeze. The loudspeaker jack is positioned so the plug presses under the top lid of the computer, increasing the chance of an intermittent connection.

In a 4-inch-by-4-inch black metal case, the loudspeaker with a mesh grill on the front and a swivel bracket on the back is well suited for mounting under a shelf or on a wall. At the top of the case, a noise filter slide

switch activates a high-frequency filter to lower static. The loudspeaker is the same as those designed for mobile CB or amateur radios. You can connect the Voice Box to Apple's internal speaker, but speech fidelity and intelligibility suffer when you use this method.

Software includes the speech program and optional graphics routines that display a face whose lip movement is synchronized with the words spoken.

The main program requires only 5K of memory—much less than that used by other speech systems. This program, TEXTTOSPEECH, contains the data required to convert written English into the spoken word.

As children, we mastered the basics of the English language but never thought about the intricate speech techniques required to say something as simple as hello. Difficult as it may be, the procedure is even more complex for a machine. Although the text-to-speech program in Voice Box III is far from infallible, it is one of the most accurate routines I have heard with an Apple-based speech device.

Introduced by The Alien Group, Voice Box III produces clear, understandable speech, accepts input in English, and adds inflection automatically. Voice Box III consists of a small circuit board that plugs into the Apple's main bus, an enclosed, external loudspeaker, and a program disk.

The main board is remarkably small—approximately 2½ inches square, and houses the speech chip, volume control, and external loud-



Voice Box III's graphics mouth words along with the text.

HARDWARE REVIEWS

DANGER: LOOSE PICO NUTS

It's catching. You, too, will go nuts over briefcase-size computers.

These lap-sized "picocomputers" are the indispensable new tool you'll need to get ahead.

But which pico should you buy?

Read *PICO—The Briefcase Computer Report*, and you'll learn which pico is best for you: your word processing, your spreadsheets, your data bases. The best pico for your successful business management.

You need a picocomputer right now. Read *PICO*, and you'll learn which pico is your best investment.



To subscribe:

Call 1-800-227-1053

Or mail in this completed form to:

PICO

150 South Main St.

Woodridge NJ 07075

- Enter my subscription to *PICO—The Briefcase Computer Report*, 12 monthly issues for \$19.97.
- Send me a *PICO* Product Evaluation Kit so I can help evaluate pico products.
- Check enclosed Bill me 751134
- MC VISA AE

Exp. date _____

Card no. _____

Name _____

Address _____

City _____

State _____ ZIP _____

Putting data into the Voice Box is easy: In its simplest form, a word can be typed on the keyboard and then spoken. Since this system is limited, interface the Voice Box with your own programs for more effective speech. With BASIC, any phrase can be spoken by assigning it to the string variable SP\$, and then calling the speech program as a subroutine. No complex machine- or assembly-language routines are involved; just add two extra lines at the start of your BASIC programs to set memory limits and load the text-to-speech program. Instructions for assembly language users are included also.

Another routine allows you to load Apple text files from disk and read them aloud. I ran several files to hear how they sounded and the text-to-speech conversion software read text well. There's no doubt that the voice comes from a machine, though, so you must listen carefully to understand every word.

The text-to-speech program takes every word literally. If the number 1000 appeared in the text, Voice Box would pronounce each numeral—"one, zero, zero, zero"—rather than "one thousand." For correct pronunciation, you need to spell the number out. Certain words won't sound like they're supposed to because of phonetical construction that we take for granted. For example, you must change "control" to "controle" for the Voice Box to pronounce it correctly.

Voice Box's impressive automatic intonation system imitates human speech very well by changing the pitch and stress of words according to construction and punctuation. This way the voice follows a familiar, colloquial pattern; pitch drops at the end of sentences, rises for questions, and pauses at commas. The words also change according to context.

Two voices (male or female) are available, although both sound unmistakably electronic. The voice speed can be changed and intonation can be added.

Alien's documentation is atrocious; the print quality is so poor on the six-page, photocopied flyer that it is difficult to read and to follow. Future ver-

sions should include a better manual.

The \$129 Voice Box is a clever device for any programmer or hobbyist. Its modest memory requirements make it usable in almost any application, and the low cost keeps Voice Box within a tinkerer's budget. ■

W. Charles Doherty
South Dartmouth, MA

Epson JX-80

Epson America
3415 Kashiwa Street
Torrance, CA 90505
Color dot-matrix printer
\$800

★★★

A fast, sophisticated dot-matrix printer with seven bold colors, the JX-80 is a quality machine designed to spark up your reports, advertising, billing, and spreadsheets.

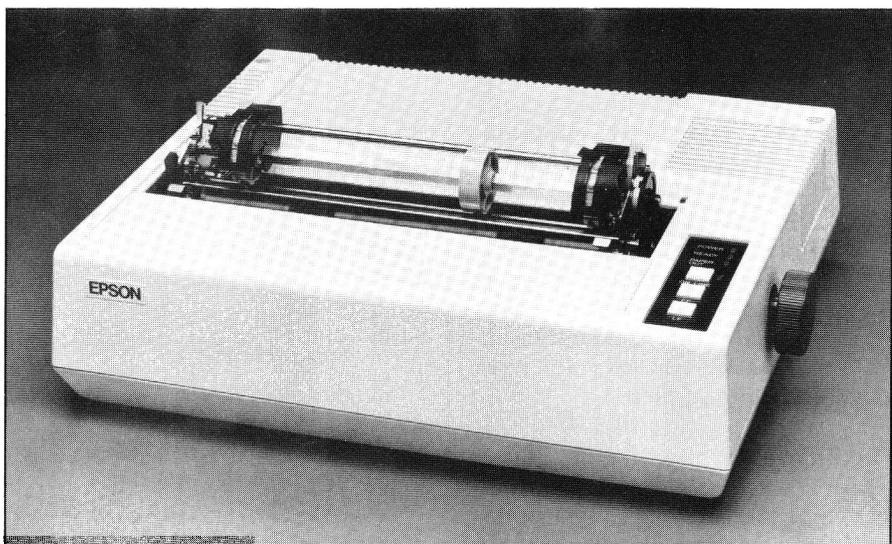
The JX-80 isn't a machine for beginners whose needs run to term-paper texts and other general applications. Rather, you'd buy it for its programmable characters as well as its color printing.

The printer is easy to hook up to your system. It requires a Centronics-style cord and parallel interface card in your Apple. A serial model is also available.

Powerful Printing

At the heart of the JX-80 is a full-featured dot-matrix printer with a speed of 160 characters per second (cps) and sound level of 58 decibels. Your choice of friction or tractor feed handles paper widths up to 8½ inches. It prints 80 characters per line in normal type style, 137 characters per line in condensed print, and 40 characters per line in expanded print. Form-handling ability includes vertical and horizontal tabs, margins, variable line feed, and reverse feed.

Roman and elite fonts come in normal, condensed, and enlarged type sizes (see the **Figure**). Special uses can call on italic, underscore, subscripts, and superscripts. Print den-



The Epson JX-80 seven-color printer.

sity varies from normal to emphasized to double-strike. Proportional spacing lends a professional typeset look to documents.

A control-codes system regulates these features. The JX-80 uses the same codes as the rest of the Epson family. However, by pressing the form feed button before printing data you can control these options. For condensed print, just tap the button before printing.

The character set has 96 letters, numbers, and other symbols, using true descenders for letters like y and g. Eleven international character sets differ slightly, but include accent marks, diphthongs, and currency symbols. The graphics mode controls individual dots and supports screen-dump programs.

DIP switches, located under a top-mounted panel, are described in the manual and easily set. One switch enables a 2K buffer so the computer

sends data to the printer buffer and then returns for more work. This lets you prepare the next document while the printer finishes the first.

One JX-80 option defines up to 256 of your own characters. This time-consuming process involves drawing designs and counting dots and reminds me of Apple shape tables. But once you get the hang of it, you can include smiling faces, Apple's apples, or flying saucers anywhere in your document. Your customized characters replace regular characters. If you redefine < as an apple, each time you want the apple, just type <.

The Rainbow Connection

Other good dot-matrix printers offer these features, but the JX-80's color printing sets it apart from the lot. Like all Epson ribbons, the inked, cloth ribbon keeps recirculating until you replace it.

Colors are arranged in four hori-

Figure. Sample of some JX-80 type styles.

NORMAL	ABCLIM abcjly
EMPHASIZED	ABCLIM abcjly
PROPORTIONAL	ABCLIM abcjly
DOUBLE STRIKE	ABCLIM abcjly
 NORMAL	 ABCLIM abcjly
ELITE	ABCLIM abcjly
ITALIC	ABCLIM abcjly
CONDENSED	ABCLIM abcjly
ENLARGE	ABCLIM abcjly

FREE UPS SHIPPING NO HIDDEN CHARGES

Dot Matrix

BROTHER/DYNAX \$ 1039.88
C. ITOH CALL
Prowriter CALL
Prowriter-2 CALL
HotDot CALL
HotDot-2 CALL

EPSON RX/FX/LQ Series CALL
INFORUNNER 309.88
MEMOTECH DMX-80 259.88

OKIDATA Microline 92 419.88
Microline w/Imagewriter code (IIC, Mac) 499.88

Microline 93 CALL
Microline 84 769.88
NEC

Pinwriter (80 col) 699.88
Pinwriter (132 col) 959.88

TOSHIBA P-1351 CALL
P-1340 CALL

Letter-Quality

BROTHER/DYNAX HR/DX-15 \$ 399.88
HR-25 CALL
HR-35 939.88

C. ITOH A-10 CALL
F-10/40 CALL
F-10/55 1379.88

Diablo Series CALL
NEC 2010/2030 739.88
3510/3530 CALL

7710/7730 CALL
Tractor 359.88

QUME Sprint 11/40 1519.88
Sprint 11/55 1679.88

LetterPro 20 709.88
SILVER REED EXP-770 CALL
EXP-550 CALL

770/550 Tractor 129.88
EXP-500 389.88

EXP-400 329.88
500/400 Tractor 119.88

STAR MICRONICS PowerType CALL

Modems

HAYES Micromodem IIe \$ CALL
Smartmodem 300 CALL
Smartmodem 1200 CALL

NOVATION AppleCat 300 239.99
AppleCat 300 to 1200 259.88
Upgrade Kit 449.88

AppleCat 1200 449.88

Monitors

AMDEK 300G (gr) \$ 144.88
300A (am) 159.88

Color 300 269.88

NEC JB-1201G (gr) 159.88
JB-1205M (am) 159.88

ROLAND DG-121 144.88

Microfazer Print Buffers

Parallel-Parallel 8K 139.88

64K 184.88

Parallel-Serial 8K 149.88

64K 199.88

Serial-Parallel 8K 149.88

64K 199.88

Serial-Serial 8K 149.88

64K 199.88

TRACE SoundTrap (80) 129.88

SoundTrap (132) 189.88

Apple Peripherals

ALS CP/M+ (3.0) \$ 279.88
Smarterm II 139.88
Dispatcher 74.88

AMT MicroDrive (1/2 ht) 179.88
MA SYSTEMS Printer Card w/cable 79.88

MICROSOFT 16K RAMCard CALL
Softcard II (Z-80) CALL

Premium Softcard II (Z-80 & 64K card) 459.88
Softcard IIe (Z-80, 80 col & 64K card) 279.88

ORANGE MICRO Grappler+ 109.88
Buffer Board (Z-80) 114.88
Buffered Grappler+ CALL

INTERACTIVE STRUC. Pkasso-U 129.88
QUADRAM Quad e-Ram (Ile) 109.88

RANA SYSTEMS Elite-1 219.88

Elite-2 CALL
Elite-3 CALL

Drive Controller Card (ProDOS compatible) 84.88
TBL 16K RAMCard 69.88

Drive Controller 69.88
TITAN Accelerator II 419.88

Memory Cards 32K 154.88
64K 244.88

128K 349.88
Neptune Card CALL

VIDEX Enhancer II 109.88
PSIO 159.88

VideoTerm 199.88
VideoTerm with 40/80 col

SoftSwitch 219.88
SoftSwitch IIe 29.88

UltraTerm 244.88

Accessories

IDE Switch Boxes

Parallel, 2-way \$ 109.88

Serial, 2-way 109.88

Parallel, 4-way 159.88

Cross Switch 129.88

INLAND

Monitor Stand 39.88

Printer Stand (80) 39.88

Printer Stand (132) 49.88

INNOVATIVE CONCEPTS

Flip-N-File 50 29.88

KENSINGTON

System Saver CALL

QUADRAM

Microfazer Print Buffers

Parallel-Parallel 8K 139.88

64K 184.88

Parallel-Serial 8K 149.88

64K 199.88

Serial-Parallel 8K 149.88

64K 199.88

Serial-Serial 8K 149.88

64K 199.88

TECHNICAL INFORMATION/SALES

(603) 881-9855

TOLL-FREE ORDER DESK

(800) 343-0726

Hours: 9:00 to 5:30 EST, Mon-Fri

■ FREE UPS ground shipping on all orders over \$50 (under \$50 add \$2.50 handling)

■ MasterCard, VISA, American Express, Diners Club & Carte Blanche credit cards accepted

■ No surcharges on credit card orders

■ Credit cards are not charged until your order is shipped from our warehouse

■ CODs accepted up to \$1000 (add \$10 for COD handling). Payable with certified check, money order or cash

■ Allow 10 days for shipping from date of order

■ All personal checks held 30 days for clearance

■ Full manufacturer's warranty on all products sold

■ Sorry, no APO/FPO or foreign orders

HIGH TECHNOLOGY AT AFFORDABLE PRICES

THE BOTTOM LINE

■ Milford, NH 03055-0423 ■ Phone (603) 881-9855

January 1985 inCider 123

horizontal bands on the inch-wide ribbon, which the printer raises and lowers to the proper band of color. Black is along the top, followed by magenta, blue, and yellow. Secondary colors (violet, orange, and green) require two passes of the print head to layer the primary colors. Skillful overprinting of the basic four colors produces 80 shades of color. All this overprinting and ribbon moving drastically reduces printing speed. (The advertised 160 cps applies only to single-color printing.)

You can change color through control codes, just as you would change type style. Before sending data to be printed, send this line of BASIC to your printer:

```
PRINT CHR$(27): "r" : CHR$(N):
```

Escape, CHR\$(27), alerts the printer for special instructions. The color code is the letter *r*. (Apple II Plus owners, use CHR\$(114) instead.) CHR\$(N), where N is a number from zero to 6, delineates color.

The four-color ribbon is expensive (\$17), so use an Epson FX-80, black ribbon (\$14) for general word processing. Yellow, the lightest color, is rated at 800,000 characters. Black is rated at 1,400,000 characters. While the other colors are true and rich, yellow is illegible but it's the basis of stronger colors, like green and orange.

Color Your World

If your word processor lets you send control codes to the printer, you have easy access to the JX-80 colors. Just send the proper codes before and after passages for the words you want printed in color. Charts, graphs, and reports take on a more dramatic, professional look.

Since this hardware is ahead of available software, it will take a while for manufacturers to develop programs that will challenge the JX-80's capabilities.

You must wait for software authors to write color screen dumps to witness the printer's full potential. Then the JX-80 will handle business graphics, game screens, and drawings. Look for this in updated versions of Penguin's Paper Graphics (\$49.95), Koala's Graphics Exhibitor (\$39.95), and Roger Wagner Publishing's Printographer (\$39.95).

One way to control the JX-80 is through your own BASIC program. At the beginning of your program, define strings with all the control characters needed to shift colors (see the **Program listing**). Use one in a PRINT statement and the text comes out that color. The American Epson manual explains this well, but the examples are in MBASIC so you'll have to translate into Applesoft.

The Last Analysis

Epson's JX-80 is a powerful dot-matrix printer that offers type styles and sizes for just about any use. Experienced programmers will be pleased with its programmable characters, alternate character sets, and graphics abilities. The color produced by the JX-80 is bright and accurate. Controlling color is sophisticated, but no more so than controlling italics and underlining. ■

Kerry J. Lanz
inCider staff

McMill 68000

Stellation Two
P.O. Box 2342
Santa Barbara, CA 93120
Coprocessor board
\$229
\$299 with assembler

★ ★

Stellation II designed McMill for software developers, educators, and hobbyists who want to learn more about the 68000 series of 32-bit processors. This coprocessor board is based on a Motorola 68000-series microprocessor—the chip used in both the Macintosh and the Lisa.

Unlike other coprocessor systems, McMill isn't intended to enhance the Apple II's basic performance. (Its speed is limited by the timing of the Apple II's clock.) Nor does it let you run software written for other popular computers.

But at \$229 (without optional assembler software), McMill is much less expensive than any other 68000 development system, and, unlike the others, McMill requires no additional on-board memory.

Program listing. Color commands can be stored as strings at the beginning of an Applesoft BASIC program.

```
10 REM
11 REM Demo of color control
12 REM on Epson JX-80
13 REM
48 REM Define color controls
49 REM
50 B$ = CHR$(27) + CHR$(114) +
CHR$(0): REM Black
51 M$ = CHR$(27) + CHR$(114) +
CHR$(1): REM Magenta
52 C$ = CHR$(27) + CHR$(114) +
CHR$(2): REM Cyan or Blue
53 V$ = CHR$(27) + CHR$(114) +
CHR$(3): REM Violet
54 Y$ = CHR$(27) + CHR$(114) +
CHR$(4): REM Yellow
55 O$ = CHR$(27) + CHR$(114) +
CHR$(5): REM Orange
56 G$ = CHR$(27) + CHR$(114) +
CHR$(6): REM Green
98 REM
99 REM
100 PRINT CHR$(4)"PR#1"
199 REM
200 REM PUT YOUR PROGRAM HERE
201 REM
210 PRINT Y$;"THIS IS IN YELLOW,
Y$"
220 PRINT G$;"WITH G$ YOU GET GR
EEN"
230 PRINT V$;"V$ MAKES IT VIOLET
"
240 PRINT B$;"NOW TO BLACK WITH
B$"
250 REM
1000 PRINT CHR$(4)"PR#0"
1500 END
```

The device slides into any slot of the Apple's main bus. The processor itself is actually a 68008—completely software-compatible with the 68000, but equipped with an 8-bit external data bus instead of the normal 16. So the 68008 can work within an 8-bit system like the Apple while maintaining the 16- and 32-bit internal functions of the 68000. Code used on one will work on the other with no modification.

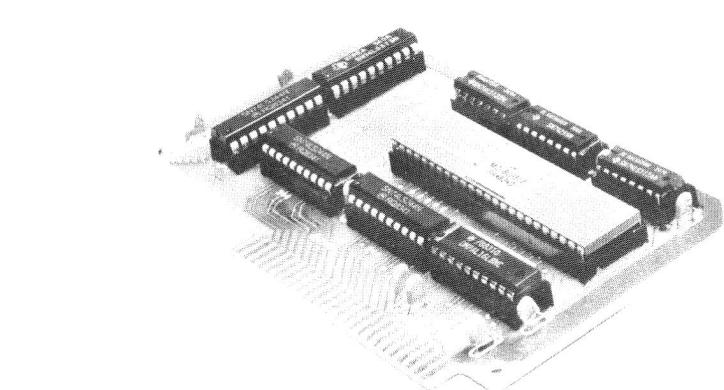
The package includes a disk of FIG Forth, a public-domain edition of that popular computer language. Stellation Two also supplies a copy of *Programming the M68000* by Tim King and Brian Knight, one of the most informative software reference manuals I have seen for any processor. Without being overly technical it presents the 68000 from the ground up.

You can purchase McMill with an editor-assembler from S-C Software. This \$299 combination makes using the system much easier. You could almost consider the Macro Assembler a necessity. It's very forgiving, and uses many BASIC-like commands such as

LOAD, SAVE, and LIST, rather than some obscure command structure. Unfortunately, the main part of S-C's manual is devoted to its 6502 version, with the 68000 edition treated as an afterthought. Although the Macro Assembler produces code for the 68000, it uses the Apple's 6502 to do so. Plans are in the works for a true 68000 assembler, one that generates 68000 code on the processor itself.

The sparse documentation for McMill consists of an eight-page photocopied booklet with an unreadable schematic diagram. (Stellation Two has plans for an improved version of the manual.) The package also includes a Motorola 68000 instruction reference card with print fine enough to make a lawyer envious.

With hardware from one manufacturer, software from another, and a reference book from a third, I found myself constantly going from manual to manual. For example, the assembler commands given in *Program-*



McMill 68000 brings 32 bits to your Apple II.

ming the M68000 are slightly different from those used by S-C Software and would result in an error unless you check the manual carefully.

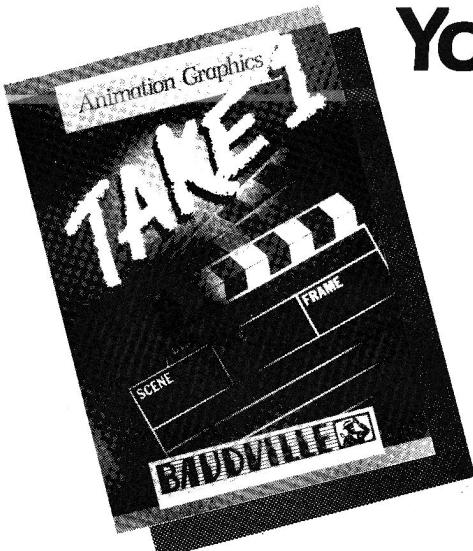
The product is not for the casual user. Before even considering McMill, you should be comfortable with machine- and assembly-language programming. If you are, and you need to work with or learn about 68000-related equipment, McMill offers an ex-

cellent, low-cost alternative to traditional development systems. ■

W. Charles Doherty
South Dartmouth, MA

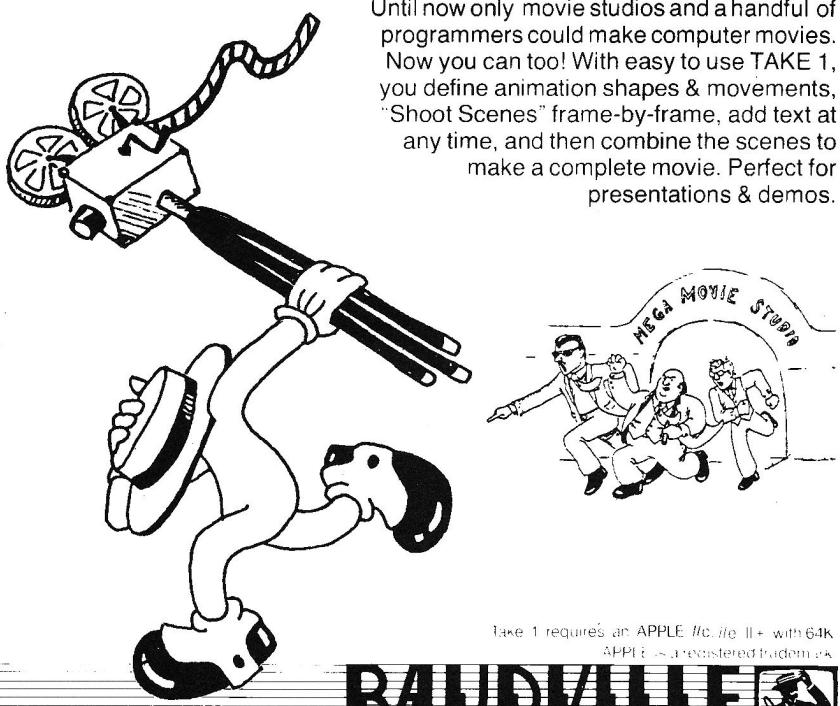
At press time, Stellation Two announced the McMill Plus for \$499. This adds expandable memory and debugger EPROM to the basic McMill. —eds.

Circle 159 on Reader Service card.



Yours For The Making!

Stunning animation that's fast, smooth, and flicker free!



See Your Dealer...

or for direct orders enclose \$59.95 plus \$3.00 for shipping & handling. Mastercard and Visa accepted.

616/957-3036

Take 1 requires an APPLE IIc or II+ with 64K
APPLE is a registered trademark

BAUDVILLE

1001 Medical Park Dr. S.E. Grand Rapids, MI 49506 Phone 616/957-3036

CLASSIFIEDS

Games

ADVENTURERS!

Complete maps & coded clues for your favorite adventure games. All SIERRA ON-LINE, all PENGUIN, also Mask of Sun, Serp. Star, Sherw. Forest, Death in Carib., Masquerade, Sands of Egypt, Blade of Blackpool, Gruds, \$4/ea., 3 sets \$10. Also Datamost's Vol. I & II adventure clues, \$9.95 + \$1.50 s&h each. Ask about discount software.

ASK ALICE
Box 198
Guilford, CT 06437

PICK THAT TUNE

Like the famous TV game show. Up to 10 players try to identify 100 famous tunes. Players may either bid or play "Stop the Music" where players are assigned unique keys on the keyboard. The first one to recognize the tune and press their key gets to guess the tune. Sixteen game variations. Saves top ten scores. 48K Apple II, II+, //e or //c, 1 disk. \$29.95. Check, money order, VISA or MC (713) 937-6410.

Texas residents add 6.125% sales tax.



SWEARINGEN SOFTWARE
6312 W. Little York #197
Houston, TX 77088

TRIVIA CHALLENGE

An exciting new Trivia game with a hires game board. Five categories, including Entertainment, Sports, History, Geography, & Miscellaneous. A Trivia Development System which allows you to create your own categories & questions is included at no additional cost. As an ongoing service, The Trivia Factory will market any trivia question disk created with the development system. Complete package \$15.95. Send check or money order to:

THE TRIVIA FACTORY
Box 564, Boulder Ave.
Stonington, CT 06378

EXODUS LIVES!

Finished *ULTIMA III*? Visiting Monitor West too often? Is Exotic armour not exotic any more? ULTIMORE ADVENTURES to the rescue!! Revitalize *ULTIMA III* with new scenarios, cities, castles, dungeons, and lands to explore. Choose from *DIVIDED WORLD*, *SLAVERORDS*, *SPACESHIP CRASH* & others. \$20 each, 3 for \$50. Free catalog.

BACKSTREET SOFTWARE
7929 Townsend
Des Moines, IA 50322

THE ABYSSAL ZONE™

Underwater graphic adventure. Discover the mysteries of the Bermuda Triangle. Comes with 3-ring binder and 2 disks. Contains 114 hi-res pictures created with Graphics Magician. Game/Copyright by Jeff Gray, M.S. Aquatic Biology. Send \$29.95 + \$2 (U.P.S.) (Visa/MC, check or MO) to:



SALTY SOFTWARE
1139 Hawthorne S.W.
Canton, OH 44710
or (216) 478-2220 24 hrs.

\$3 ADVENTURE HINT BOOKS

Coded clues, solutions, maps: Any Zork, Enchanter, Planetfall, Witness, Infidel, Deadline, Starcross, Original Adventure, Masquerade, Sherwood Forest, The Quest, Coveted Mirror, Transylvania, Wizard and Princess, Mask of Sun, Serpent's Star, Ulysses, Mystery House, Death Caribbean, Drk Crystal. Clues, solution-Ultima III. Any Wizardry scenario maps.

ASPEN APPLE SOFTWARE
Box 1962
Boulder, CO 80306

Services

SOFTWARE GALORE!

Five Big Reasons to buy from Soft Source-R

1. Top selling Apple + c e Mac programs
2. Up to 40% off
3. Recreational, educational, sm. business
4. Money back guarantee
5. FREE shipping

FREE brochure (specify computer)

THE SOFT SOURCE-R INC.
Dept. B, Box 2931
Joliet, IL 60434

US\$8.00 INCLUDED DISK!

Yes, thousand famous disk programs for Apple II, II+ & IIc (business, education, games etc.), all peripheral cards at unbelievable price! 48K Apple compatible @US\$380.00/set (included air parcel postage and thousand worth free softwares). Write immediately with US\$1.00 for your catalogue:

RELIANT
P.O. Box 33610
Sheung Wan, Hong Kong

Hardware

MOUSETRACER

Use your Mac, IIe, or IIc mouse and draw like the pros! Put cartoons, pictures, logos, etc. on the drawing board. Strap your mouse to the Mousetracer and use your favorite graphics program to trace the picture of your choice. The possibilities are limitless! Send \$34.95 + \$2 postage & handling (CA residents add \$2.10 sales tax) to:

BRIMARK INNOVATIONS
9821 Yolanda Ave.
Northridge, CA 91324

Business

DATA & INFO EXCHANGE

On line games against the computer, On line Shopping at great discounts, over 400 downloads for the Apple and hundreds for other computers in 9 libraries. Hundreds for other types of computers. Hundreds of text files in 9 libraries. 20 bulletin boards. System in 300/1200 baud Membership fee: \$25.00 yr. No hr. rates.

AMERICAN NETWORKS
P.O. Box 218
Westwego, LA 70094
Modem 504-436-7236
Voice 504-436-7236
Visa/Mastercharge accepted

THE DISK LABELLER

A powerful program for AUTOMATIC printing of disk labels showing FILES, DOS—see free & used. Built-in default & escape functions, auto config. for printer slots & drives. Completely MENU driven. Req. no doc. Includes 300 5 in. labels. Req. 64K Apple II, II+, IIe, IIc, disk dr., printer. Only \$59.95 + \$3 ship. NY res. add sales tax.

Practical Software Ltd.
Dept. ST
Box 64
Pomona, NY 10970
(914) 425-1158

TAX WORK—QUICK & EASY!

E-Z Federal income tax programs for Apple. 48K, 1 or 2 drives. Forms and Schedules 1040, A, B, C, D, E, G, SE, W, 2210, 2441, 4562 & worksheets for \$35 ppd. For info., write to:

CROWELL SOFTWARE CO.
5820 Bristlecone Ct.
St. Louis, MO 63129

THE FASTEST & EASIEST

Compare "THE ACCOUNTANT" (ours) to the "CONTINENTAL" (theirs). THE ACCOUNTANT is 30 times faster and allows 4000 transactions per disk! Help menus, on-screen summaries and unlimited accounts and categories. Dealers inquire! Retail \$120.00

SCHMIDT ENTERPRISES
15841 Leadwell St.
Van Nuys, CA 91406
(818) 994-4060

LOSING MONEY?

Let The Cheap Accountant get your money back. Control your runaway receivables & improve cash flow with this simple system. Print professional invoices, statements, aged trial balances & exception reports. Complete documentation provided. Requires an Apple II+ and 48K. Send \$29.95 + \$1.50 (NJ Res. + 6% Sales Tax) to:

THE TKR COMPANY
99 Garden St.
Dumont, NJ 07628

Utilities

MINUTE MANUALS

PFS:FILE/REPORT/GRAPH/	
WRITE	\$12.95
APPLE WRITER (SPECIFY II + OR //e	\$ 7.95
DB MASTER (VER 3)	\$12.95
Basic & advanced step by step procedures & printing and formatting procedures. Codes explained for printers shown below.	

GLOSSARY DISK FOR APPLE WRITER \$14.95

No need to know or remember printer codes any longer. Access any code within Apple Writer II+ or //e with a single keystroke for the Epson, Gemini, Okidata, Prowriter, Apple, or NEC 8023A. NUL patch explained. Scripts on Apple DMP. Send check + \$1 to:

MINUTEWARE
P.O. Box 2392
Columbia, MD 21045
(301) 995-1166

RGB CARDS APPLE & FRANKLIN

Apple II, II+, IIe: Colormaster, \$139. Kaleidoscope, \$199.; Franklin Ace 1000, 1200: Colormaster, \$169., Kaleidoscope, \$219. Cards plug into slot 7. Can be interfaced with 80 col. cards & 80 col. card with extended memory. Compatible with all RGB monitors. Apple IIc: Colormaster II, \$199. Apple IIc version is an external module.

TELEMAX, INC.
ENHANCEMENT PRODUCTS
P.O. Box 339
Warrington, PA 18976
(215) 343-3000

Entertainment

ATTENTION:

Hi-Res Adventure Games: Secret of Easter Island and the Learjet Caper. \$32.00 ea. The Flexible Message System—a BBS system. \$59.95. Call (313) 623-6309 for a sample (modem).

NUCLEUS SOFTWARE
5582 Dvorak Street
Clarkston, MI 48016
(313) 623-7115

18 NEW EAMON ADVENTURES

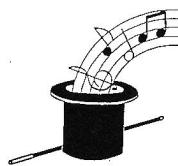
Choose from Units 1,2,3 or brand new #4. Each with 18 adventures & utilities on 9 disks for \$35. Any 2 units for \$60. Any 3 for \$85. All 72 adventures for \$110. Sample adv. @ \$5. Also AdventureDisk—a monthly double-sided disk with hints, tips and solutions to all types of adv. Included is a NEW Eamon adventure each issue. \$9 to start, then \$6 per issue.

ADVENTUREDISK
Box 216
Mercer Island, WA 98040

Education

MELODY MAGIC

If you have always wanted to learn to play a musical instrument but thought music was too difficult, then this is for you! Melody Magic teaches you how to read the melody part of sheet music so that you can enter and save your favorite melodies. A simple music book is included which contains 29 easy to read famous melodies. 48K Apple II, II+, //e or //c, 1 disk. \$34.95. Check, money order, VISA or MC (713) 937-6410. Texas residents add 6.125% sales tax.



SWEARINGEN SOFTWARE
6312 W. Little York #197
Houston, TX 77088

MOVING?

Let us know 8 weeks in advance so that you won't miss a single issue of inCider. Attach old label where indicated and print new address in space provided. Also include your mailing label whenever you write concerning your subscription. It helps us serve you promptly. Write to:

inCider®

Subscription Department
PO Box 911
Farmingdale, NY 11737

Extend my subscription one additional year for only \$24.97

Payment enclosed Bill Me

Canada & Mexico \$27.97 1 year only, US Funds drawn on US bank. Foreign Surface \$44.97 1 year only, U.S. Funds drawn on US banks only.

If you have no label handy, print OLD address here.

AFFIX LABEL *Name _____*

Address _____

City _____ State _____ Zip _____

print new address here:

Name _____

Address _____

City _____ State _____ Zip _____

inCider Subscription Dept. • PO Box 911 • Farmingdale, NY 11737

ATTENTION

Subscribers!

We occasionally make our mailing list available to other companies or organizations with products or services which we feel might be of interest to you. If you prefer that your name be deleted from such a list, please fill out the coupon below or affix a copy of your mailing label and mail it to:

C.W. Communications/Peterborough
inCider
PO Box 911
Farmingdale, NY 11737

Please delete my name from mailing lists sent to other companies or organizations.

name _____
address _____
city _____ state _____ zip _____

inCider

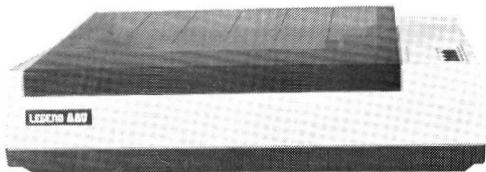
inCider

Reader Service

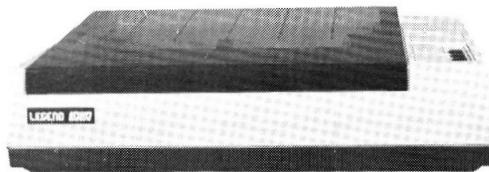
TO RECEIVE MORE INFORMATION ON THE PRODUCTS AND SERVICES ADVERTISED IN THIS ISSUE, PLEASE TURN TO READER SERVICE CARD.

“...Damn near letter quality!”

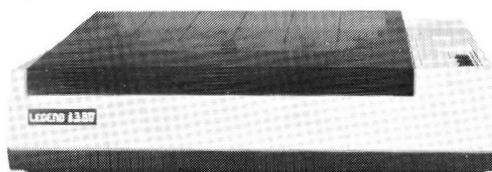
The high quality, square dot technology used by Legend produces a character so clear, so crisp our users tell us it's "damn near letter quality!" We invite comparisons. In fact, we're so confident about our quality we'll be happy to send you an actual sample of legendary output, just for the asking. Legends are perfect for those important reports and proposals as well as regular office correspondence. The graphs and charts you create with Legend are stunningly good! All you have to choose is how fast you want to go. We use a top-quality carbon ribbon common to the world's most popular typewriter that makes each and every character clean and sharp. And we're so sure about the reliability of our Legends we guarantee our print head... for life!



The LEGEND 880 provides over forty fonts, all software-selectable and is rated at 80 cps but purrs along at a comfortable RTS of 104 characters per second. It's designed to work with all popular computers including IBM, most of the IBM-compatibles as well as Apple, TI and Commodore. And all this can be yours today at a really affordable price!



The LEGEND 1080, rated at 100 cps gives you the quality of the 880 at a faster RTS of 140 characters per second. And simple, easy-to-use switch settings bring forty fonts to your fingertips! True Epson compatibility means you can run all the popular software packages including Lotus 1-2-3, Symphony, Framework, Wordstar and more!



The LEGEND 1380 is perfect for high speed high performance applications. Rated at 130 cps, it produces legendary print quality at an incredible RTS of 163 characters per second. Full IBM graphics compatibility along with downloadable character sets allows you to design your very own fonts and run all of the new IBM graphics software.

Upgrade your printer buffer for only \$1.00. For a limited time only you can upgrade the buffer in either your Legend 1080 or Legend 1380. See your dealer for all the details.

For more information about these and the full line of Legendary printers contact Legend Peripheral Products, 6041 Variel Avenue, Woodland Hills, Ca 91367. Telephone (818) 704-9100. Outside CA call toll-free 1-800-321-4484. Telex 662436.

LEGEND PERIPHERAL
PRODUCTS

Circle 428 on Reader Service card.

Trademarks — IBM International Business Machines Corporation/Epson-Epson America/Lotus 1-2-3, Symphony/Lotus Development Corporation/Framework-Ashton-Tate/Wordstar-MicroPro Apple-Apple Computer/Commodore-Commodore Business Machines-TI-Texas Instruments Legend and RTS-Cal Abco, Legend Peripheral Products

America's Number 1 Computer Buying Service Brings You These 15 Exclusive, Money-Saving Benefits . . .

Join PC NETWORK for as low as \$8 for one year (or \$15 for two years) and receive all these exclusive, money-saving benefits:

1 COST + 8% PRICING — The NETWORK purchases millions of dollars in merchandise each month. You benefit in receiving the lowest price available and all at just 8% above published dealer wholesale price.

2 OUR 500 PAGE WHOLESALE CATALOG — Members receive our 500 page wholesale catalog containing over 20,000 hardware and software products for the IBM PC, APPLE and over 50 other popular computer systems. THE NETWORK'S CATALOG IS THE LARGEST SINGLE COMPILATION OF PERSONAL COMPUTER PRODUCTS AVAILABLE TODAY.

3 IN-STOCK INSURED FAST HOME DELIVERY — THE NETWORK maintains a giant multi-million dollar inventory of most popular products, allowing us to ship many orders from stock. Non-stock items are typically maintained in local warehouses just days away from The NETWORK and YOU. We pay all insurance expenses on your shipment. **EMERGENCY OVERNIGHT SERVICE IS AVAILABLE ON REQUEST.**

4 10 DAY RETURN POLICY — If you are not satisfied, for any reason with any hardware component purchased from The NETWORK within 10 days of receipt, we will refund your entire purchase (less shipping) with no questions asked.

5 MEMBERSHIP SATISFACTION GUARANTEE — If for any reason you are not satisfied with your membership within 30 days, we will refund your dues in FULL.

6 EXPERIENCED CONSULTANTS — The NETWORK hires consultants, not order takers, to aid you in product selection. Our consulting staff possesses in excess of 150 man years of personal computer product experience. **We back our consultants with our money back guarantee: IF ANY PRODUCT RECOMMENDED BY OUR CONSULTING STAFF FAILS TO PERFORM AS PROMISED — OR IS INCOMPATIBLE WITH YOUR SYSTEM — WE WILL TAKE IT BACK AT OUR EXPENSE FOR A 100% REFUND.**

7 FREE TECHNICAL SUPPORT — The NETWORK supports every product it sells. Our qualified TECH-SUPPORT staff will help you assemble your system, interpret vendor documentation and get your software and hardware to work. **WE WILL GIVE YOU ALL THE HELP YOU NEED, WHEN YOU NEED IT — FREE!**

+8 OPTIONAL BUSINESS RENTAL LIBRARY — All members can join our BUSINESS RENTAL LIBRARY featuring over 1000 available titles for just \$25 PER YEAR above the base membership fee. This entitles you to rent business software AT JUST 20% of the DISCOUNTED PRICE FOR A 14 DAY PERIOD. If you decide to keep the software, the entire rental fee is deducted from the purchase price. **VIP MEMBERS GET A FULL 28 DAYS** for just \$30 above the V.I.P. base fee. This also includes the game library privileges for a \$5 combination savings.

+9 OPTIONAL GAME SOFTWARE RENTAL LIBRARY — The Game Rental library is available to members for just \$10 PER YEAR and permits evaluation (or just enjoyment) of any game or educational software product as above.

10 SPECIAL SAVINGS BULLETINS — THE PRINT-OUT — The NETWORK seeks every opportunity to save money for its members. We buy excess dealer inventories, and store bankruptcy closeouts regularly. We then turn around and make this merchandise (only top quality name brand products) available to our members at fantastic savings via THE PRINTOUT, our newsletter and savings bulletins.

CALL TOLL FREE

1-800-621-S-A-V-E
In Illinois call (312) 280-0002

Your Membership Validation Number: 1915



PC NETWORK
320 West Ohio
Chicago, Illinois 60610

Call now...Join the PC NETWORK
and start saving today!

The Nation's Largest Corporations Depend on PC NETWORK!

On our corporate roster are some of the nation's largest financial, industrial and professional concerns including some of the most important names in the computer industry:

AT&T	Harvard University
Barclays Bank	Hewlett Packard
Bell & Howell	Hughes Aircraft
Citibank	IBM
Columbia University	ITT
Data General	Kodak
Farm Bureau	Multimate
Insurance	Standard Oil of Ohio
Frontier Airlines	University of Chicago
General Mills	Veteran's
Gillette	Administration

plus thousands of satisfied consulting firms, small businesses, user groups, municipalities, government agencies and valuewise individuals ACROSS THE NATION! Their buyers know that purchasing or renting from PC NETWORK saves them time, money and trouble. They also count on us for product evaluation, professional consultation and the broadest spectrum of products and brands around.

PC Network's Try-Before-You Buy Software Evaluation Service is the Ideal Way to Avoid Costly Errors in All Your Software Purchases!

SPECIAL V.I.P. MEMBERSHIP

A limited number of PC NETWORK V.I.P. Memberships are available at just \$15 for one year or \$25 for two years.

V.I.P. Members receive additional benefits:

1. FIRST PICK ON "BELOW WHOLE-SALE" SPECIALS—V.I.P. Members are given preference in the purchase of any "below wholesale" merchandise specials as featured in the "PRINT-OUT" where only limited quantities are available. Whether it be 75¢ diskettes or \$3 chips, V.I.P. Members often earn back the membership cost difference the first time they exercise this option.

2. V.I.P. SAVINGS ON SOFTWARE RENTAL LIBRARIES—All V.I.P. Members are eligible to join our Business AND Game Software Rental Libraries for just \$30 per year in addition to the basic V.I.P. membership fee. All the same conditions apply to the V.I.P. Libraries as the Basic Membership Libraries.

3. EXTENDED V.I.P. RENTAL PRIVILEGES—V.I.P. Members can enjoy their rented merchandise longer . . . a full 21 days instead of the twelve days allowed with our Basic Membership.

11 DISCOUNT BOOK LIBRARY — Working with numerous publishers and distributors, The NETWORK has assembled a library of over 1000 computer related books and manuals at savings of up to 75% from the normal store price.

12 MEMBERSHIP REFERRAL BONUS — Our most valuable source of new members is you! To date almost 40% of our members have been referred by word of mouth from other satisfied members. For those of you who refer new members, THE NETWORK will credit a cash bonus to your account applicable to any future purchase.

13 CORPORATE ACCOUNT PROGRAM — Almost 50% of The NETWORK's members are corporate buyers and users (see opposite page left). The NETWORK can establish open account status and assign designated account managers to expedite orders, and coordinate multiple location shipments.

14 QUANTITY DISCOUNTS — For large corporations, clubs and repeat or quantity buyers The NETWORK can extend additional single order discounts, when available to us from our manufacturers and distributors.

15 PRICE PROTECTION — The PC Industry is crazy!! Prices change not yearly or monthly or even weekly but often day by day! These changes are sometimes up but are mostly down!!! **THE NETWORK GUARANTEES THAT IN THE EVENT OF A PRODUCT PRICE REDUCTION, BETWEEN THE TIME YOU PLACE YOUR ORDER AND THE TIME THE PRODUCT SHIPS YOU WILL ONLY PAY THE LOWER AMOUNT!!**

NEW SOFTWARE

Apple Writer Printer Library

Let Apple Writer // have full control of your printer with **Glossary Disk** (\$16). This collection of files covers printers such as Epson, Okidata, ProWriter, and NEC. The manual shows how to send any printer code with a single key-stroke. For more information, write MinuteWare, P.O. Box 2392, Columbia, MD 21045, or use number 460 on the Reader Service card.

All-in-One Fiscal Planner

Let **Beacon** show you the way through fiscal fog. The Beacon system costs \$90 and runs on any Apple II with 48K. It keeps tax records, estimates net worth, and manages cash, investments, and assets. You can print reports and statements as needed. The system is published by The Cumberland Company, 4765 North Cumberland Boulevard, Milwaukee, WI 53211. Mark Reader Service number 452.

Product descriptions contained in this section are based on information supplied to us by the respective manufacturers. These announcements are provided solely as a service to our readers and do not constitute an endorsement by inCider of any given product.

Writing Tutorial for Bank Street

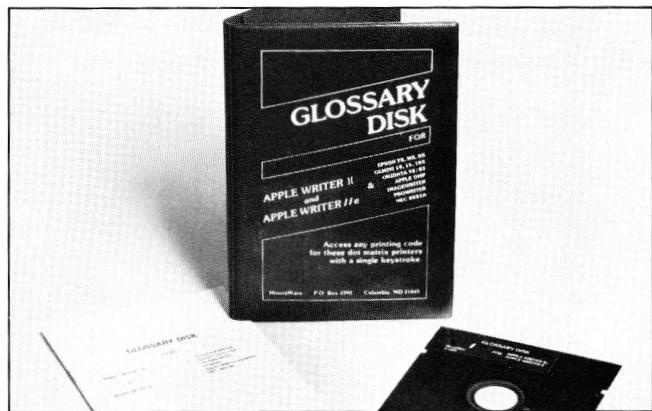
The **Complete Writer** works with Bank Street Writer to teach the fundamentals of good writing. The three-disk package (\$99.95) runs on any 64K Apple II. Individual disks (\$39.95 each when ordered separately) are: Newsroom (factual writing), Mystery (narrative), and Campaign (persuasive writing). Contact Learnco, 128 High Street, Greenland, NH 03840. Reader Service number is 462.

Printing Your Mouse Work

If you use Apple's MousePaint, **Mouseprint** lets you send your graphics to many popular printers. It works with ProDOS and is compatible with most popular combinations of dot-matrix printers and interface cards. Specify your printer and card and send \$22.95 to Ahware, 805 Luz Court, Danville, CA 94526. Use Reader Service number 464.

Hitchhiker's Guide

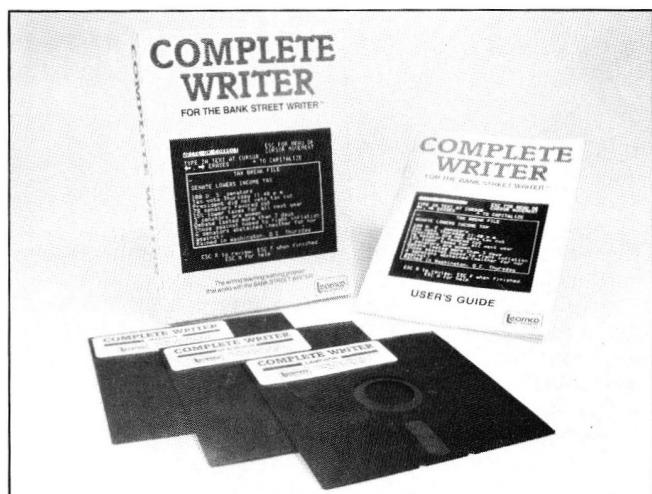
First, a world-class best seller. Next, a top TV series on PBS. What's left but an Infocom text adventure (\$39.95) based on **The Hitchhiker's Guide to the Galaxy** by Douglas Adams. Join Ar-



Glossary Disk of printer codes for Apple Writer.

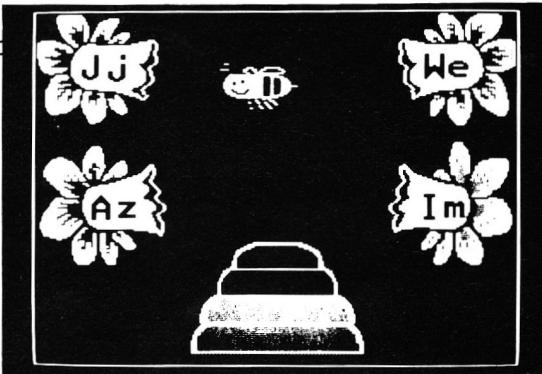


Beacon casts light on financial management.

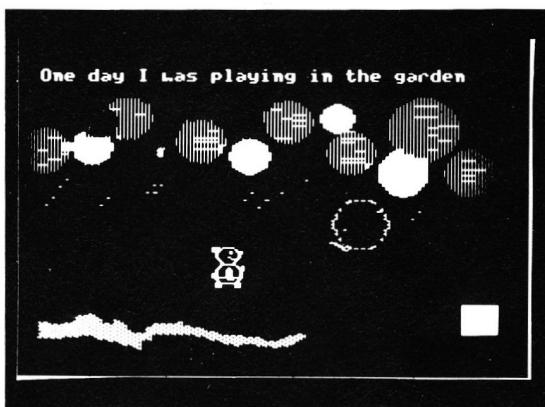


Learn writing skills with Complete Writer.

edited by Kerry J. Lanz



Youngsters learn capital letters in *Easy as ABC*.



Edit your own hi-res movies with KLI.

thur Dent and friends in their search for the ultimate question. Don't panic, just contact Infocom, 55 Wheeler Street, Cambridge, MA 02138, or check number 456 on the Reader Service card.

Lights, Camera...

Make your own animated stories with **KLI**, a system for combining animated graphics, music, and text. Individual modules let you create shape tables, animation parameters, background scenes, and music. Programmed so even a child can make movies, KLI (\$44.95) is from Interlearn, P.O. Box 342, Cardiff-by-the-Sea, CA 92007. Reader Service number is 451.

Colorful Home Education

Easy as ABC (\$40) gives youngsters five alphabet games. In **Stickers** (\$35), children move and color 100 shapes. Color your own drawings or fill in the 50 that come with **Rainbow Painter**, an electronic coloring book for \$35. These titles work on any 48K Apple II and come from Springboard Software, 7807 Creekridge Circle, Minneapolis, MN 55435. Use Reader Service number 455.

Develop 68000 Software

Develop software for the Macintosh and other 68000 systems with the **SX-68** cross assembler (\$100) on your 64K Apple II. An editor creates source files which can be

Circle 238 on Reader Service card.

BridgePro®

Join us for Bridge

- One and two player games
- Random hands — millions possible
- HELP features for beginners
- "Duplicate" Bridge option
- DEMONSTRATION and BEST HAND modes
- QUIT, AUTO FINISH, and REPLAY options

Ever wonder why millions around the world enjoy the card game of Bridge? Why so many play year after year? Bridge is that kind of game: uniquely challenging and exciting. BridgePro™ makes it easy and fun to learn or improve Bridge skills. If you already know how to play, BridgePro™ lets you enjoy Bridge by yourself. And the cards are randomly dealt — you'll never have to repeat a hand. For many, BridgePro™ will be a game that never grows old.

Diskette \$35 (COD's add \$2). Visa/MC accepted. California residents add 6.5% tax.

**Commodore 64 • APPLE II+, IIc, or IIe
ATARI 800 XL, 1200 XL, or min. 40K**

Computer Management Corporation
2424 Exbourne Court, Walnut Creek, CA 94596 • (415) 930-8075
Dealer/Distributor inquiries welcome

Circle 380 on Reader Service card.

***REDUCES DISKETTE COST 50%!**

Make use of the back of your 5 1/4" Diskettes and **SAVE**

- **NIBBLE NOTCH** tools make it easy.
- Adds the precise notch where you need it.
- Doubles diskette space or **MONEY BACK!**

NIBBLE NOTCH I
Cuts square notch for Apple, II, II+, IIe, III, Franklin and Commodore.

only **\$14.95** each
add \$1.50 each P&H (\$4.50 each foreign P&H)

DISK OPTIMIZER® SYSTEM
SOFTWARE FOR APPLE, II, II+, IIe, III & Franklin

- **469% FASTER** Than Similar Programs!
- Certifies your "new" disk 100% Error Free
- Removes Bad Sectors • Adds 36th Track
- Performs Disk Drive Speed Check
- Adds DOS and More

only **\$24.95** each
add \$1.50 each P&H (\$4.50 each foreign P&H)

— OR BUY BOTH —

only **\$29.95**
add \$2.50 each set P&H (\$6.50 foreign P&H)
Florida Residents Add 5% Sales Tax

SATISFACTION GUARANTEED OR YOUR MONEY BACK!

ORDER TODAY!
CALL TOLL FREE: 1-800-642-2536
OR SEND CHECK OR MONEY ORDER TO:

NIBBLE NOTCH COMPUTER PRODUCTS
DIVISION OF CORTRAN INTERNATIONAL
4211 NW 75th TERRACE • DEPT. 21 • LAUDERHILL, FL 33319
PAT. PEND.

MasterCard

saved on a disk or sent to the assembler. After two passes, the assembler generates a program listing and object code. For details, contact Allen Systems, 2151 Fairfax Road, Columbus, OH 43221. Use number 461 on the Reader Service card.

Battle the Bismarck

The storm-tossed North Atlantic becomes the stage for **Dreadnoughts'** simulation of World War II naval battles. Choose from more than 40 major ships, including the Bismarck. Priced at \$30, the game works on any Apple II and is published by Avalon Hill Game Company, 4517 Harford Road, Baltimore, MD 21214. Use number 466 on the Reader Service card.

Logo Utilities

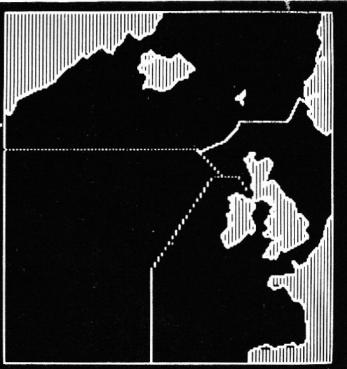
Solve those nagging Logo problems with the **Logo Wiz-Kit**. These utilities let you print Logo files and graphics, manage memory more effectively, and review Logo files from DOS 3.3. For \$21 you get a teacher's disk, a student's disk, and instructions. Write Young People's Logo Association, P.O. Box 75085, Richardson, TX 75081. Use Reader Service number 457.

Figuring Statistics

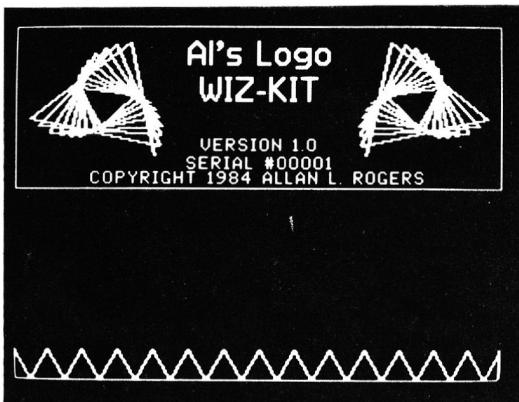
Analytical Graphics accepts data from keyboard or from DIF files and displays the data in bar and line graphs, with linear or log axes. Graphs can easily be labelled and printed. The package is \$90, runs on any 64K Ap-

0000 23 MAY
VISIBILITY:
FOG 1 NM
CONTACTS: 0
COURSE: PATROL
SPEED: 28KTS
FUEL: 7454
BISMARCK
SPOTTED

ORDER?

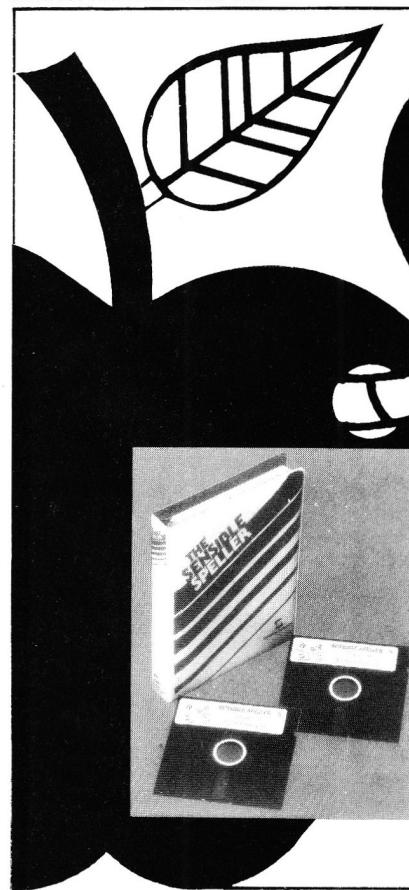


Dreadnoughts lets you captain the Bismarck.



Wiz-Kit utilities print Logo graphics.

Circle 353 on Reader Service card.



Best protection from sneaky typos that worm their way into your Apple documents!

THE SENSIBLE SPELLER™

won't let misspellings get away!

This unique software program, a virtual electronic dictionary, catches spelling mistakes in your writings. It actually displays misspelled words in context, suggests the correct spelling, and allows immediate replacement of misspelled words with correct ones. It derives its huge, 80,000-word vocabulary...which is all on disk...directly from the official Random House Dictionary.

Sensible Speller is friendly and fast, taking only a minute or two to correct a ten-page document. It provides room on disk to add thousands of your own words. It is compatible with nearly all Apple word processor programs* and runs on all Apple IIc, IIe, II+, and Apple-compatible computers.

Sensible Speller is available for \$125 in either the "IV" or ProDOS version at your dealer or you may order it direct, enclosing \$1.25 for shipping. Visa/MasterCard/Check/COD welcome! And...send for a free brochure on all Sensible Software products.

NEW! Sensible Speller now available for Macintosh!



210 S. Woodward, Suite 229
Birmingham, MI 48011 (313) 258-5566

*It works with all the following word processors, with owners of trademarks indicated in parentheses: DOS 3.2 & DOS 5.0 (AppleWorks & Apple-Writer, all versions); Apple Computer Inc. (BASIC Street Writer [Brodebind], Format II [Kensington Microware], HomeWord & ScreenWriter [Silicon On-Line Inc.]); Word Handler (Silicon Valley Systems); CPM/Wordstar (Digital Research Corp. -MicroPro International); PFS: WRITE (Software Publishing, Inc.); and others. All features are not available with CPM, PFS: WRITE & Word Handler. Macintosh is a trademark of Apple Computer, Inc.

NEW SOFTWARE

ple II, and includes two program disks, tutorial disk, and manual. This information is from Scientific Software Products, 5726 Professional Circle, Indianapolis, IN 46241. The Reader Service number is 458.

Accounting for Home and Business

Engage your Apple as your accountant with **The Debit Credit Connection** (\$90), an accounting package for home and small business. The program works on any Apple II, is copyable, and supports a hard disk. It also prints reports and checks as needed. Write Solitaire, 7146 West 113th Street, Bloomington, MN 55438, or use Reader Service number 467.

Insurance Software

The **Mortgage Accelerator** shows when a whole life insurance policy prepays a mortgage by comparing interest and payments for both the mortgage and the policy. The package (\$240) contains a disk for any Apple II, manual, data worksheets, and sample artwork for a proposal folder. Contact American Software Technology, 1150 Kane Concourse, Bay Harbor Islands, FL 33154. Use Reader Service number 459.

Diversified Utilities

Diversi-Copy (\$30) copies unprotected DOS 3.3, Pascal, CP/M, and ProDOS disks in seconds. It runs on any Apple II, and works fastest on a

IIc. **Diversi-Dial** (\$50) lets you start a 7-line CB simulation in your own neighborhood. It runs on any Apple II with 64K and a Novation modem. Both products are from DSR, 5848 Crampton Court, Rockford, IL 61111. Reader Service number is 465.

Sport Spreadsheets

Master your statistics with **Sport Stats** for baseball or basketball (\$63 each). Coaches and fans speed up their record keeping with these spreadsheet-style programs. Menus help set up categories, update information, and find current stats fast. For more information write Educational Activities, P.O. Box 392, Freeport, NY 11520, or circle Reader Service number 469.

Make a Date with a Comet

The comet is coming and **Halley's Comet** shows you where to look. The disk runs on any Apple II, is not copy-protected, and costs \$49.95. It includes a history of the comet and plots the comet's position on any date and for any location. Results are shown on several hi-res maps. Contact American Only, 13361 Frati Lane, Sebastopol, CA 95472. Use number 450 on the Reader Service card.

Converter for BPI Files

GenCalc (\$69.50) converts BPI accounting files into formats compatible with AppleWorks, Visi-Calc, and business graphics packages. The

Circle 144 on Reader Service card.

TWO NEW PROGRAMS FROM DAVKA

A TASTE-TESTED JEWISH COMPUTER COOKBOOK



available for the Apple II+, IIe, IIc and IBM PC with disk drive

For "Balbostahs," beginning cooks, or bachelors... features more than 150 of the finest recipes in Jewish cookery. The Jewish Computer Cookbook plays no ethnic favorites. It includes such selections as Rumanian, Knaidlach, Beet Lerniak, Chili, Spinach Filo, and Biscuit Tortoni - All Kosher!

Imagine you're starting with only a few ingredients and want recipes that use them. The Jewish Computer Cookbook will do an instant search of all the recipes for that ingredient! You can add, change or remove any recipe, automatically calculates ingredient amounts for different serving sizes.

Print recipes, or shopping lists! Even create your own cookbook or your family's favorite recipes. Plus the cookbook automatically calculates ingredient amounts for different serving sizes. The Jewish Computer Cookbook is only \$39.95 for the basic cookbook and recipe disk.

AN UNBELIEVABLE, UNBEATABLE BARGAIN!

Order the Jewish Computer Cookbook at the regular price of \$39.95 and get absolutely free any two of the supplementary modules. Regularly \$12.00 each.

BUT YOU DON'T TASTE JEWISH

A collection of international cuisine (French, Italian, Mexican, Chinese) adapted for the Kosher Kitchen. A wide variety of appetizers, entrees, desserts and more.

LIKE MAMA USED TO MAKE

A mouth-watering array of traditional Jewish Sabbath and Holiday cooking, with recipe suggestions adapted for each festive occasion.

THE PARTY PLACE

Having a cocktail party? A sit-down dinner? A business buffet? This disk does everything except prepare the food! From finger foods to desserts, a selection of the best in party fare.



THE ALEF-BET COMPUTER COLORING BOOK

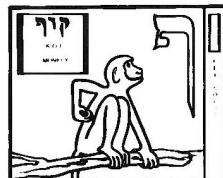
Software for Pre-Schoolers

Available for Apple II+ / IIe / IIc Only \$24.95

An interactive program that will familiarize youngsters with the letters of the Hebrew alphabet while providing hours of creative fun. Children can select from a 'palette' of 16 colors to color in 27 different pictures. Each picture corresponds to a different Hebrew letter—and features an object whose first letter in its Hebrew form (or last, if it's a final letter), is the same as the large letter displayed on the screen. Unlike paper coloring books, pictures may be 'colored in' over and over again, and finished artwork can be saved on the disk itself. Older children will enjoy connecting the dots to form the letter before coloring the picture. The Alef-Bet Coloring Book helps in identification and recognition of Hebrew letters and will familiarize children with the computer keyboard—but most important—it's fun!!

The Alef-Bet Computer Coloring Book

- lets your child create full-color 'works of art'
- is an excellent creative tool
- will give your child a head start in learning the Hebrew letters
- for children ages 3 and up



ORDER FORM

Call toll-free 1-800-621-8227

In Illinois call 1-312-944-4070

Yes, send me the Jewish Computer Cookbook and two free disks for only \$39.95.

Check two: But You Don't Taste Jewish Like Mama Used to Make The Party Place

Name _____

Address _____

City, State, Zip. _____

Phone () _____

845 N. Michigan Ave. Suite 843

Chicago, IL 60611

Yes, please send me the Alef-Bet Computer Coloring Book for only \$24.95.

ENCLOSE CHECK, OR COMPLETE BELOW:

Please charge my:

American Express MasterCharge VISA

Card # _____

Exp. Date _____ Signature _____



Amount enclosed

manual contains hints on transferring data and on using AppleWorks to run a small business. For details, write to Business Machines & Systems, P.O. Box 910, Glen Ellen, CA 95442, or circle 453 on the Reader Service card.

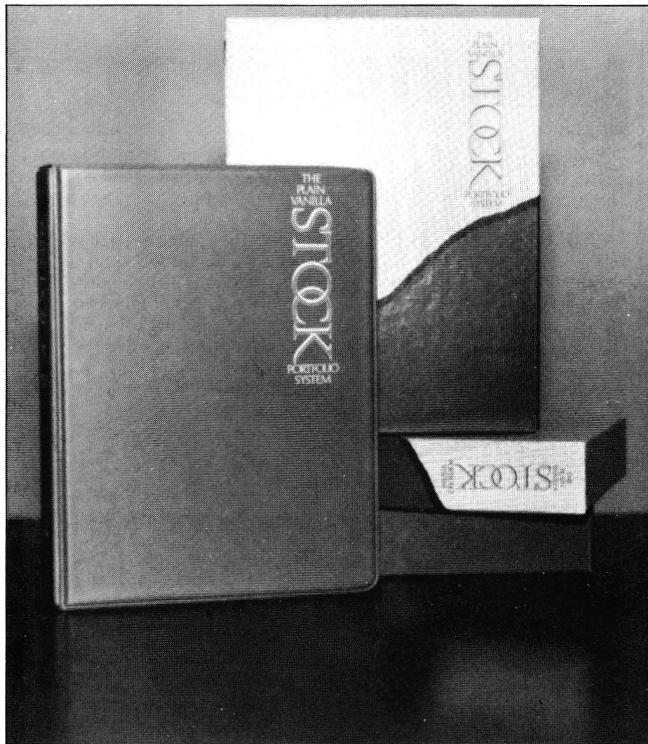
Apple on Your Family Tree

Your Apple can record your family lineage with **The Ancestry Link**, a data-base manager for genealogy research. The four-disk system runs on any Apple II, comes with manual, and costs \$69.95. A tutorial helps you organize family data and print out a variety of reports. To learn more, contact Accelerated Logic, 108 East 38th Street, Suite 902, New

York, NY 10016. Circle number 463 on the Reader Service card.

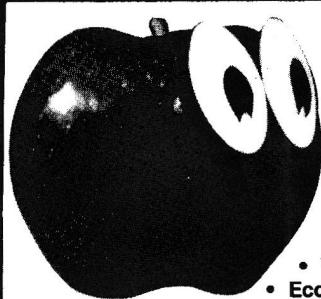
Take Stock of Your Shares

Pick the investor's helper that is right for you from **The Plain Vanilla Stock Portfolio System**. The Investor (\$99.95) tracks small portfolios, while The Manager (\$129.95) suits large or multiple portfolios. The Professional (\$159.95) works with your modem to automatically update data. The system works on any Apple II and comes from Iris Communications, 660 Newport Center Drive, Suite 750, Newport Beach, CA 92660. Reader Service card number is 454.



Plain Vanilla investment help comes in three sizes.

Circle 204 on Reader Service card.



LET YOUR APPLE SEE THE WORLD!

The DS-65 DigiSector® opens up a whole new world for your Apple II. Your computer can now be a part of the action, taking pictures to amuse your friends, watching your house while you're away, taking computer portraits . . . the applications abound! The DS-65 is a random access video digitizer. It converts a TV camera's output into digital information your computer can process. The DS-65 features:

- High Resolution — a 256 x 256 picture element scan
- Precision — 64 levels of grey scale
- Versatility — Accepts either NTSC or industrial video input
- Economy — A professional tool priced for the hobbyist

The DS-65 is an intelligent peripheral card with on-board software in 2708 EPROM. Check these software features:

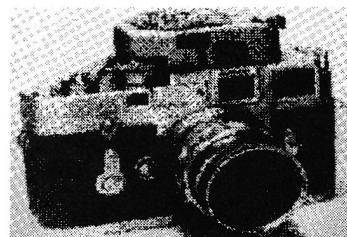
- Full screen scans directly to Apple Hi-Res screen
- Easy random access digitizing by Basic programs
- Line-scan digitizing for reading charts or tracking objects
- Utility functions for clearing and copying the Hi-Res screen

Use the DS-65 for precision security systems; computer portraiture; robotics; fast to slow scan conversion; moving target indicators; reading UPC codes, musical scores and paper tape and more! **GIVE YOUR APPLE THE GIFT OF SIGHT!** DS-65 Price: \$349.95
RCA 1500 Series Camera w/6:1 zoom lens Price: \$399.90/Combination Price: \$729.95

ADDITIONAL SOFTWARE FOR THE DS-65

— **Picture Scanner:** An applications tool for processing video images for display on the Hi-Res screen. A variety of dithering algorithms are provided, for compressing the digitized image into the Hi-Res screen and simulating grey scales. Price: \$39.95

— **Superscan:** Enables you to enhance the DS-65's Hi-Res pictures with colors! Choose from 21 different colors and assign them to grey scale values, modify pictures, zoom, enhance contrast, etc. Includes print routines for Anadex 9500 or 9501; Epson MX-80GFT and MX-100; and IDS 460 Paper Tiger*. Written for The Micro Works by Magna Soft. Price: \$79.95



HI-RES PICTURE USING THE DS-65 AND PICTURE SCANNER SOFTWARE

THE
MICRO
WORKS

Now for IBM PC!

P.O. BOX 1110 DEL MAR, CA 92014 619-942-2400

California Residents add 6% Tax

Mastercard/Visa Accepted

*Paper Tiger is a trademark of Integral Data Systems, Inc.

APPLIED ENGINEERING

The BEST Peripherals for the BEST Computer!

NEW RAMWORKS™ CARD

APPLE WORKS MEMORY EXPANSION AND A LOT MORE

Applied Engineering has solved the most common problem that computer owners have—running out of memory. RAMWORKS™ is the perfect solution because it offers the widest and biggest memory sizes available anywhere.

RAMWORKS™—A card that plugs into the Apple IIe auxiliary slot and functions EXACTLY like Apple's extended 80 column card (in fact, a 128K RAMWORKS™ actually costs less than Apple's 64K extended card) but with RAMWORKS™ you get more memory, 80 column text, a 3-year warranty and most importantly, room to grow without using more slots. A design so advanced there's a patent pending on it. If you have a IIc or an IBM, we suggest you do what everybody does, trade it in on a IIe.

You can utilize this RAM memory to expand Apple Works, VisiCalc, and many others. The RAMWORKS™ card will automatically expand Apple Works to 55K, VisiCalc IIe to 95K, Advanced VisiCalc IIe to 78K. Optional low-cost software is available from Applied Engineering to increase the storage capacity of these popular programs EVEN HIGHER! RAMWORKS™ is the only product capable of expanding Apple Works beyond 55K or Advanced VisiCalc IIe beyond 78K. With the Optional RAMDRIVE™ software RAMWORKS™ can also be used as an ultra high speed RAM disk. Depending on the memory size of the RAMWORKS™ card, you can emulate up to 4 disk drives with one RAMWORKS™ card. All at about 20 times faster than mechanical floppy drives and about 5 times faster than a hard disk.

RAMWORKS™ can be used as a solid state disk with DOS 3.3, PASCAL, CP/M, and PRO-DOS (up to 1,900 blocks free!)

RAMWORKS™ can be purchased in a wide range of sizes and is user upgradable using either 64K RAMS or the new 256K RAMS. In fact, RAMWORKS™ is the only auxiliary slot card on the market that will allow the new 256K RAMS to be used. If you already have an extended 80 column card, no problem. Just unplug the 64K RAMS and plug them into the RAMWORKS™ for an additional 64K. A RGB option is also available, you can order it with your RAMWORKS™ card or add it on at a later date.

RAMWORKS™ saves you time, money, slots and hassle. You'll have additional memory NOW and in the future.

Ramworks™ with 64K Installed.....\$179
 Ramworks™ with 128K Installed.....\$249
 Ramworks™ with 256K Installed.....\$449
 Ramworks™ with 512K Installed.....\$799
 Ramworks™ with 1 MEG Installed.....\$1499
 RGB Option (can be added later).....\$129

VIEWMASTER 80

There used to be about a dozen 80 column cards for the Apple, now there's only ONE.

- TOTALLY Videx Compatible.
- 80 characters by 24 lines, with a sharp 7X9 dot matrix.
- On-board 40/80 soft video switch with manual 40 column override.
- Fully compatible with ALL Apple languages and software—there are NO exceptions.
- Low power consumption through the use of CMOS devices.
- All connections are made with standard video connectors.
- Both upper and lower case characters are standard.
- All new design (using a new Microprocessor based C.R.T. controller) for a beautiful razor sharp display.
- The VIEWMASTER incorporates all the features of all other 80 column cards, plus many new improvements.

PRICE	BUILT-IN SOFTSWITCH	SHIFT KEY SUPPORT	LOW POWER DESIGN	80 COLUMN HOME MATRIX	7X9 DOT INPUTS	LIGHT PEN	40 COLUMN OVERRIDE	INVERSE CHARACTERS
VIEWMASTER	159	YES	YES	YES	YES	YES	YES	YES
SUPERVIEW	MORE	NO	YES	NO	NO	NO	YES	YES
SMARTVIEW	MORE	NO	YES	NO	NO	YES	NO	NO
VISION 80	MORE	YES	YES	NO	YES	NO	NO	NO
OMNIVISION	MORE	NO	YES	NO	NO	NO	YES	YES
VIEWMAX 80	MORE	YES	YES	NO	NO	YES	NO	YES
SMARTTERM	MORE	YES	YES	NO	NO	YES	YES	NO
VIDEX	MORE	NO	YES	YES	NO	YES	NO	YES

The VIEWMASTER 80 works with all 80 column applications including CP/M, Pascal, WordStar, Format II, Easywriter, Apple Writer II, VisiCalc, and all others. The VIEWMASTER 80 is THE MOST compatible 80 column card you can buy at ANY price!

PRICE \$159

Our boards are far superior to most of the consumer electronics made today. All I.C.'s are in high quality sockets with mil-spec. components used throughout. P.C. boards are glass-epoxy with gold contacts. Made in America to be the best in the world. All products work in Apple IIe, II, II+ and Franklin. The RAMWORKS™ is IIe only. Applied Engineering also manufactures a full line of data acquisition and control products for the Apple: A/D converters and digital I/O cards, etc. Please call for more information. All our products are fully tested with complete documentation and available for immediate delivery. All products are guaranteed with a no hassle THREE YEAR WARRANTY.

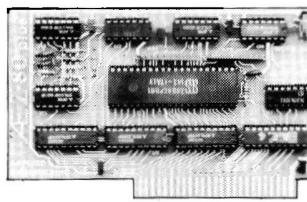
Texas Residents Add 5.125% Sales Tax
 Add \$10.00 If Outside U.S.A.

Send Check or Money Order
APPLIED ENGINEERING
 P.O. Box 798
 Carrollton, TX 75006

Z-80 PLUS

NOW INCLUDES NEW CP/AM 4.0™

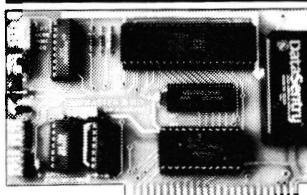
Enter the CP/M world with the new Z-80 Plus card from Applied Engineering and introduce your Apple to thousands of new programs. Only the Z-80 Plus comes standard with the new 4.0 software, the most advanced system for running CP/M programs ever. Only CP/AM 4.0™ has advanced features like built-in disk emulation for popular memory expansion boards (those made by Apple and Applied Engineering and others) to give you a faster system with more storage. You also get menu driven utilities that are much easier to use than the older CP/M utilities so you can get down to all that great CP/M software faster. If you already own the Z-80 Plus, you can upgrade to the 4.0 software for only \$29. The Z-80 Plus runs older CP/M programs too, down to Version 2.1 (2.2 is the most popular). With the Z-80 Plus you can run the largest body of software in existence. Simply plug the Z-80 Plus into any slot in your Apple. You'll have two computers in one and the advantages of both, all at an unbelievably low price.



- TOTALLY compatible with ALL CP/M software.
- The only Z-80 card with a special 2K "CP/M detector" chip.
- Fully compatible with microsoft disks (no pre-boot required).
- Specifically designed for high speed operation in the Apple IIe (runs just as fast in the II+ and Franklin).
- Runs WORD STAR, dBASE II, TURBO PASCAL, FORTRAN-80, PEACHTREE and ALL other CP/M software with no pre-boot.
- A semi-custom I.C. and low parts count allows the Z-80 Plus to fly thru CP/M programs at a very low power level. (We use the Z-80A at fast 4MHz.)
- Does EVERYTHING the other Z-80 boards do, plus Z-80 interrupts.

PRICE \$139

THE NEW TIMEMASTER II H.O.



- Absolutely, positively totally PRO-DOS and DOS 3.3 compatible.
- Time in hours, minutes, seconds and milliseconds (the ONLY PRO-DOS compatible card with millisecond capability).
- 24 hour military format or 12 hour with AM/PM format.

- Date with year, month, day of week and leap year.
- The easiest programming in BASIC.
- Eight software controlled interrupts so you can run two programs at the same time (many examples are included).
- Compatible with ALL of Apple's languages. Includes over 35 programs for machine code, Applesoft, CP/M and Pascal on 2 disks.
- On-board timer lets you time any interval up to 48 days long down to the nearest millisecond.
- Rechargeable nickel-cadmium battery will last over 20 years.
- Two BSR/serial ports for future expansion.

Full emulation of all other clocks. It's easy for the H.O. to emulate other clocks, we just drop off features. That's why the H.O. can emulate others, but none of the others emulate us.

PRICE \$129

The Timemaster II H.O. will automatically emulate the correct clock card for the software you're using. You can also give the H.O. a simple command to tell it which clock to emulate.

Of course, most programs will use the Timemaster II H.O. in its native mode, but it's comforting to know that you can use programs written for other products without any modification.

PRICE \$129

PRICE \$129

Call (214) 492-2027
 8 a.m. to 11 p.m. 7 days a week
 MasterCard, Visa & C.O.D. Welcome
 No extra charge for credit cards

NEW PRODUCTS

Double Your Viewing

After hours of work in front of your monitor, you can change it into a remote-control television with the **MT/1**. This 60-channel, cable-ready tuner (\$200) works with color and monochrome monitors and can send the audio output to your stereo. Full information is available from Cardco, 300 South Topeka, Wichita, KS 67202. Reader Service number is 476.

Fifty at Your Fingers

Store and organize up to 50 disks in the **DiskFiler** (\$34.95). Five flip-down compartments separate the 5 1/4-inch disks into categories and a handgrip adds easy portability. This desktop holder is from Computer Accessories, 7696 Formula Place, San Diego, CA 92121, number 484 on the Reader Service card.

Epson Enhancement

Epson's FX and JX printers deliver letter-quality results with the **LetterType** board (\$199), including a 6K buffer. Once installed, it's controlled by switch or control-codes. Letter-quality speed is 32 cps and draft speed is 160 cps. This product is from Epson America, Kashiwa

Street, Torrance, CA 90505. Circle number 477 on the Reader Service card.

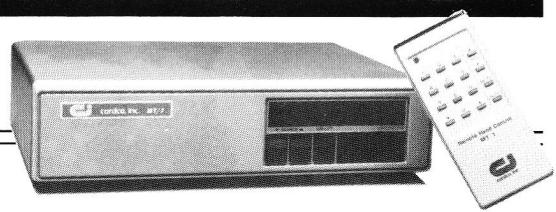
Complete Surge Protection

Wire Tree Plus protects your whole system from voltage surges, spikes, and interference. Of the six outlets, one is continuously on-line and five are switch controlled. It also offers two surge-protected modem connections. This Tree is \$99.95 from Networx, 203 Harrison Place, Brooklyn, NY 11237. Circle number 485 on the Reader Service card.

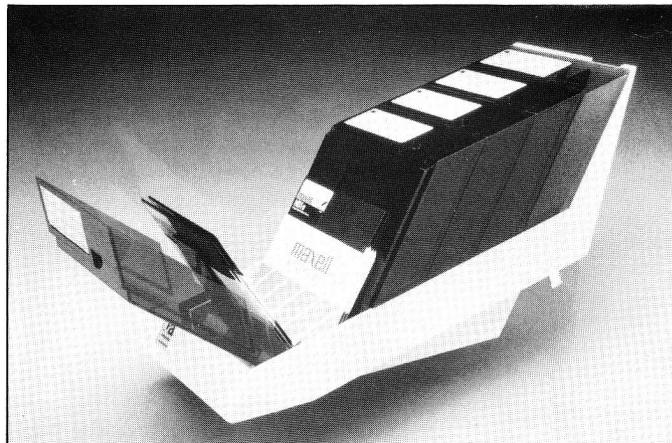
No More Baked Apples

Extra cards and long hours mean high temperature inside your Apple. **The Fan** (\$155) fits on the back of your Apple II Plus or //e directing cool air over cards and CPU. It also filters surges for dependable operation. Get more information from Kemcore, Suite 7068, 111 East Drake, Fort Collins, CO 80525. Use number 473 on the Reader Service card.

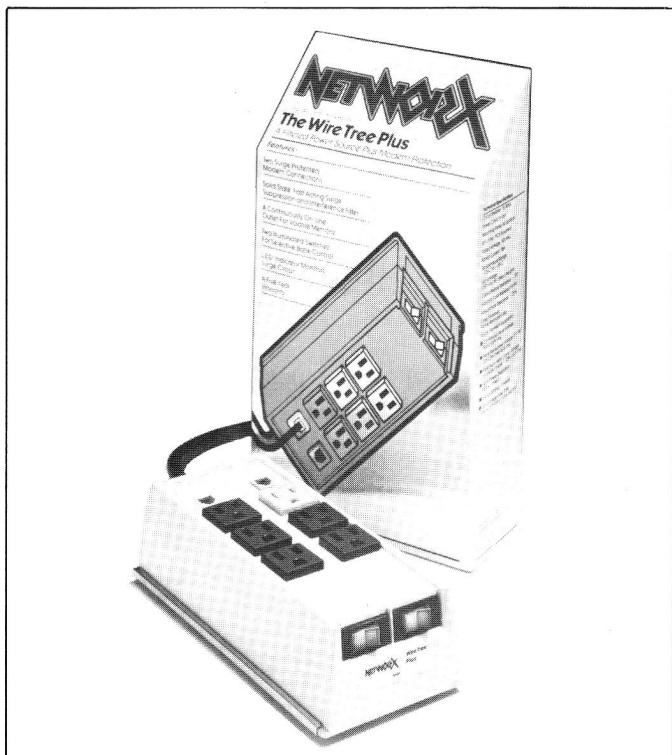
Product descriptions contained in this section are based on information supplied to us by the respective manufacturers. These announcements are provided solely as a service to our readers and do not constitute an endorsement by inCider of any given product.



Wireless MT/1 puts TV on your monitor.



DiskFiler stores 50 disks within easy reach.



Wire Tree protects your entire system.

edited by Kerry J. Lanz



Don't leave home without your Apple.

Don't Leave Without It

Take your computer and your printer on your mid-winter vacation with **American Tourister** computer cases. Each case has a strong outer shell with interior foam cut to fit your equipment. It looks just like any other luggage to foil theft. Prices are \$137.50 for an Apple II Plus or //e, and \$105 for Epson FX printers. Contact American Tourister, 91 Main Street, Warren, RI 02885. Use Reader Service card number 471.

The Portable Connection

Disk + connects your Apple II Plus or //e to a Radio Shack Model 100 portable. The kit (\$69.95) includes instructions, disk for the Apple, cas-

ette and EPROM for the Model 100. Hook the Model 100 to your Apple through an RS-232 interface and use the larger memory of the Apple. Write to Portable Computer Support Group, 11035 Harry Hines Boulevard, Suite 207, Dallas, TX 75229. Reader Service number is 472.

All-in-One Modem Card

The **Zoom/Modem** plugs into a slot in your Apple II, II Plus, or //e and opens up the world of telecommunications. At \$229, this auto-dial, auto-answer, 300-baud modem with a built-in terminal program includes offers from on-line information services. Get information from Zoom Telephonics, 207 South Street, Boston, MA 02111. Use Reader Service number 486.

The Truth About inCider

You probably already know that **inCider** is one of the fastest-growing Apple*-specific magazines on the market today.

What you might *not* know is that there are over 1.2 million Apple computer owners out there. And, many of them buy their copies of **inCider** at dealerships like yours every month. They might even be buying it from your competitors...

The remarkable success Apple has enjoyed shows no signs of slowing. As a result, **inCider's** continued growth is assured—and so is yours, as an **inCider** dealer.

We make it easy for you to sell **inCider**. We give you:

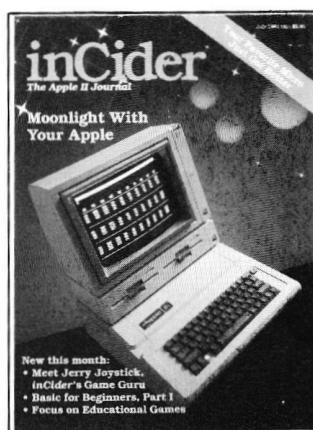
- liberal dealer discounts
- four month, full-refund returns
- a toll-free number for customer service
- a colorful poster to spur sales

To place your order, call our Direct Sales Department today, at

1-800-343-0728

or write to

inCider
Direct Sales Department
80 Pine Street,
Peterborough, NH 03458



New this month:

- Meet Jerry Joystick, **inCider's** Game Guru
- Basic for Beginners, Part I
- Focus on Educational Games

*Apple is a registered trademark of Apple Computer Inc.

Ultra-Fast Printer

Faster than a speeding typist, the **OT-700** dot-matrix printer (\$1495) has a top speed of 700 characters per second. Letter-quality printing is also fast at 350 cps. Graphics printing, alternate character sets, and foreign alphabets are available. For details write Output Technology, 606 110th Avenue NE, Bellevue, WA 98004. Check number 475 on the Reader Service card.

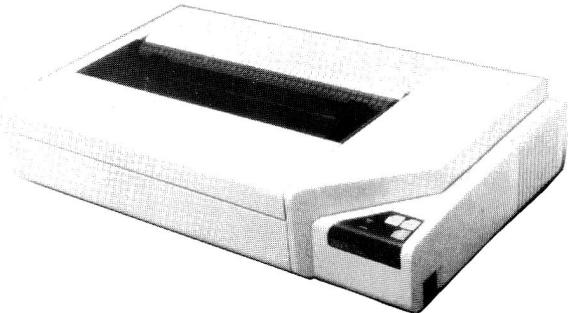
Low-Cost Home Printer

The **Fastext-80**, priced at \$259, is an affordable dot-matrix printer with a speed of 80 cps. Features include pica and elite type styles, condensed and enlarged printing, and graphics mode. It comes Centron-

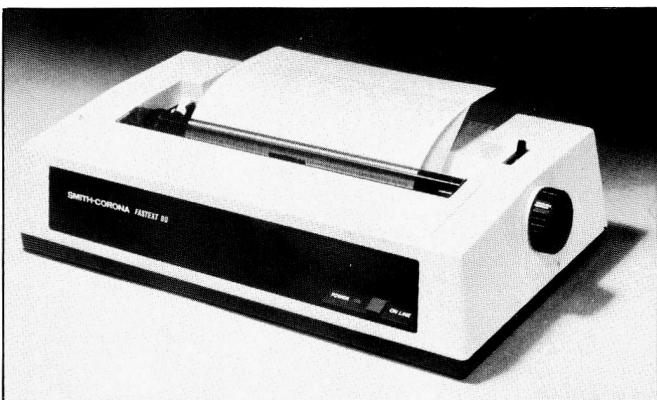
ics compatible, but a serial version is available. Contact Smith-Corona, 65 Locust Avenue, New Canaan, CT 06840, or check off Reader Service number 481.

Alternative Operating System

More disk space and faster speed come from **DOS 4.0**. For \$95 you get a CMOS 6502 chip, disk with DOS 4.0 operating system, and two manuals. The new chip provides fast processing, while the new operating system boosts disk storage and efficiency. This system is for an Apple II, II Plus, or //e. Get more details from Rune Enterprises, Suite 214, 80 Eureka Square, Pacifica, CA 94044. Mark number 478 on the Reader Service card.



High-speed OT-700 dot-matrix printer.



Affordable printing with the Smith-Corona Fastext-80.

Circle 264 on Reader Service card.

BACKUP YOUR DISKS

NOW AVAILABLE AT YOUR LOCAL COMPUTER STORE

ESSENTIAL DATA DUPLICATOR III™

EDD runs on Apple II, II plus, IIe, IIC and Apple III (in emulation mode) using one or two disk drives. EDD allows you to easily and quickly make back up copies of your "uncopyable" Apple disks. ■ Since EDD has been preset to copy the widest range of copy-protections possible, you just simply boot up EDD, put the disk you want to copy in one disk drive and a blank disk in the other (EDD will work using one drive also) and in about 2 1/2 minutes a copy is made. ■ Unlike the "copy-cards" which only copy "single load" programs, EDD copies the entire disk. This would be similar to hooking up two cassette recorders, playing from one, and recording to the other. ■ We have even included an option so you can check the speed of your disk drives because drive speeds running fast or slow can damage disks and cause other problems. ■ We publish EDD program lists (information about copy-protected disks) every couple of months, which EDD owners can receive. The current list is included with the purchase of EDD. ■ The bottom line is this; if EDD can't copy it, chances are nothing will.

\$79.95 Ask for EDD at your local computer store, or, to order direct; send \$79.95 plus \$2 shipping (\$5 foreign). Mastercard/Visa accepted. Prepayment required.

UTILICO MICROWARE
3377 Solano Ave., Suite #352
Napa, CA 94558 (707) 257-2420

Warning: EDD is sold for the sole purpose of making archival copies ONLY.

GET FAST RELIEF FROM IRS HEADACHES!

With TAX COMMAND Income Tax Preparatory Software Series!

On disk for Apple II, II+, //e, and //c with 64K or more: TAX COMMAND PROFESSIONAL: high-speed tax computation, with a wide variety of schedules, at your finger tips.

- Fast line-by-line Federal Tax information entry.
- All mathematical calculations done automatically.
- Built-in tax tables.
- Prints on the official U.S. Tax forms.
- Forget something? Tax Command Professional is flexible enough to quickly recalculate.
- Cost of program is tax deductible.

This menu driven program covers the 1040 Form, Schedule A, B, C, D, E, G, R, RP, SE, W, and Forms 2106, 2119, 2441, and 3903.

\$79.95.

On disk for Apple II, II+, //e, and //c with 64K or more: NEW! TAX COMMAND PLANNER for quick, easy planning of tax strategies.

- Specifically designed for your tax planning.
- Decide how to depreciate assets.
- Whether to sell stock.
- How to make contributions at the lowest cost.
- Six different options for five years.

\$79.95.

Registered owners receive next year's update at a reduced cost.

Double Discount! Buy Tax Command Professional and Tax Command Planner for one low price of \$139.99.



Send me fast relief! Enclosed is my check or money order for the amount specified below plus \$2.00 for shipping and handling. Please send me:

Tax Command Professional (\$79.95)
 Tax Command Planner (\$79.95)
 Double Discount! Send both programs. (\$139.99)

Credit card customers call (414) 278-0829.

Name _____ Address _____

City _____ State _____ Zip _____

Mail to:
Practical Programs, Inc. • P.O. Box 93104
625 North Milwaukee Street • Milwaukee, Wisconsin 53203



Circle 326 on Reader Service card.

Before this happens, call SAFEWARE

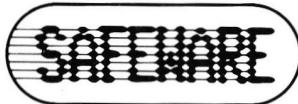
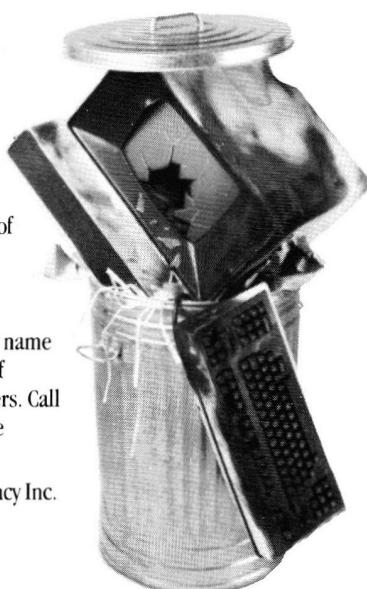
800/848-3469

(In Ohio, call
614/262-0559)

Protects your computer against theft, fire, power surges and other accidental losses. Insures your entire system for as little as \$35 a year—depending on the value of your hardware, software, and media. Full replacement after a low \$50 deductible.

We're SAFEWARE,™ the first name in computer insurance. Tens of thousands of satisfied customers. Call toll-free for rates or immediate coverage.

SAFEWARE, The Insurance Agency Inc.
P.O. Box 02211
2929 N. High Street
Columbus, Ohio 43202



NEW PRODUCTS



Smartboard programmable keyboard and trackball.

Keyboard and Trackball

Smartboard combines a sophisticated keyboard with a trackball. The keyboard has ten programmable keys, numeric keypad, and optional Dvorak key layout. Use the trackball for games or program it for mouse emulation. Smartboard works with an Apple II, II Plus, or //e, costs \$400, and needs an adapter (\$50). Contact Wico, 6400 West Gross Point Road, Niles, IL 60648, or mark Reader Service number 474.

Modem Gives System Security

With passwords and call-back protection, the **Security Modem** (\$695) guards your system from unauthorized access. This Hayes-compatible 1200/300/110 baud modem uses an RS-232 interface and stores 25 passwords and phone numbers. For details write Cermetek Micro-

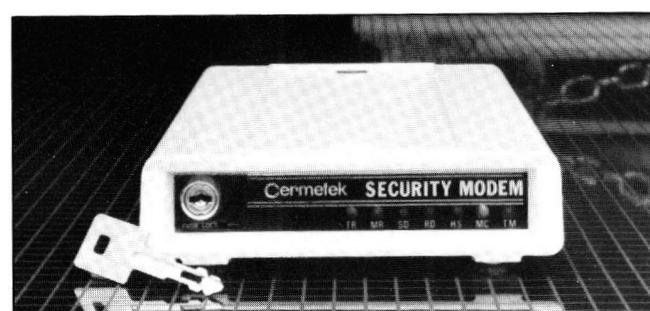
electronics, 1308 Borregas Avenue, Sunnyvale, CA 94088. Reader Service card number is 482.

Emergency Power Protection

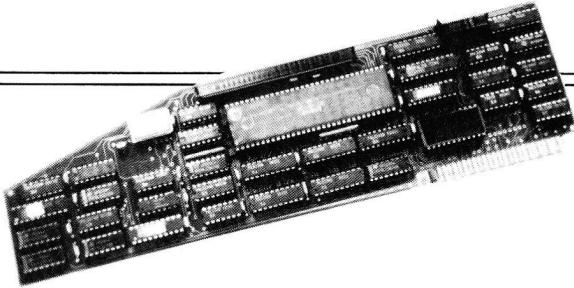
Don't let winter storms dump your files along with the snow. The **Minuteman 500** (\$699) provides your system with 500 watts of power for up to 30 minutes in case of power failure. Use it year-round as a surge protector and line filter, but it automatically comes online in case of brownouts and blackouts. Write Para Systems, 11425 Mathis Street, Suite 404, Dallas, TX 75234. The Reader Service number is 489.



Minuteman 500 protects your power and your data.



The Security Modem protects your system.



PDQ 32-bit card runs the PDQBASIC+ Applesoft compiler.

Applesoft for 32 Bits

Run your Applesoft programs on a superfast 32-bit processor with the **PDQBASIC+** compiler (\$95). The compiler requires the **PDQ Super-32** coprocessor card (\$795). Execution speed can be 40 times faster with this system. Full details are available from Enhancement Technology, 17 Keeler Street, Pittsfield, MA 01202. Use number 480 on the Reader Service card.

Pooling Your Printer

The **Scooter Multi-Buffer** allows one parallel printer to receive data from three computers without manual switching. Indicator lights tell how much of the 64K memory is being used. Useful for schools or offices, it's priced at \$389 by Ohm/Electronics, 746 Vermont, Palatine, IL 60067. The Reader Service number is 479.

Serial Card for Epsons

The **Universal Card** (\$129.50) allows your serial Apple //c to drive Epson RX and FX printers. The Card checks data, and changes Imagewriter control codes to Epson codes so it's compatible with all software written for the //c. For additional details contact Hanzon Data, 18732 142nd Avenue N.E., Woodinville, WA 98072, or check Reader Service number 488.

Sweet Talkin' Chip

The new SSI 263 chip lies at the heart of the **Sweet Talker II** sound synthesizer and software. It imitates speaking and singing with complete control of vibrato, tone, and inflection. Music and sound effects are available. Plug it into a slot on your Apple II Plus or //e for \$104. Talk to Micro-mint, 561 Willow Avenue, Cedarhurst, NY 11516, or mark Reader Service number 470.

Testing the Chips

Just the New Year's gift for your techie friend is the **DA6502-B** for \$595. This 6502 emulator lets you build, test, and repair any system based on the 6502 CPU, including Apples. The system consists of terminal, emulator program, 6502 chip, bus switch, and power supply. Contact Da-Tech, 92 Steamwhistle Drive, Ivyland, PA 18974. Use number 483 on the Reader Service card.

Switchable Color Monitor

Teknika's **MJ-22** high-resolution monitor switches between RGB and NTSC composite signals. The monitor, priced at \$439.95, uses the composite signal of your Apple II. An optional 80-column RGB board for the Apple //e costs \$200 and gives additional modes and a choice of text colors. Both monitor and board are from Teknika Electronics, 353 Route 46 West, Fairfield, NJ 07006. Mark Reader Service number 487.

Circle 34 on Reader Service card.

Maximum Protection for your Apple



The **APPLECENTER** protects your Apple II system from theft and unauthorized use. The MODEL 12 features a built-in filtered cooling fan plus state-of-the-art voltage surge protection. All metal construction, the **APPLECENTER** bolts easily to the worksurface (or use optional adhesive plate) to secure your Apple II or IIe, 2 disk drives or Duodisk. You control the use of your Apple with the key locking on/off switch. Our MODEL 10 is compatible with side mounted fans. Our **EMBLEM** secures your IBM PC from theft. Our **SECURITY CORNERS** are designed to secure printers, hard disks, and other computers.



Call or write for additional information:

DOSS INDUSTRIES

1224 Mariposa, San Francisco, CA 94107
(415) 861-2223

FREE SHIPPING DISKETTES

West Coast "Call"
1(800) 621-6221

Discounts Starting at 3 Box Quantities

Central & East "Call"
1(800) 654-4058

3M	Dysan	maxell	Verbatim
• 5 1/4" •	• 5 1/4" •	3 1/2" CALL	• 5 1/4" Datalife
s-side 17 95	s-side 22 95	s-side 19 95	s-side 18 95
d-den. 23 95	d-side 30 50	d-side 25 95	d-den. 24 95
d-den. 27 50	s-side 34 50	s-side 28 95	s-side 30 95
d-side 33 95	d-side 45 50	d-side 36 95	d-side 39 95
quad	quad	quad	quad
• 8" •	• 8" •	• 8" •	• 8" Datalife
s-side 21 50	s-side 28 50	s-side 31 95	s-side 24 75
s-den. 26 00	s-side 30 95	d-den. 31 95	s-den. 26 95
d-den. 31 50	d-side 34 95	d-side 34 95	d-den. 31 95
d-den.	d-den.	d-den.	d-den.

3M	AMARAY MEDIA MATE
DC100A...1395	(3 1/2" ... 1195) (5 1/4" ... 1195)
DC300A...1840	DISK MINDERS
DC300XL 2025	(5 1/4" ... 1675) (8" ... 2150)
DC600A...2445	BULK PACKED DISKS "CALL"

Diskettes 10/Box the Dealer Inquiries Welcomed

1(800) 654-4058

Diskette Connection   

*UP's Delivery Only. Add 300 on orders under 3500 or 20 disk.

1984 Article Index

BUSINESS

Bishop, Dan	Mountains on a Micro	1:20
Brewer, Mike	The Photographer's Apple	1:58
Burnett, Peggy	Taming the Wild Inventory (and Other Mysteries)	10:52
Conley, Lawrence	Account for Yourself	12:84
Cowell, W.D.	Customized Tax Preparation with VisiCalc	4:74
Dougherty, J. Patrick	Preschool Financial Management with VisiCalc	1:68
Frazier, Howard	Customers on File	10:56
Garrison, Paul	Apples in Real Estate	1:44
Garrison, Paul	The Computer and the Writer	1:52
Glau, Gregory R.	Barring Your Buying	2:92
Glau, Gregory R.	Breakin' It Down	6:104
Glau, Gregory R.	Business Pictures	11:41
Glau, Gregory R.	Cash Flow Woes	1:152
Glau, Gregory R.	Selling Savings	3:126
Glau, Gregory R.	Talking to Yourself	5:106
Glau, Gregory R.	Taxing Times	4:116
Glau, Gregory R.	Three for Your Money	7:23
Glau, Gregory R.	Word Processor Bargains	8:47
Huntington, Fred	How I Survived a Tax Audit	7:74
Mason, Archie	The Data Basement	1:34
McClelland, Trish	Be a Computer Consultant	1:64
McClelland, Trish	Variance Analysis Revealed	6:53
McGuire, Ken	Letterheads Unlimited	10:68

Larsen, Mark	Fast Tracks	11:66
Lindauer, Damien	Grape Gobbler	8:68
Lindauer, Damien	Typing Defense	9:81
Magge, Subu	Stack Attack	5:54
Marks, Dennis M.	Ssserpent	2:76
Romero, John	Scout Search	6:68
Stear, Ronald	Jigsaw Puzzle	1:90

GENERAL

Bishop, Dan	inCider's Holiday Shopping Guide	12:48
Brennan, Terry	Of Mice and Pointers	4:24
Davidson, John	A Solar Survey	2:42
DeTray, Jeff	The Alternative Apple	2:58
Eisenberg, Amee and Bob Ryan	An Interview with Steve Wozniak	7:52
Kelly, Nancy White and Carol M. Clerke	//c vs. PCjr: Which One Belongs in Your Home?	8:80
Kohler, Joe	Tackling the Building Environment	2:52
Kohn, Alfie	F-Load: A Solar Design Tool	2:44
Lanz, Kerry J.	Russian Word Processor	7:64
Mills, Jeffrey A. and John J. Fedak	Off to See the Wizards	11:56
Murphy, Brian J.	A Variable Poster Printer	1:78
O'Brien, Bill	Tom Snyder: Interview	6:42
Quinn, Paul	The Mouse That Roars	10:72
Russon, Rob	Dave Larson: Bringing Apples to Market	9:88
Ryan, Bob	A New Glossary for Computerists	12:98
Ryan, Bob	The Apple //c	7:60
Ryan, Bob	Lisa 2	3:52
Sheldon, Ken	Macintosh...The Gloves Come Off at Apple	3:42
Smith, Bill	Olympic Coaching by Computer	4:36
Smith, Rodney N.	The Solar Connection	2:34
Wendel, O.T. and J. Kudebeh	Stumping with Micros	11:78
Whitmore, Sam	Appleton: Running with Quick-File	4:52
Whitmore, Sam	Bill Budge: Pinball's All-Time High Scorer	5:30
Wiesenber, Michael	Electronic Arts	5:35
Witham, Joan	Read 'Em and Weep	12:60
	inCider's Guide to Mouse Software	10:76

GRAPHICS

Deitcher, Kenneth A.	Title Slides Without Peer	5:50
Fudge, Don	Are You Another Rembrandt?	10:19
Fudge, Don	Collision Encounters of the Third Kind	1:122
Fudge, Don	Getting Shapely	2:104
Fudge, Don	Hi-Res Text Typing: Part 1	7:92
Fudge, Don	Hi-Res Text Typing: Part 2	8:112
Fudge, Don	Hundreds of Scenes Per Disk!	5:16
Fudge, Don	Introduction to Function Plotting	4:16
Fudge, Don	Mirror, Mirror...and Memory Management	6:13
Hummel, Kenneth	Design Maker	4:58
Miller, Steve	A Piece of the Pie	10:66
Swan, Lawrence J.	Hypnosis	9:107

GAMES

Berghout, Floyd	A Galaxy of Games	11:48
Branchfield, Aric	Golf Slice II	4:54
Davis, Joel J.	Eagle I	10:43
Devine, Robert R.	Presidential Power	3:60
Fudge, Don	Correction	5:140
Lanz, Kerry J.	Shogun	3:90
	Mystery Code	11:89
	The Exodus: Ultima III Character Editor	6:58

HARDWARE CONSTRUCTION

Corp. Michael B.	The Paddle Softswitcher	1:100
Faughn, Jerry	Gameport Interfacing	9:77
Faughn, Jerry	Using a Versatile Interface Adapter with Your Apple	6:72

HINTS 'N' TECHNIQUES

Bragner, Robert	The Applesoft Random Number Bug	4:126
Bragner, Robert	Coded Patchwork for The Inspector	7:114
Cable, Hobart S.	Get Control of Your Apple Dot Matrix Printer	2:120
Corica, Timothy	Simple Variable Dump	4:132
Creamer, Jeff	BLOAD Spec-Finder	6:111
Dymerski, Paul P.	Beating Fre(0) with HIMEM	6:110
Galler, Michael	Recover a Protected File in MBASIC	9:91
	Correction	12:66
Hurlburl, H.Z.	Byte Seeking	3:114
Jackson, Ed	DOS Commands Turn the Trick	4:130
Jeske, Mark	Input Hello	10:100
Lindauer, Damien	Professional Numbers	7:116
Lott, Steven	Paddle Reading	5:114
Miller, W.M.	A Bug in AppleWorks	11:109
Morse, P. Kenneth	Now You See It, Now You Don't	12:127
Ogasawara, Todd	Apple Page Dump	1:157
Page, Paul	Maintenance Made Easy	12:126
Payne, Dewey	Those Beautiful Exec Subroutines	1:159
Phillips, Michael	Memory Search	10:100
Plum, Abram M.	Out, Damned Cursor!	5:112
Reich, L.S.	Precision Dumping	2:124
Rollinson, Susan W.	Pretty-Printing from Word Processors	3:114
Rubenfeld, Viktor	Garbage Clearing	9:92
Rubenfeld, Viktor	Poignant Statements	8:125
Segrist, Jim	Personalize Your Disks	4:128
Sutton, Jon	Goodbye 80-Column Blues	8:125
Verdelotti, Edward	Serpent on a Stick	11:110

JUVENILE

Murphy, Brian J.	Baby's First Computer Program	5:28
Rowland, Bill	Builder	4:28
Rowland, Bill	Joysticking	8:33
Rowland, Bill	Talk to Me	9:47
Seeds, Michael A.	Dino Math	11:31
Seeds, Michael A.	Kidword	10:29
Seeds, Michael A.	Munch Mouse	7:35
Seeds, Michael A.	Starfrog and Flutterbye	3:54
Seeds, Michael A.	Trim an Apple Tree	12:39

PASCAL

Florini, James R.	Making Your Pascal Apple Grow	3:108
Florini, James R.	Printing Multiple Files with DIABLOPRT	6:77
Florini, James R.	The World's Cheapest Word Processor	5:64
Karr, Clark R.	Pascal Character Generator	4:85
Munro, Allen	Using Pascal on the Apple //e	1:96

PROGRAMS, MISCELLANEOUS

Coker, Frank	Random Music	12:93
Dempsey, Daniel F.	Piano Keys	7:68
Frost, Norman C.	Softball Statistics	4:40
Fudge, Don	Fudging Apple Sounds	9:109
Kandell, Jonathan	Computer Music Worth Listening To	2:68
Rodgers, Clifford L.	Ten Pin Tally	4:50
Rollinson, Susan W.	New Year's Eve	1:85

TELECOMMUNICATIONS

Granfield, John	Buying Your First Modem	8:58
Kitzerow, Scott	Direct Connect Diary	8:64
Lesko, Matthew	Priceless Data Bases for (Almost) Nothing	11:74
Ryan, Bob	Don't Hang Up!	8:54
Witham, Joan	Directory of Modem Manufacturers	8:61

TUTORIALS

Bishop, Dan	BASIC Looping Structures	11:100
Bishop, Dan	The Basics of BASIC	7:41
Bishop, Dan	Decisions, Decisions...	9:40
Bishop, Dan	Decisions II and Random Numbers	10:102
Bishop, Dan	Hi-Res Alphabet Soup	3:14
Bishop, Dan	Hi-Res Page 2 Text	2:16
Bishop, Dan	On Nonstandard Basic and Other Things	6:22
Bishop, Dan	Remarks and Subroutines	8:120
Bishop, Dan	The Sort Index	5:97
Darnay, Arsen	Hunting the Elusive ASCII	5:42
Swoboda, Lee	The Compleat Text File Primer: Part 1	3:100
Swoboda, Lee	The Compleat Text File Primer: Part 2—The Memory	4:64
Swoboda, Lee	The Compleat Text File Primer: Part 3—Disk Operating Systems	5:84
Swoboda, Lee	The Compleat Text File Primer: Part 4—Text Files	6:88
Swoboda, Lee	The Compleat Text File Primer: Part 5—Sorting	7:84
Swoboda, Lee	The Compleat Text File Primer: Part 6—Searching	8:90
Swoboda, Lee	The Compleat Text File Primer: Part 7—Visi-Data	10:80

UTILITIES

Bynum, Bill	Nothing but Interruptions	12:72
Claiborne, Anthony	In Search of . . . Basic Keywords	1:117
Danzer, Paul M.	Load Machine Language and MBasic Together	2:88
Jones, Stephen	Build a Better MousePaint	12:69
Keilholz, Nadine L.	Apple Writer Patchwork	6:36
Lanz, Kerry J.	Capturing Big Games	11:62
Lowe, David C.	Clearmem	4:94
Silvestri, Antonio C.	Probing Apple Disk Files	4:96

1984 Review Index

BOOKS

Baldridge, Ann	The Complete Handbook of Personal Computer Communications	2:156
Bowling, R.A.	Executive VisiCalc for the Apple Computer	10:141
Bowling, R.A.	VisiCalc Extensions for the Apple II and Apple //e	12:159
Burke, Anna Mae	Computer Literacy: A Hands-On Approach	1:164
Callamaras, Peter	CP/M Bible: The Authoritative Reference Guide to CP/M	4:138
Crom, Justin	Using Apple Business Computers	10:142
Davison, John W.	How to Create Your Own Computer Bulletin Board	3:154
Dickson, Wayne	Fancy Programming in Applesoft	1:165
Dodson, Marc	Pascal for the Apple	8:145
Doherty, W. Charles	Moonlighting with Your Personal Computer	11:141
Doherty, W. Charles	The Soul of CP/M	2:160
Doughty, A.E.	Computers in Teaching Mathematics	9:148
Doughty, A.E.	Discovering Apple Logo	8:146
Doughty, A.E.	Learning with Logo	6:113
Eldred, Eric	Pascal Programs for Business	2:158
Engelsher, Charles	Inside Apple's ProDOS	12:159
Garland, Lisa	Income from Your Home Computer	10:143
Glau, Gregory R.	Better BASIC for the Apple	9:146
Goldman, Steve	Getting the Most from Your Micro	7:140
Grevstad, Eric	The Survival Kit for Apple Computer Games	2:156
Gubernat, Susan	Electronic Life: How To Think About Computers	3:152
Hoffman, David B.	Pascal Programs for Business	10:141
Holt, Oliver	The Farm Computer	8:147
Kuechmann, F.	Apple Interfacing	3:154
Kuechmann, F.	Apple II Applications	6:113
Lanz, Kerry J.	The Book of Adventure Games	11:139
Lanz, Kerry J.	Golden Flutes and Great Escapes	11:142
McCullough, Karen	Writing with a Word Processor; Writing in the Computer Age	12:160
McMillen, Kenneth	The Apple II Circuit Description	6:116
O'Brien, Bill	Getting On-Line	8:145
O'Neill, Janet	40 Easy Steps to Programming in Basic and Logo	4:138
Reese, James	Pascal Programs for Games and Graphics	5:118
Robinson, Gerry	Computers, Teaching, and Learning: A Guide to Using Computers in Schools	9:148
Rowland, Bill	The Academic Apple	9:146
Schmelitz, Leslie R.	The Apple House	6:114
Schwarz, Jay	The Apple //c Book	11:139
Schwarz, Jay	Going Places with the New Apple //c	9:147
Seward, Hub	Apple II 6502 Assembly Language Tutor	1:164
Silverstein, Ken	An Apple for Kids	12:159
Silverstein, Ken	Write Your Own Apple Games	5:118
Sumner, Lee E.	Assembly Language Programming for the Apple II	1:165
Ude, Arthur	The DIF File: For Users of VisiCalc & Other Software	3:156
Ude, Arthur	The Naked Computer	5:119
Ude, Arthur	What Do You Do After You Plug It In?	7:140
Waugh, Michael	Hardware Interfacing with the Apple II Plus	2:162

Whitmore, Sam

Megabucks From Your Microcomputer

1:167

BUSINESS

Amortize It—Loan Amortization/ Analyzer

1:180

Crom, Justin	Graph'n'Calc	3:140
Crom, Justin	ThinkTank	4:146
Doherty, W. Charles	Financial Planning for VisiCalc	2:134
Doherty, W. Charles	In-The-Mail	7:134
Doherty, W. Charles	Magicalc	9:130
Doherty, W. Charles	PractiCalc II	10:115
Fuccillo, Richard M.	OPVAL	5:128
Fuccillo, Richard M.	Portfolio	5:134
Fuccillo, Richard M.	Stock-Folio	10:117
Fuccillo, Richard M.	Teleminder	3:146
Fuccillo, Richard M.	Winning on Wall Street	10:118
Glau, Gregory R.	AccountingPlus Super/e	3:137
Glau, Gregory R.	BPI Accounts Receivable	6:142
Glau, Gregory R.	Certified Personal Accountant	10:115
Glau, Gregory R.	PeachCalc	2:140
Glau, Gregory R.	Peachtree's Accounts Payable	2:146
Glau, Gregory R.	Peachtree's Accounts Receivable	2:148
Glau, Gregory R.	Work Force II	6:140
Mason, Archie	Dow Jones Spreadsheet Link	10:121
Murphy, Brian J.	Market Illustrator	1:178
Norman, Scott	Knoware	12:145
Umberger, Daniel	People Management	12:144
Voskuil, Jon	Financial Cookbook	12:136

DATA BASES

Fertel, Richard	Bookends	1:168
Fertel, Richard	CodeWriter	10:126
Glau, Gregory R.	The Data Bank	1:172
Hart, Roger	Data Spectrum	11:124
Ryan, Bob	Magic Memory	6:125
Walpole, Peter	Report Card	10:123

EDUCATION

Burke, Anna Mae Walsh	Create-A-Test	9:129
Campbell, E.R.	PLATO Courseware	9:136
DelPorto, Ron	Hands on Basic Programming	1:185
Fox, Bonnie	Fraction Factory; Edu-Ware Fractions; Fraction Fever; Fractions	9:127
Fox, Bonnie	Micro-Math	4:148
Kaplan, Howard	Kidwriter	7:128
Kelly, Nancy White	Microzine	6:141
Lurie, Margaret	Counters; Number Farm	12:146
Metzel, Janet	Early Games Music	2:130
Metzel, Janet	Neuromuscular Concepts	2:130
Muller, Jim	Apple Logo //	9:134
Murphy, Brian J.	Kinder Koncepts	9:126
O'Neill, Janet	Word Blaster	7:127
O'Neill, Janet	Young Folks Series	1:174
Pagnoni, Mario	Arcademic Skill Builders in Language Arts	2:138
Pagnoni, Mario	SAT Series	2:134
Pagnoni, Mario	Speed Reader II	6:128
Robinson, Gerald T.	Kids on Keys	9:128
Seeds, Michael A.	Stickybear Opposites	8:139
Stavely, Tony and Rachel	M-ss-ng L-nks	12:142
Tkach, John	Kids' Corner: Learning About Numbers	1:188
Watt, Molly	The Factory	7:129
Waugh, Michael L.	BASIC Tutor	8:132
Waugh, Michael L.	Learning with Fuzzywomp	11:128

Waugh, Michael L.	Mastering the SAT	9:135	Eldred, Eric	E-Z Card	1:190	
Waugh, Michael L.	Preschool Skill Builders	7:131	Florini, James R.	ALF AD8088	12:150	
GAMES						
Beaulieu, Linda	Planetfall	8:140	O'Brien, Bill	RGB Interface	12:150	
Beaulieu, Linda	The Witness	3:132	Salamone, Ted	FingerPrint	10:131	
Brown, Richard	Death in the Caribbean	4:154	Miscellaneous			
Brown, Richard	Lancaster	4:147	Dempsey, Daniel F.	Drum-Key	10:132	
Fox, Bonnie	MathMaze	12:137	Doherty, W. Charles	Soundmaster II	11:129	
Fuccillo, Richard M.	Tycoon	4:150	Engelsher, Charles	DuoDisk	12:149	
Grammer, Eric	Sammy Lightfoot	3:146	Mahaffey, Jerry	Pro 100 Keyboard	11:130	
Hoffman, Tobi	Crypto Cube	2:136	Meizel, Janet	Voice-Based Learning System	6:122	
Hoffman, Tobi	Pentapus	4:156	O'Brien, Bill	Cricket	12:154	
Kirchhof, Steven	Legacy of Lylgamyn	1:178	Schwartz, Steven A.	Amdisk-I Micro-floppy Disk Drive	5:120	
Lanz, Kerry J.	El-ixir	11:116	Summer, Lee E.	Keywiz VIP	2:164	
Lesser, Hartley	Lode Runner	4:160	Tkach, John	Mac Inker	1:194	
Meizel, Janet	Microscopic Journey	2:138	Modems			
Meizel, Janet	Planetmaster	1:176	Alexy, Albert A. and	Apple's Talkative Pair	8:74	
Meizel, Janet	Police Artist	1:182	Darrell L. Zwemke			
Morganstein, David	How About a Nice Game of	12:148	Engelsher, Charles	Era 2	12:156	
Morganstein, David	Chess?					
Murphy, Brian J.	Sargon III	8:133	Guild, George	UDS 212A/D Modem	3:164	
Murphy, Brian J.	Break the Bank Blackjack	7:130	Guild, George	U.S. Robotics Password Modem	8:143	
Murphy, Brian J.	Carrier Force	8:136	Printers			
Murphy, Brian J.	Caverns of Callisto	6:124	Becker, Loftus E.	The Vista V1200	4:140	
Murphy, Brian J.	Chivalry	6:125	Hart, Roger	Stalking the Low-Cost	6:28	
Murphy, Brian J.	The Coveted Mirror	8:140		Daisywheel Printer		
Murphy, Brian J.	Cubit	5:127	Rand, Herb	The Silver-Reed EXP 500	6:120	
Murphy, Brian J.	Gruds in Space	6:124	Summer, Lee E.	Apple Color Plotter	5:122	
Murphy, Brian J.	In Search of the Most Amazing	6:131	Voskuil, Jon	Apple Letter Quality Printer	1:190	
Murphy, Brian J.	Thing		Voskuil, Jon	Inforunner Riteman Printer	5:121	
Murphy, Brian J.	I.Q. Baseball	5:126	Voskuil, Jon	Microline 93	2:166	
Murphy, Brian J.	Masquerade	7:133	Voskuil, Jon	Ricoh RP1200N Daisy-Wheel	10:130	
Murphy, Brian J.	Murder by the Dozen	8:131		Printer		
Murphy, Brian J.	Plasmania	3:148	Voskuil, Jon	Smith-Corona L-1000	6:119	
Murphy, Brian J.	The Return of Heracles	11:118	White, Alexander S.	Centronics H80	11:129	
Murphy, Brian J.	Seastalker	12:137	White, Alexander S.	Juki 6100 Printer	6:118	
Murphy, Brian J.	Stellar 7	4:158	MISCELLANEOUS			
Murphy, Brian J.	Tournament Golf	8:130	Baldridge, Ann	TermExec Version 1.2	6:142	
Murphy, Brian J.	VODAC—The Alpine Encounter	7:125	Mahaffey, Jerry	The Incredible Jack	1:184	
Murphy, Brian J.	Word Challenge	11:119	Mason, Archie	Appleworks	7:80	
Muse, Dan	One-on-One	7:135	Meizel, Janet	Home Health Disk	2:144	
O'Neill, Janet	Troll's Tale	3:144	Ude, Arthur	Person-to-Person	11:120	
Ryan, Bob	Legionnaire	3:132	UTILITIES			
Salamone, Ted	The Heist	10:125	Bragner, Robert	Beagle Basic	3:148	
Sassano, Wayne J.	Time Tunnels	11:117	Brieger, Jerry	Print Graphics	1:177	
Watt, Molly	Jenny of the Prairie	8:138	Callamaras, Peter	Piracy Pruf	3:143	
Whitmore, Sam	North Atlantic '86	3:143	Close, Kenneth S.	DiskQuik	6:136	
Williams, Steven	Beyond Castle Wolfenstein	11:116	Doherty, W. Charles	Music Construction Set	12:138	
Williams, Steven	The Eating Machine	7:124	Lanz, Kerry J.	Paper Graphics	7:132	
GRAPHICS			Meizel, Janet	Songwriter	11:122	
Baldridge, Ann	The Graphics Magician	6:126	Morganstein, David	Documax	11:127	
Glau, Gregory R.	Multigraph	12:140	Sassano, Wayne J.	Number Commander	8:137	
Glau, Gregory R.	The Prime Plotter	1:169	Schmidt, Allan H.	The Print Shop	9:132	
Schmelz, Leslie R.	Electronic Playground	8:134	Schwartz, Steven	Font Downloader and Editor	1:186	
Umberger, Daniel W.	PictureWriter	11:126	WORD PROCESSORS			
HARDWARE						
Graphics						
Doherty, W. Charles	Polaroid Palette	12:78	Glau, Gregory R.	Write Away	3:134	
Meizel, Janet	PowerPad and Leonardo's	9:141	Gontarz, Gerry	Bank Street Speller	12:140	
	Library		Grevstad, Eric	Cut & Paste	5:126	
Schmidt, Allan H.	Apple Graphics Tablet	9:143	Morganstein, David	Homeword	7:137	
Schmidt, Allan H.	Gibson Light Pen	11:132	Morganstein, David	Gutenberg	6:133	
Schwartz, Steven A.	KoalaPad	5:120	Morganstein, David	Pen-Pal	4:149	
Interfaces			Morganstein, David	The Write Stuff	12:143	
Danzer, Paul M.	CP/M Gold Card	10:129	Morganstein, David	The Writer	7:125	
			Morganstein, David	Circascript	5:136	
			Sassano, Wayne J.	Simply Perfect	10:114	

Reader Service	Page	Reader Service	Page
168 Addmaster Corporation	99	Dynamics	20, 46
22 Advanced Logic Systems	68	inCider	
24 Appleware	105	Dealer ad	136
* Applied Engineering	93, 134	Subscription ad	64
273 Apricorn	43	12 Interactive	
219 Apropos Technology	97	Microware	105
* Batteries Included	47	157 International Apple	
159 Baudville	125	Core	78
179 Beagle Bros	113	535 Juki Industries	
* Beck Manufacturing	106	of America	26
* Bottom Line	123	86 Kensington Microware	31
4 Borderbund	7	541 Koala Technologies	CII
* Business Computers of Peterborough	77	428 Legend	128
6 Bytes & Pieces	104	417 MCT	53
172 Caribbean Computer Sales	99	288 Macrotech Computer	
361 Central Point Software	98	Products	34, 35
21 Cherry Valley Press	72	56 Midwest	81
Classified Ads	126, 127	102 Mercury MegaBank	25
408 Columbia Software Club	37	208 Micro City	83
195 Computer Colorworks	51	206 Micro Prose Software	61
356 Computer Learning Center	73, 74, 75	204 Micro Works	133
238 Computer Management Corporation	130	538 Mindscape	8, 9
17 Conroy-LaPointe	107	539 Mindscape	56
151 Creative Software	27	173 Monogram	11
163 Coreconcepts	36	380 Nibble Notch	130
144 Davka Corporation	132	310 Northeastern	
3 Dennison Computer	CIV	Software	115
* Diskette Connection	139	416 Orange Micro	40
108 Diversified Software	65	31 Pacific Exchanges	99
34 Doss Industries	139	* PC Network	Insert
362 East Coast Software	120	449 Pico	122
275 Electronic Arts	84	286 Practical Programs	138
318 Fastrack Computer Products	119	49 Prof. Jones	44
508 First Class Peripherals	13, 14	521 Programs Plus	109
510 First Class Peripherals	15	268 Prometheus Products	94
146 Golem Computer	62	16 Quinsept	102
66 H & E Computronics	CIII	281 Quinsept	72
109 Haba Systems	45	* Quorum	102
427 Hardcore COMPUTIST	70	326 Safeware	138
* Hayes Products	1	223 Sav-Soft	72
229 High Order Micro Electronics	42	105 Sega Enterprises	2, 3
* Human Systems		353 Sensible Software	131

For further information from our advertisers, please use the Reader Service card.

*This advertiser prefers to be contacted directly.

Advertising Sales: (603) 924-7138, (800) 441-4403

Paul Boule, Sales Manager; Barbara Alvarez

Reader Service

This card valid until February 28, 1985

My vote for the best advertisement in this issue goes to
whose Reader Service number is _____.

A. Where did you get this copy of *inCider*?

- 1. Personal subscription 5. At work
- 2. Computer store 6. Library
- 3. Newsstand 7. Friend/Colleague
- 4. Bookstore 8. Other

B. How many of each issue's program listings do you actually type in?

- 1. 0 4. 3
- 2. 1 5. 4
- 3. 2 6. 5 or more

C. Are you interested in reading more about the Macintosh or Lisa in *inCider*?

- 1. Yes, on the Macintosh 3. Yes, on both
- 2. Yes, on Lisa 4. No

D. Which of the following microcomputers do you own or use?

- 1. Apple II or II+ 5. Macintosh
- 2. Apple Ile 6. Apple compatible
- 3. Apple IIC 7. Other
- 4. Apple III 8. Don't own or use one

E. What is your annual household income?

- 1. Under \$20,000 4. \$60,000 - \$80,000
- 2. \$20,000 - \$40,000 5. \$80,000 - \$100,000
- 3. \$40,000 - \$60,000 6. Over \$100,000

F. How much have you spent on computer hardware during the last 12 months?

- 1. Nothing 5. \$3,000 - \$4,000
- 2. Under \$1,000 6. \$4,000 - \$5,000
- 3. \$1,000 - \$2,000 7. Over \$5,000
- 4. \$2,000 - \$3,000

G. How much do you plan to spend on computer hardware during the next 12 months?

- 1. Nothing 5. \$3,000 - \$4,000
- 2. Under \$1,000 6. \$4,000 - \$5,000
- 3. \$1,000 - \$2,000 7. Over \$5,000
- 4. \$2,000 - \$3,000

H. How much have you spent on software during the last 12 months?

- 1. Nothing 4. \$250 - \$500
- 2. Less than \$100 5. \$500 - \$1,000
- 3. \$100 - \$250 6. Over \$1,000

I. What is your specific interest in the items circled at right?

- 1. Immediate purchase 4. Reference
- 2. Purchase within 6 months 5. Other
- 3. Brand comparisons

J. Do you influence computer purchases within your company?

- 1. Yes 4. No
- 2. No 5. Doesn't apply

K. On a scale of 1 (no interest) to 5 (great interest), please rate your interest in the following *inCider* columns:

- 1. Fermentations 7. The Applesoft Adviser
- 2. The Game Reserve 8. The Cider Press
- 3. The Glau Report 9. Fudge It!
- 4. O'Brien's Journal 10. Ask *inCider*
- 5. The Learning Machine 11. The Apple Clinic
- 6. Child's Play 12. Apple Extract

L. If you are not a subscriber, please circle 500.

Reader Service: Return this card to receive full information on the products advertised in this issue. Refer to the ad. You will find numbers near the logo of each advertiser. Each represents the advertiser's individual Reader Service Number. Circle the corresponding numbers on the card on this page, include your name, address, zip, & stamp, and drop in a mailbox. In 4-6 weeks you'll hear from the advertiser directly.

1	6	11	16	21	151	156	161	166	171	301	305	311	316	321	451	456	461	466	471
2	7	12	17	22	152	157	162	167	172	312	317	322	327	332	452	457	462	467	472
3	8	13	18	23	153	158	163	168	173	323	328	333	338	343	453	458	463	468	473
4	9	14	19	24	154	159	164	169	174	304	309	314	319	324	454	459	464	469	474
5	10	15	20	25	155	160	165	170	175	305	310	315	320	325	455	460	465	470	475
26	31	36	41	46	176	181	186	191	196	326	331	336	341	346	476	481	486	491	496
27	32	37	42	47	177	182	187	192	197	327	332	337	342	347	477	482	487	492	497
28	33	38	43	48	178	183	188	193	198	328	333	338	343	348	478	483	488	493	498
29	34	39	44	49	179	184	189	194	199	329	334	339	344	349	479	484	489	494	499
30	35	40	45	50	180	185	190	195	200	330	335	340	345	350	480	485	490	495	500
51	56	61	66	71	201	206	211	216	221	351	356	361	366	371	501	506	511	516	521
52	57	62	67	72	202	207	212	217	222	352	357	362	367	372	502	507	512	517	522
53	58	63	68	73	203	208	213	218	223	353	358	363	368	373	503	508	513	518	523
54	59	64	69	74	204	209	214	219	224	354	359	364	369	374	504	509	514	519	524
55	60	65	70	75	205	210	215	220	225	355	360	365	370	375	505	510	515	520	525
76	81	86	91	96	226	231	236	241	246	376	381	386	391	396	526	531	536	541	546
77	82	87	92	97	227	232	237	242	247	377	382	387	392	397	527	532	537	542	547
78	83	88	93	98	228	233	238	243	248	378	383	388	393	398	528	533	538	543	548
79	84	89	94	99	229	234	239	244	249	379	384	389	394	399	529	534	539	544	549
80	85	90	95	100	230	235	240	245	250	380	385	390	395	400	530	535	540	545	550
101	106	111	116	121	251	256	261	266	271	401	406	411	416	421	551	556	561	566	571
102	107	112	117	122	252	257	262	267	272	402	407	412	417	422	552	557	562	567	572
103	108	113	118	123	253	258	263	268	273	403	408	413	418	423	553	558	563	568	573
104	109	114	119	124	254	259	264	269	274	404	409	414	419	424	554	559	564	569	574
105	110	115	120	125	255	260	265	270	275	405	410	415	420	425	555	560	565	570	575
126	131	136	141	146	276	281	286	291	296	426	431	436	441	446	576	581	586	591	596
127	132	137	142	147	277	282	287	292	297	427	432	437	442	447	577	582	587	592	597
128	133	138	143	148	278	283	288	293	298	428	433	438	443	448	578	583	588	593	598
129	134	139	144	149	279	284	289	294	299	429	434	439	444	449	579	584	589	594	599
130	135	140	145	150	280	285	290	295	300	430	435	440	445	450	580	585	590	595	600

Reader Service

This card valid until February 28, 1985

My vote for the best advertisement in this issue goes to
whose Reader Service number is _____.

A. Where did you get this copy of *inCider*?

- 1. Personal subscription 5. At work
- 2. Computer store 6. Library
- 3. Newsstand 7. Friend/Colleague
- 4. Bookstore 8. Other

B. How many of each issue's program listings do you actually type in?

- 1. 0 4. 3
- 2. 1 5. 4
- 3. 2 6. 5 or more

C. Are you interested in reading more about the Macintosh or Lisa in *inCider*?

- 1. Yes, on the Macintosh 3. Yes, on both
- 2. Yes, on Lisa 4. No

D. Which of the following microcomputers do you own or use?

- 1. Apple II or II+ 5. Macintosh
- 2. Apple Ile 6. Apple compatible
- 3. Apple IIC 7. Other
- 4. Apple III 8. Don't own or use one

E. What is your annual household income?

- 1. Under \$20,000 4. \$60,000 - \$80,000
- 2. \$20,000 - \$40,000 5. \$80,000 - \$100,000
- 3. \$40,000 - \$60,000 6. Over \$100,000

F. How much have you spent on computer hardware during the last 12 months?

- 1. Nothing 5. \$3,000 - \$4,000
- 2. Under \$1,000 6. \$4,000 - \$5,000
- 3. \$1,000 - \$2,000 7. Over \$5,000
- 4. \$2,000 - \$3,000

G. How much do you plan to spend on computer hardware during the next 12 months?

- 1. Nothing 5. \$3,000 - \$4,000
- 2. Under \$1,000 6. \$4,000 - \$5,000
- 3. \$1,000 - \$2,000 7. Over \$5,000
- 4. \$2,000 - \$3,000

H. How much have you spent on software during the last 12 months?

- 1. Nothing 4. \$250 - \$500
- 2. Less than \$100 5. \$500 - \$1,000
- 3. \$100 - \$250 6. Over \$1,000

I. What is your specific interest in the items circled at right?

- 1. Immediate purchase 4. Reference
- 2. Purchase within 6 months 5. Other
- 3. Brand comparisons

J. Do you influence computer purchases within your company?

- 1. Yes 4. No
- 2. No 5. Doesn't apply

K. On a scale of 1 (no interest) to 5 (great interest), please rate your interest in the following *inCider* columns:

- 1. Fermentations 7. The Applesoft Adviser
- 2. The Game Reserve 8. The Cider Press
- 3. The Glau Report 9. Fudge It!
- 4. O'Brien's Journal 10. Ask *inCider*
- 5. The Learning Machine 11. The Apple Clinic
- 6. Child's Play 12. Apple Extract

L. If you are not a subscriber, please circle 500.

Reader Service: Return this card to receive full information on the products advertised in this issue. Refer to the ad. You will find numbers near the logo of each advertiser. Each represents the advertiser's individual Reader Service Number. Circle the corresponding numbers on the card on this page, include your name, address, zip, & stamp, and drop in a mailbox. In 4-6 weeks you'll hear from the advertiser directly.

1	6	11	16	21	151	156	161	166	171	301	305	311	316	321	451	456	461	466	471
2	7	12	17	22	152	157	162	167	172	302	307	312	317	322	452	457	462	467	472
3	8	13	18	23	153	158	163	168	173	303	308	313	318	323	453	458	463	468	473
4	9	14	19	24	154	159	164	169	174	304	309	314	319	324	454	459	464	469	474
5	10	15	20	25	155	160	165	170	175	305	310	315	320	325	455	460	465	470	475
26	31	36	41	46	176	181	186	191	196	326	331	336	341	346	476	481	486	491	496
27	32	37	42	47	177	182	187	192	197	327	332	337	342	347	477	482	487	492	

PLACE
STAMP
HERE

inCider
P.O. Box 336
Dalton, MA 01227

PLACE
STAMP
HERE

inCider
P.O. Box 336
Dalton, MA 01227

Introducing the Most Powerful Business Software Ever!

TRS-80™ (Model I, II, III, or 16) • APPLE™ • IBM™ • OSBORNE™ • CP/M™ • XEROX™



The VERSABUSINESS™ Series

Each VERSABUSINESS module can be purchased and used independently, or can be linked in any combination to form a complete, coordinated business system.

VERSARECEIVABLES™

\$99.95

VERSARECEIVABLES™ is a complete menu-driven accounts receivable, invoicing, and monthly statement-generating system. It keeps track of all information related to who owes you or your company money, and can provide automatic billing for past due accounts. VERSARECEIVABLES™ prints all necessary statements, invoices, and summary reports and can be linked with VERSALEDGER II™ and VERSAINVENTORY™.

VERSAPAYABLES™

\$99.95

VERSAPAYABLES™ is designed to keep track of current and aged payables, keeping you in touch with all information regarding how much money your company owes, and to whom. VERSAPAYABLES™ maintains a complete record on each vendor, prints checks, check registers, vouchers, transaction reports, aged payables reports, vendor reports, and more. With VERSAPAYABLES™, you can even let your computer automatically select which vouchers are to be paid.

VERSAPAYROLL™

\$99.95

VERSAPAYROLL™ is a powerful and sophisticated, but easy to use payroll system that keeps track of all government-required payroll information. Complete employee records are maintained, and all necessary payroll calculations are performed automatically, with totals displayed on screen for operator approval. A payroll can be run totally, automatically, or the operator can intervene to prevent a check from being printed, or to alter information on it. If desired, totals may be posted to the VERSALEDGER II™ system.

VERSAINVENTORY™

\$99.95

VERSAINVENTORY™ is a complete inventory control system that gives you instant access to data on any item. VERSAINVENTORY™ keeps track of all information related to what items are in stock, out of stock, on backorder, etc., stores sales and pricing data, alerts you when an item falls below a preset reorder point, and allows you to enter and print invoices directly or to link with the VERSARECEIVABLES™ system. VERSAINVENTORY™ prints all needed inventory listings, reports of items below reorder point, inventory value reports, period and year-to-date sales reports, price lists, inventory checklists, etc.

VERSALEDGER II™

\$149.95

VERSALEDGER II™ is a complete accounting system that grows as your business grows. VERSALEDGER II™ can be used as a simple personal checkbook register, expanded to a small business bookkeeping system or developed into a large corporate general ledger system **without any additional software**.

- VERSALEDGER II™ gives you almost unlimited storage capacity (300 to 10,000 entries per month, depending on the system),
- stores all check and general ledger information forever,
- prints tractor-feed checks,
- handles multiple checkbooks and general ledgers,
- prints 17 customized accounting reports including check registers, balance sheets, income statements, transaction reports, account listings, etc.

VERSALEDGER II™ comes with a professionally-written 160 page manual designed for first-time users. The VERSALEDGER II™ manual will help you become quickly familiar with VERSALEDGER II™, using complete sample data files supplied on diskette and more than 50 pages of sample printouts.

SATISFACTION GUARANTEED!

Every VERSABUSINESS™ module is guaranteed to outperform all other competitive systems, and at a fraction of their cost. If you are not satisfied with any VERSABUSINESS™ module, you may return it within 30 days for a refund. Manuals for any VERSABUSINESS™ module may be purchased for \$25 each, credited toward a later purchase of that module.

To Order:

**Write or call Toll-free (800) 431-2818
(N.Y. residents call 914-425-1535)**

- * add \$3 for shipping in UPS areas
- * add \$4 for C.O.D. or non-UPS areas

- * add \$5 to CANADA or MEXICO
- * add proper postage elsewhere

DEALER INQUIRIES WELCOME

All prices and specifications subject to change / Delivery subject to availability.

COMPUTRONICS

50 N. PASCACK ROAD, SPRING VALLEY, N.Y. 10977

* TRS-80 is a trademark of the Radio Shack Division of Tandy Corp. • APPLE is a trademark of Apple Corp. • IBM is a trademark of IBM Corp. • OSBORNE is a trademark of Osborne Corp.

Circle 66 on Reader Service card.

*CP/M is a trademark of Digital Research. • XEROX is a trademark of Xerox Corp.



APPLES AND ELEPHANTS.TM



Nothing goes with the new Apple IIc[®] like Elephant Floppy Disks. And because Elephant never forgets, they'll go with them for a long, long time. In fact, they're 100% guaranteed to maintain their high quality for a lifetime of heavy use. Apples and Elephants. You could almost say that they were made for each other. For the Elephant dealer nearest you, call 1-800-343-8413. In Massachusetts, call collect (617) 769-8150.

Dennison



ELEPHANTTM NEVER FORGETS.

Circle 3 on Reader Service card.

Apple IIc is a registered trademark of Apple Computer, Inc.