

\$2.95

# Apple

MAY 1985

VOLUME 3  
ISSUE 5

INCLUDING  
**MACINTOSH**  
COVERAGE

STOCK OPTIONS

TYPESETTING

REVIEWS: THINKTANK 512

MUSICWORKS

THE INDEPENDENT GUIDE  
FOR **APPLE** COMPUTING

Downloaded from [www.Apple2Online.com](http://www.Apple2Online.com)

## UNDERSTANDING **ProDOS**

FIRST IN A SERIES

VOICE  
RECOGNITION &  
SYNTHESIS

IMPROVE YOUR  
WRITING SKILLS

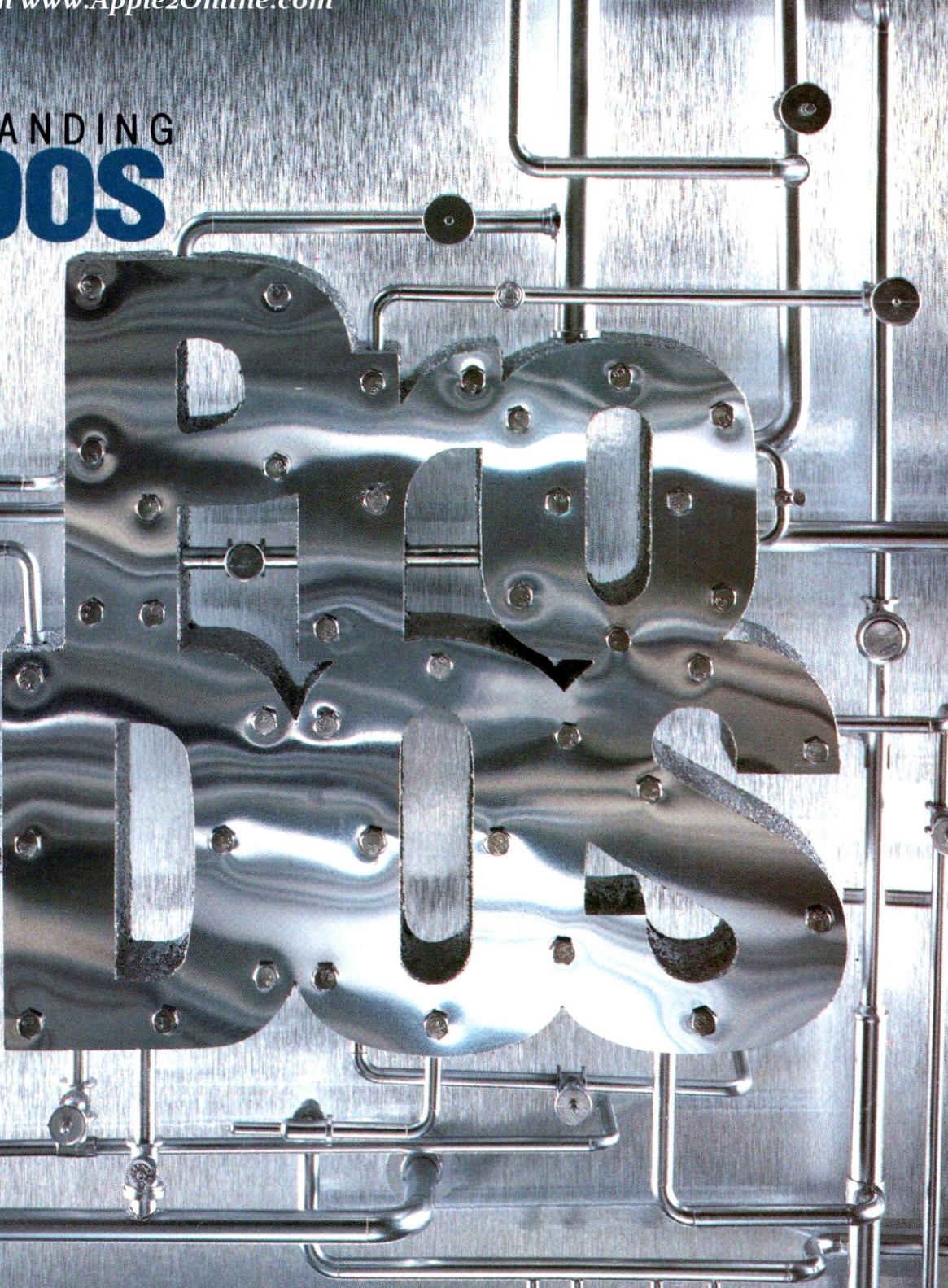
LOW-COST  
HARD DISK FOR  
APPLE II PLUS, IIe

APPLE III  
SOFTWARE  
UPDATE

TK!SOLVER

APPLE II  
ANIMATION  
PART II

ENTERTAINMENT:  
FIVE  
REVIEWS



05

0

14024 14289

# 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.

# 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.

\*CP/M is a trademark of Digital Research • \*XEROX is a trademark of Xerox Corp.

### DEALER INQUIRIES WELCOME

All prices and specifications subject to change / Delivery subject to availability.

VERSALEDGER



### 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.

# The Latest Compact 3.5" Hard Disk System from AST Research.



## MicroStor™, the Apple IIe™ 10Mbyte Hard Disk System with an optional 10Mbyte Tape Back-up.

MicroStor™, the compact 3.5" hard disk system is designed for the knowledgeable professional who needs a rugged, high quality, dependable mass storage system at an economical price.

AST, known for setting high standards with enhancement products for personal computers such as the IBM PC™, the Apple IIe™, and the Macintosh XL™, is providing the latest 3.5" hard disk technology in easy-to-install configurations. The MicroStor system starts with a 10 megabyte hard disk that can be upgraded to include backup support of a 10 megabyte cartridge tape drive.

MicroStor runs 4-6 times faster than floppy drives. It provides safe storage of your valuable data and is 100% compatible with ProDOS™.

For more information about MicroStor's versatility, see your local computer retailer or call AST Research for a dealer near you.



2121 Alton Avenue, Irvine CA 92714  
Telephone (714) 863-1333  
Telex 753699 ASTR UR

**AST, a world leader in enhancement products for personal computers.**

Apple IIe, Macintosh, Macintosh XL, and ProDOS are trademarks of Apple Computer, Inc.

IBM PC is a trademark of International Business Machines Corp.

MicroStor is a trademark of AST Research, Inc.

Downloaded from www.Apple2Online.com



THE INDEPENDENT  
GUIDE FOR  
APPLE COMPUTING

## COVER STORY

26

UNDERSTANDING  
ProDOS, PART I

By Steve Rosenthal and Ken Kashmarek

If you write your own programs, format disks, make masters, or want to know about what goes on inside the sloping case of your Apple II computer, peruse this rundown on how ProDOS works and what makes it different from the previous standard, DOS 3.3.



CONSTRUCTION: TECHNIQUE

PHOTOGRAPHY: DOW/CLEMENT



## SPEECH RECOGNITION

34

APPLES, APPLES, LEND  
ME YOUR EARS

By Steve Rosenthal

This overview of speech-recognition hardware and software tells you how to turn your Apple II, II Plus, or IIe into a perfect listener.

## SPEECH SYNTHESIS

40

SEASON'D WITH A  
GRACIOUS VOICE

By Steve Rosenthal

When your Apple II speaks its first words, you're in for some fascinating experiences. Learn about the hardware and software your computer needs to open up new frontiers of communication.

## SOFTWARE

47

APPLE III SOFTWARE  
CHARTBy Delores Woods  
Huajardo

Part II in a three-part series of charts listing currently available software for the Apple III.

48

## RIGHTING YOUR WRITING

By John Barry

If you're thinking of becoming the next Ernest Hemingway, you should read this article to learn about two grammar programs that can help you attain your goals, The Grammar Examiner and Writing Skills.



55

## TK + YOU = SOLUTIONS

By Greg Stone and Rufus Winsor

When you have problems that can be reduced to equations, it is decidedly worth your time to take a look at TK!Solver.

## HARDWARE

68

## THE SIDER

By Chris Albertson

Discover why this low-priced mass-storage device for Apple II Plus and IIe computers lives up to expectations.

## TELECOMMUNICATIONS

73

THE IIc  
COMMUNICATIONS GAP

By Mark Andrews

If you are having trouble getting your IIc to work with a modem and want to know what Apple's doing about it, read this article to learn the solution to the modem problem.

## GRAPHICS

76

## MAKING IT MOVE, PART II

By Roberta Schwartz and Michael Callery

Do your graphics lack pizzazz? Do you want to liven them up? Then dive into this article for tips on Apple animation products.

## DEPARTMENTS

**9**  
**EDITORIAL** **11**  
**LETTERS**

**14**  
**NEWS** +  
By **Frederic E. Davis**  
News and views of the personal-computer industry

**17**  
**THOUGHTWARE**  
By **Steve Rosenthal**  
ProDOS Renews the Infrastructure: Ride down the road with Steve Rosenthal as he covers the history of the Apple II operating system, from DOS to DOS 3.3 to the current ProDOS.

**25**  
**APPLEWORDS**  
By **Steve Rosenthal**  
A short glossary of terms for use with the articles "Apples, Apples, Lend Me Your Ears" and "Season'd with a Gracious Voice," on pages 34-38 and 40-44, respectively, of this issue.



**85**  
**MONEY MATTERS**  
By **Ken Landis**  
To lease or to buy your car: Probably one of the most misunderstood, most often misjudged financial decisions.

**152**  
**Pipeline**

By **Ruth Ramberg**  
Products you want to know about—for the entire Apple-computer line

**177**  
**SPEAKING OF GRAPHICS**

By **Roberta Schwartz and Michael Callery**  
Read this column for recommendations on needlepoint-design graphics, teaching programming to gifted children, learning animation techniques, fine-tuning double-hi-res graphics, hints on using the Graphics Department, and—special for *A+* readers—creating a self-running slide show of your hi-res pictures.

**183**  
**THAT'S ENTERTAINMENT**

Reviews of *The Hitchhiker's Guide to the Galaxy*, *Seven Cities of Gold*, *Triple Play*, *Adventures in Flesh*, and *Universe*

**197**  
**RESCUE SQUAD**

By **Michael Callery**  
How to get a catalog list under DOS 3.3 or ProDOS and how to get letter-quality print, subscripts and superscripts, and custom fonts with an Apple IIe, an Imagewriter, and a Super Serial card

**206**  
**COMING UP**

**207**  
**INDEX TO ADVERTISERS**

## MONTHLY **MACINTOSH** COVERAGE

**92**

**TAME THE BULLS AND THE BEARS WITH YOUR MACINTOSH**

By **Vahé Guzelimian**  
If you are an experienced investor, you can make a profound change in the way you invest your money. You can use your Macintosh and a telephone modem to call the Dow Jones News/Retrieval service for the latest financial news and quotes for thousands of securities. Read how Dow Jones News/Retrieval may help you make investment decisions.



**102**  
**THINKTANK 512**

By **Sharon Zardetto Aker**  
This well-known outlining program has been beefed up for the 512K version of the Macintosh. To learn how to use this program to its fullest extent read this article, which includes a section called "A Day in the Life of a ThinkTanker."

**112**

**MUSICWORKS**

By **Greg Stone**  
Greg Stone tells you how your Macintosh can bring music into your life.

**119**

**DESKTOP PUBLISHING**

By **John Barry, Frederic E. Davis, and Michael Wiesenber**  
The publishing industry may never be the same, now that Apple's Macintosh Office strategy has arrived.

**133**  
**MONEY-MANAGEMENT PROGRAMS**

By **John Lincoln**  
One of these personal-money-management programs will be the one for you.

**143**  
**C-WORTHY COMPILER**

By **Thom Hogan**  
This month we'll take a close look at a product that, in my opinion, provides the first quality programming environment for the Macintosh. That product is Consulair C.

**149**  
**MACTIPS**

Readers have their say.

# Flight Simulator II

For Apple II,  
Apple II+, & Apple Ile



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 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



**Publisher**  
Sydney H. Rogers

**Editor**  
Maggie Canon

**Senior Editor/Technical**  
Frederic E. Davis

**Senior Editor/Features**  
Jane Willson

**Senior Copy Editor**  
Eva Langfeldt

**Managing Editor**  
Leslie Steere

**Copy Editor**  
Ruth Ramberg

**Office Manager**  
Marjorie Gae Brandon

**Assistant Editor**  
Candace De Santis

**Consulting Editors**

Michael Callery, Chip Carman,  
Steve Rosenthal, Roberta Schwartz

**Contributing Editors**

Chris Albertson, Dennis Brothers, Sue Crissman,  
Robert Cowart, W. Charles Doherty,  
Thom Hogan, Ken Landis, Russ Lockwood,  
Vanessa Schnatmeier, John W. Tripp, John Zussman

**Art Director**  
Peter A. Tucker

**Associate Art Director**  
Fabian Cooperman

**Art Assistant**  
Ae Kyung Kuark

**Mechanical Artists**

Kyle Houbolt, Steve Campbell,  
Julie Oxberry, Dennis Norwood

**Receptionist**  
Judy Gosse

**Editorial Office**  
11 Davis Drive, Belmont, CA 94002, (415) 598-2290

**Advertising/Business Office**

Ziff-Davis Publishing Company, One Park Avenue, New York, NY 10016,  
(212) 503-5105

**Subscription Inquiries and Service**

A+, P.O. Box 2965, Boulder, CO 80322 (800) 525-0643

**Advertising Manager**

**Mid-Atlantic/Southeast Manager**

**Mid-West Manager**

**Northwest Manager**

**Southwest Manager**

**Advertising Coordinator**

**Telemarketing Manager**

**Account Representatives**

Suzanne M. Zellner

Thomas E. Richardson

Thomas J. Lutzke

David J. Ezequelle

Cynthia L. Ramsey

Angelo M. Turco

Cindy M. Silverman

Chris M. Tice

MID-WEST Andrew S. Dietz

WEST COAST Leslie C. Phillip

Timothy N. Carter

Helen Kempisty

**Assistant to Publisher**

**COMPUTER PUBLICATIONS DIVISION**

**President**

**Senior Vice President**

**Vice President, Editorial**

**Vice President, Production**

**Vice President, Licensing & Special Projects**

**Vice President, Creative Services**

**Vice President, Circulation**

**Vice President, Circulation Services**

**Vice President**

**Marketing Manager**

**Business Manager**

**Editorial Director**

Kenneth H. Koppel

Eileen G. Markowitz

Jonathan D. Lazarus

Baird Davis

Jerry Schneider

Herbert Stern

Alicia Marie Evans

James Ramaley

Hugh Tietjen

Ronnie Sonnenberg

Gary A. Gustafson

Ernest F. Baxter

**ZIFF DAVIS PUBLISHING COMPANY**

Richard P. Friese

Philip T. Heffernan

Philip Sine

William Phillips

Selwyn Taubman

Bertram Abrams

**President**

**Senior Vice President**

**Senior Vice President**

**Vice President**

**Treasurer**

**Secretary**

A+: The Independent Guide for Apple Computing ISSN (#0740-1590) is published monthly for \$24.97 one year, \$43.97 two years, and \$57.97 three years. Additional postage \$12 for Canada, \$12 other foreign by Ziff-Davis Publishing Co., One Park Ave., New York, NY 10016. Second-Class pending at New York, NY 10016 and at additional mailing offices. POSTMASTER: Send address changes to A+, P.O. Box 2965, Boulder, CO 80321.

A+ is an independent journal, not affiliated in any way with Apple Computer, Inc. Apple is a registered trademark of Apple Computer, Inc. Entire contents Copyright © 1985 Ziff-Davis Publishing Co. All rights reserved; reproduction in whole or in part without permission is prohibited. The following are trademarks of Ziff-Davis Publishing Co.: A+, A+: The Independent Guide for Apple Computing, Dispatches, Rescue Squad, That's Entertainment.

Permissions: Material in this publication may not be reproduced in any form without permission. Requests for permission should be directed to Jean Lamensdorf, Manager, Reprints/Rights and Permissions, Ziff-Davis Publishing Company, 1 Park Ave., New York, NY 10016. BPA membership (Selected Market Audit Division) applied for October 1983.



# Smart Business Advice

Street Electronics' new BusinessCard™ is the smart solution to any combination of Apple® //e interfacing needs. The BusinessCard combines two serial interfaces, a clock/calendar with battery backup, built-in graphic screen dump capabilities and the option of up to 64K of print buffering on a single card. And, it's compatible with the programs you're already using, like AppleWorks, MousePaint,™ and Apple Access //

With the BusinessCard you can operate a printer, 300 or 1200 baud modem, date your ProDOS™ files, as well as store and print text or graphics to a wide variety of printers for under \$200.00. Or, you can buy two serial interface cards, a clock card, screen dump software and a print buffer from other companies and spend over \$500.00. Now, which business decision should you make?

Available at your local Apple dealer.

Street Electronics Corporation  
1140 Mark Avenue  
Carpinteria, CA  
(805) 684-4593

(Call for our product catalog.)  
CIRCLE 187 ON READER SERVICE CARD

Watch for our new  
BusinessCard for  
parallel printers.



Apple is a registered trademark of Apple Computer, Inc.

MousePaint and ProDOS are trademarks of Apple Computer, Inc.

Now \$95

# Don't buy a spreadsheet

A lot of electronic spreadsheets can't cover your needs. They just don't go far enough.

They can't adapt to the way you think. They speak in hieroglyphics (/GF\$, /R, /S#S), instead of English.

Time for Microsoft® Multiplan, the high energy spread. Software that's rich with understanding. Full of high performance capabilities for the Apple® II & III family.



**Multiplan**  
loves you as you are.

Other spreadsheets force you to learn how they think. Multiplan learns how you think. It remembers the way you work. Anticipates frequent commands. Even offers suggestions on spreadsheet set-up.

Multiplan not only uses English commands, it allows you to create formulas in English. Instead of typing mysterious coordinates like H54-L73=BK154, you can simply name worksheet areas: Sales-Costs=Profit.

Multiplan can link data in different spreadsheets. Make a change on one, and every related one is changed.

# that spreads too thin.

And if you have been working with VisiCalc® Multiplan can read its data files and teach it new tricks. Like how to set up variable column widths and sort data.

## The wish list.

Only Multiplan has optional Multiplan Application Programs that work with Microsoft® The High Performance Software™ you to design and build custom spreadsheets for Budget Analysis or Financial Statement Analysis in minutes. Not hours. Not days.

Small wonder Microsoft gets more performance out of a spreadsheet. We designed the MS-DOS™ operating system that tells the IBM® PC how to think. And our BASIC is the language spoken by nine out of ten micro-computers worldwide.

To get the best spread call (800) 426-9400. In Washington State, Alaska, Hawaii and Canada, call (206) 828-8088 for your nearest Microsoft Multiplan dealer now featuring Multiplan at a reduced price: \$95.

**MULTIPLAN**

Suggested list price shown for Multiplan. Microsoft and Multiplan are registered trademarks and MS-DOS and The High Performance Software are trademarks of Microsoft Corporation.

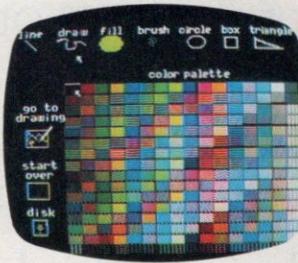
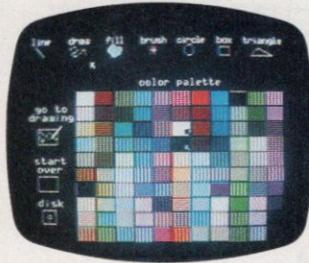
Apple is a registered trademark of Apple Computer, Inc. IBM is a registered trademark of International Business Machines Corporation. VisiCalc is a registered trademark of Visicorp.

# THE BEST KEPT SECRET ABOUT THE APPLE IIc...

Which would you rather view on your screen —  
standard hi-res or double-res?



Most software companies are satisfied giving you standard hi-res graphics. But at Penguin, we've made a real commitment to giving you the picture on your right. And to providing you the software to put this technology within easy grasp.



All Apple IIc computers are equipped with the capacity to display double-res graphics, as are all Apple IIe systems with the Extended 80-Column card. With double-res, you get twice as many colors on your palette and much higher resolution. That's almost as

big a difference as black-and-white slides of the Painted Desert as opposed to color slides.

You get fuller, richer pictures.

Penguin was the first to adapt its graphic adventures to double-res and one of the first to modify all its graphics tools to accommodate double-res.

Because the fuller and richer your picture, the better we look.



## ...IS THE QUALITY OF ITS GRAPHICS.

Penguin publishes Transylvania and The Quest graphic adventures in double-res.

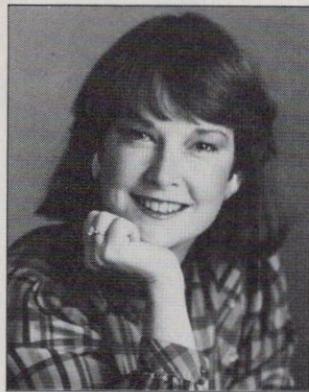
Penguin graphic packages available in double-res are: The Complete Graphics System, The Graphics Magician, Magic Paintbrush, and Cat Graphics.

For information on these, or other Penguin products, please write for a free catalog to: Dept. A, P.O. Box 311, Geneva, IL 60134

 **penguin** TM  
**software**  
*the graphics people*

830 Fourth Avenue, P.O. Box 311, Geneva, IL 60134 (312) 232-1984

Penguin, The Complete Graphics System, The Graphics Magician, Magic Paintbrush, Cat Graphics, Transylvania, and The Quest are trademarks of Penguin Software, Inc. Apple, Apple IIe, and Apple IIc are trademarks of Apple Computer, Inc. White vests are a trademark of polar penguins.



Speech synthesis and voice recognition are at a rudimentary stage now, but they may be the wave of the future.

## FORGING NEW FRONTIERS IN TECHNOLOGY

Sometimes I wonder if the dreams of technologists we read and hear about will ever come true. In my mind, scenes click by showing computers that speak and comprehend human language. Reality melts into fantasy even more as the imagination lets go in a make-believe world where robots are mascots and cars obsolete. The technology to produce that scenario seems eons away, yet I wouldn't rule it out within my lifetime.

Although I would love to see some of these scenarios materialize, I am more concerned about the present and about whether or not technologies such as speech synthesis and voice recognition have any real function in the limited form in which they are available today.

The companies that are developing products for speech synthesis and voice recognition, which are a form of artificial intelligence, are truly forging new technological frontiers. The products currently available are still at a relatively crude and unsophisticated stage of development, but they are surprisingly fun and functional.

Some people don't like the stilted sound of a synthesized voice, but I do—there's an element of security in knowing exactly what you are talking to.

The practical applications of the technology are as boundless as the imagination. Our nonresident technical guru Steve Rosenthal spent much of last month finding out about ways to use speech synthesis and voice recognition in your day-to-day life, so be sure to read his

articles on pages 34-38 and 40-44.

Computers, as you know, do a great deal more than talking and listening, and this issue is full of interesting articles that bear witness to their versatility.

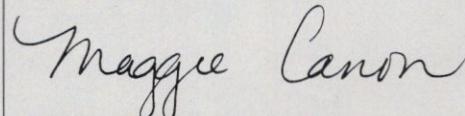
Since Apple Computer introduced ProDOS, readers have been clamoring for more information on that disk-operating system. If you are interested in this topic, be sure to read our cover story, "Understanding ProDOS," which is the first part of a three-part series on the inner workings of the operating system.

You should also take a look at this month's reviews, especially the review of *The Sider*, whose advertising has attracted a lot of attention—\$695 for a ten-megabyte hard disk, which is low enough to make even the most savvy shopper do a double take.

For our Macintosh readers, we have a review of the new version of *ThinkTank* for the 512K Mac—a much better product than the 128K version. We also take a closer look at typesetting with a Macintosh and provide a tutorial on using the Dow Jones News/Retrieval service to make investment decisions.

One last thing: We are interested in getting to know the users' groups better for both the Apple II product line and the Macintosh. So if you are a member of a users' group that might like to start a dialogue with *A+*, please send me the name, address, and phone number of your group, and we will be in touch.

I am sure you will find plenty to keep you occupied in this issue, so I'll let you get on with it. Enjoy! +



MAGGIE CANON/EDITOR

# IF YOU'RE REALLY SERIOUS ABOUT PROTECTING YOUR DATA, PUT AN ELEPHANT™ IN YOUR OFFICE.



Elephant Premium Floppy Disks. They're specially designed for the more demanding needs of business, and because they are, we test them at a higher standard. In fact, 150% of the industry standard. And then they're certified 100% error free at that more critical level.

So we can say with confidence that Elephant Premium will protect your data when other disks won't.

Plus, Elephant Premium is the only floppy disk that features The Elephant Organizer™ – the easiest way ever to store, reference and protect your disks.

So if you're concerned about protecting data for your business, get serious. Get an Elephant. For the Elephant dealer nearest you, call 1-800-343-8413. In Massachusetts, call collect 617-769-8150.

**ELEPHANT NEVER FORGETS.**

**Dennison**

## ► MORE ON PRODOS

Dear *A+*,

We at Pioneer Communications of America have faced problems similar to those stated in Jerry Rutledge's letter (see "Letters to the Editor," *A+*, February 1985). My advice is not to feel ignorant. If you are holding the older version of ProDOS (V1.0), throw it away. There are so many serious problems between ProDOS and the BASIC interpreter that it is just plain unusable. The latest revision of ProDOS, V1.0.1, may have corrected these problems.

Apple did such a good job at developing the new machine-language interface (disk I/O) calls, used at the assembler level, that it rivals some minicomputer interfaces I have seen. I can only say that from assembler, ProDOS is very nice. In addition, there is a manual that describes all the functions and usages of ProDOS called *ProDOS Technical Reference Manual* in Apple's Work Bench series.

Good luck and happy computing.

E. Boroff

Pioneer Communications of America  
Columbus, OH

## ► TOO LITTLE ON APPLE III

Dear *A+*,

I am the owner of an Apple III and noticed in your February 1985 issue that not a single thing was said about the III. I realize that you cannot cover every computer, but there is still a good audience out here that would appreciate a little coverage on the III. I think the III is an excellent machine and could give any other computer a run for the money if it were just promoted and marketed right.

Mark S. Baum  
Lubbock, TX

Dear *A+*,

I am the proud new owner of an Apple III computer. If your magazine is an "Independent Guide for Apple Com-

puting," why have you not put a column on the Apple III in your magazine? In spite of the negative rumors about the III, Apple Computer, Inc. satisfied its III customers by either repairing the defective machines or replacing them with new ones, which I think is the mark of a good company.

As a concerned owner, I feel left out in the cold without proper guidance. Please have some compassion and give us Apple III users a break.

William W. Sharp  
USAF in Europe

*Thank you for your letters. We have received quite a few similar complaints. We are not ignoring the Apple III, but because of limited space, we cannot provide articles on the III in every issue. The April issue contained the first part of an Apple III software update that will continue in the next few issues of *A+*.*

## ► FONTRIX INFO

Dear *A+*,

In your February 1985 issue, Roberta Schwartz wrote an article on Data Transforms' Fontrix graphics program. At the end of the article, a note included in the product information states that the IIc and Imagewriter do not support the graphics-dump utility the program provides. I contacted Data Transforms, and one can indeed use a IIc and an Imagewriter with the program. The mouse (if used) is specified to be in slot 4, the Super Serial Card is in slot 2, and the printer must be plugged into the modem port.

Ralph A. Mayer  
Winnipeg, Manitoba  
Canada

*We contacted Data Transforms' customer service and learned that the company has released a new version, Fontrix 1.2. The primary difference is that the new version supports more printers and printer-interface cards.*

## ► APPLES IN EUROPE

Dear *A+*,

I have been reading *A+* since it began, and I am often amused by the simplified terms used to describe computer technology. I have at times wondered where the authors get their information.

I have lived in Italy for the last two years and have read with interest the articles, both in *A+* and other magazines, that refer to using the American Apple in Europe, including Philipp Tintner's article in your January 1985 issue.

For my IIc, I use a transformer that was made in Germany and is very reliable. Transformers are easy to come by in Europe; the hardware stores are plenteous, and most Europeans are familiar with voltage transformation.

In Europe the standard hotels do not have TVs in the rooms because the more TVs you have, the more you pay in license fees.

I got a monitor with my IIc; I have seen only one that did not come with a monitor. I would not hesitate to come to Europe with an American Apple IIc or II Plus. I would take along a monitor for the IIc or II Plus, or I would take the LCD for the IIc if available. The use of modems is restricted to European standards and speeds, but I can even get on The Source here in Italy.

I want to compliment you on your magazine. I think it is a good magazine for the money. I subscribe to several, and yours is my favorite.

Paul A. Smith  
Italy

## ► CORRECTION

The product-information section that accompanies "Telecommunications" by Mark Andrews (*A+*, March 1985, page 52) incorrectly stated the system requirements for Apple Access II. The program works on an Apple IIe or IIc computer and requires a minimum of 64K RAM.



## **WITH SUPERCALC3A, YOU CAN TAKE THE APPLE II TO NEW HEIGHTS.**

Introducing SuperCalc<sup>®</sup>3a for the Apple<sup>®</sup> IIc and new Enhanced IIe.

The first integrated spreadsheet software that gives your Apple the power of SuperCalc3 or Lotus 1-2-3.<sup>™</sup>

With the same state-of-the-art spreadsheet, graphics, and data management capabilities combined in one program.

If you've ever wished you could do some serious business with your Apple II, it's just what you've been missing.

SuperCalc3a is virtually the same integrated, easy-to-

use software that's selling like hotcakes on the IBM<sup>®</sup> PC, SuperCalc3 Release 2.

And it will let you work with the Apple II in ways that you never thought possible.

With SuperCalc3a, you can develop far more complex and sophisticated spreadsheets than you ever could before.

Turn your results into presentation-quality graphics in





your choice of up to eight different graph types, five type-faces and a rainbow of colors.

With a single keystroke.

While SuperCalc3a's advanced data management and sorting capabilities keep your searches for information from turning into fact-finding missions.

Because SuperCalc3a uses the same spreadsheet files as SuperCalc3, you can send your files to and from an IBM Personal Computer. And take your work places it's never been.

You can even transfer your old VisiCalc® and Apple-

Works files directly into SuperCalc3a. Which means you can upgrade without losing a decimal point.

We've even built in the popular printing program Sideways™. So you'll never have to cut and paste wide reports together again.

To find out more about how SuperCalc3a can sweeten your Apple, call Terry Smith at 1-800-645-3003, or visit your local software dealer today.

Or just wait a few weeks. And look into the next office.

**SORCIM / IUS**  
**MICRO SOFTWARE**

A Division of Computer Associates International, Inc.



© 1985 Computer Associates International, Inc. SuperCalc is a registered trademark of Computer Associates International, Inc. Apple is a registered trademark of Apple Computer, Inc. IBM is a registered trademark of International Business Machines Corporation. Lotus and 1-2-3 are trademarks of Lotus Development Corp. VisiCalc is a registered trademark of VisiCorp. Sideways is a trademark of Funk Software, Inc.

CIRCLE 179 ON READER SERVICE CARD

► **IIC LCD**

The new LCD flat-panel display for the Apple IIC is off to a bad start. First, the display is very expensive; the \$599 retail price is several times the cost of a good video monitor. Next, the display was brought to market months behind schedule. To make matters worse, the display is very difficult to read.

It's a shame. All of us here at *A+* expected the IIC LCD display to be really great. The display is hard to read because you must view it at just the right angle to see anything at all, and even when you find the proper angle, there is too little contrast between the characters and the background of the display. Until Apple does something to improve this product, let the buyer beware.

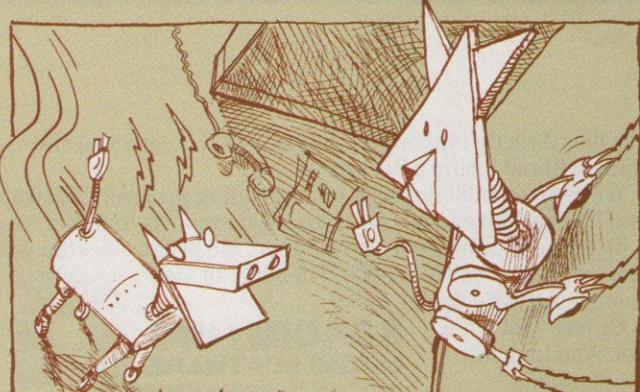
For now, if you bought the IIC to use as a portable to take home from work, you'll save money and eye-strain by taking the money it would have cost for the IIC LCD display and buying two standard video monitors, one for the office and one for home. With the money you'll have left, you

may be able to buy a small 5- to 7-inch video monitor or a portable TV with a video input. In my opinion, these small video monitors are the best available portable displays.

► **ROBOT PETS**

Nolan Bushnell, founder of Atari, Pizza Time Theaters, and Axlom, has dropped his Androbot line of home robots and turned his attention to robot pets called Petsters. Bushnell has grand plans for the Petsters robots and hopes they will replace real animals as household pets. Bushnell claims that the toys "... simulate about 80% of the functionality of a cat or dog," which is a pretty outrageous claim.

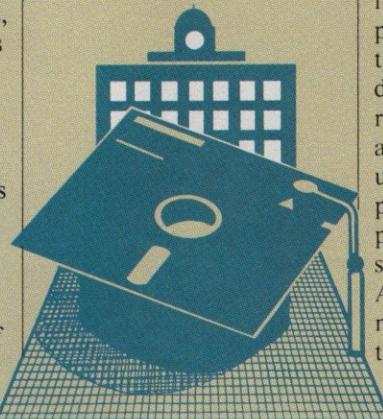
Petsters retail for less than \$100, can move around, and are sensitive to light and sound. The toys have a built-in custom microprocessor with 4K ROM and are programmed for several moods, ranging from happy to sad. The Petsters' built-in computer changes the programmed moods in a random sequence to simulate the behavior of real animals.



WILLIAM CONE

► **KRELL LETS SCHOOLS TRADE IN SOFTWARE**

Krell Software Corporation of Stony Brook, New York, has made a first-of-its-kind trade-in offer. The Krell offer, which expires September 1, 1985, allows schools



to trade in any brand of SAT or ACT test-preparation software, purchased before February 1, 1985, for its full value. The offer will allow schools to upgrade software they own but don't like to Krell's software, without losing their original investment. The full original price the school paid for the old software is applied toward the purchase of Krell software.

Krell's SAT series is the recipient of many accolades, including *Creative Computing*'s 1984 Outstanding Educational Software award. Schools wishing to upgrade to Krell's SAT or ACT software must submit a copy of the original purchase order or invoice along with the software itself. Teachers and school administrators who are interested in the of-

fer can call (800) 245-7355 (outside New York) or (516) 751-5139 (in New York) for further details.

► **3 1/2-INCH DRIVES FOR APPLE II SERIES**

Several Apple developers have told me that Apple plans to introduce Sony-type 3 1/2-inch floppy-disk drives for the Apple II series this year. These drives are the same ones that are used in the Macintosh computer, and they store approximately 400K on a single-sided diskette. The Apple II has long been in need of a floppy-disk system with more storage per diskette.

The new 3 1/2-inch diskettes not only store more than three times as much as a standard Apple II 5 1/4-inch diskette does, but they are also smaller, more durable, and less prone to accidental media damage, since they protect the read-write surface with a sliding metal shield.

Perhaps the most exciting aspect of having 3 1/2-inch drives for the Apple II series is that it creates the possibility for writing data that a Macintosh can read, and vice versa. This development could lead to an important level of data compatibility between the Mac family and the II series that would make it easier to use both types of computers together in the same school or office setting. We'll be keeping an eye on this development and will let you know more about it in an upcoming issue of *A+*.

## ► CONSORTIUM PRODUCES SOFTWARE

Reed College of Portland, Oregon, has announced the first of a series of software Reed is developing as part of Apple's University Consortium. Reed is developing two lines of software: the Griffin Series and the BenchTop Series. The Griffin Series currently has two products: GriffinTerminal, which is described as "... a powerful graphics, animation, file-handling, and interactive terminal," and GriffinText, a companion text editor for fast printing and long documents.

The BenchTop Series has two quite innovative products: The BenchTop and Rascal. The BenchTop is a combination hardware and software system that allows the Macintosh to become a laboratory data-acquisition and -analysis workstation. Rascal is a real-time version of Pascal, developed to allow real-time sensing and control in the laboratory. Rascal has features that allow you to recreate icons on the Macintosh that represent the instrumentation connected to the system.

By using the icons to represent actual pieces of laboratory equipment, BenchTop and Rascal allow you to create a visual laboratory bench top in the tradition of the Macintosh desktop. With other universities also developing products for the Mac, it seems as if Apple's University Consortium is paying off with some tangible results.



## ► MAC DEVELOPMENT OPPORTUNITIES

The Apple II and the IBM PC are the two most popular personal computers, and a lot of high-quality software and hardware is available for these machines. Although it would be hard to break into the Macintosh market with a new word-processing or database program, the Mac is still at the beginning of its technology cycle and is hungry for new applications.

If you're interested in developing software or hardware for the Macintosh, you can either go it alone or you can try to become a certified Macintosh developer. If you're going to go it alone, the good news is that an improved version of the technical reference *Inside Macintosh* is arriving in bookstores from Addison-Wesley. The bad news is that by going it alone, you may be missing out on some valuable assistance from Apple. Although becoming a certified developer requires a bit of bother and you have to pay for the services you receive, it is well worth it if you are serious

about your product.

Apple has one of the computer industry's best third-party-developer support programs, one that gives developers access to technical information and support, seminars, marketing assistance, and special developer software tools and utilities. The information and support you'll get by becoming a certified developer can make all the difference in your product-development effort. For further information about becoming a certified Macintosh Developer, contact Macintosh Developers Group MS-2T, Apple Computer, Inc., 20525 Mariani Avenue, Cupertino, CA 95014.

## ► APPLETALK CARD FOR II SERIES

Sources close to Apple report that the company is almost ready to introduce its AppleTalk interface card for the Apple II series. Although we haven't received the official details from Apple, the new plug-in card will apparently allow the Apple II, II Plus, and IIe to connect to the AppleTalk Personal Network and use resources of the Macintosh Office strategy, such as the LaserWriter printer, typesetting machines, and mass-storage systems.

## ► WOZ LEAVES APPLE

Steve Wozniak, cofounder of Apple Computer, Inc., and inventor of the Apple II, is leaving Apple again. Wozniak is teaming up with Apple engineer Joe Ennis and former Apple III project leader Wendell Sanders to start a new video company that will produce home-video-entertainment products. The first product is reported to be a handheld infrared remote-control device with two built-in microprocessors.

The new company was originally named MBF, which stood for "my best friend." Woz is now thinking of calling his company Cloud Nine, however.

## ► SUN WILL PRIVATE-LABEL LASERWRITER

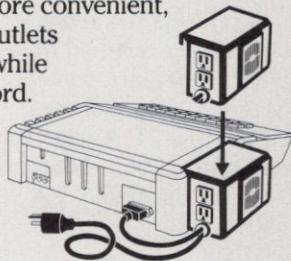
Apple has made a special agreement that will allow Sun Microsystems to sell the LaserWriter with the Sun logo on the machine. Sun sells a graphics workstation for about \$20,000 that is based on the UNIX operating system and has windowing software that is reminiscent of the Mac.

Adobe Systems, creator of the PostScript graphics language used in the LaserWriter, has developed a software product called TranScript that converts UNIX output to PostScript. Sun will add TranScript to the LaserWriter and sell the printer and software for about \$1000 more than Apple's retail price for a LaserWriter.

# CLOSE TO 1/4 MILLION APPLE II'S SAVED

**SYSTEM SAVER**® from Kensington Microware quietly protects close to 1/4 million Apple® II's every day. Often referred to as "the piece Apple forgot," System Saver's unique combination of features have made it the most versatile, most convenient, best selling accessory ever made for the Apple.

**System Saver organizes your power needs.**  
To make your Apple system more convenient, System Saver provides extra outlets for your monitor and printer, while replacing the Apple's power cord. One front-mounted power switch controls your whole system.



#### **System Saver solves power line problems.**

Impurities in the power supply cause 70-90% of all microcomputer malfunctions. Line noise can be interpreted as data, confusing your Apple and causing annoying system errors. Power surges and spikes can do costly damage to your computer's delicate circuitry.

System Saver clips surges and spikes at a safe level and filters out line noise. It makes your Apple more accurate, more efficient and more reliable.

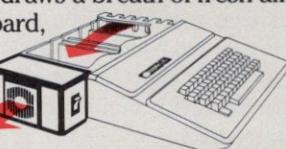
#### **System Saver keeps your Apple cool.**

Peripheral cards added to your Apple not only generate heat, they block any natural air flow through the computer. The resulting high temperature conditions can potentially shorten the lives of both your Apple and your peripheral cards.



System Saver's quiet fan draws a breath of fresh air across the Apple's mother board, over the power supply and out the side ventilation slots at the rate of 17 cubic feet per minute.

Close to 1/4 million Apple owners think of System Saver as the piece Apple forgot. And 1/4 million well-protected Apples agree. Available at your local dealer. For more information, contact Kensington Microware, 251 Park Avenue South, NY, NY 10010, (212) 475-5200 Telex: 467383 KML NY.



System Saver is UL Listed. System Saver's surge suppression circuitry conforms to IEEE specification 507 1980, Category A. Also available in 220/240 Volts, 50/60 Hz.

Trademarks: Apple/Apple Computer, Inc., System Saver/Kensington Microware Ltd. © 1985 Kensington Microware Ltd.

**KENSINGTON®**  
MICROWARE

## THOUGHTWARE BY STEVE ROSENTHAL

Like a new freeway that supercedes a local roadway, ProDOS gets you around DOS's limitations.

# ProDOS RENEWS THE INFRASTRUCTURE

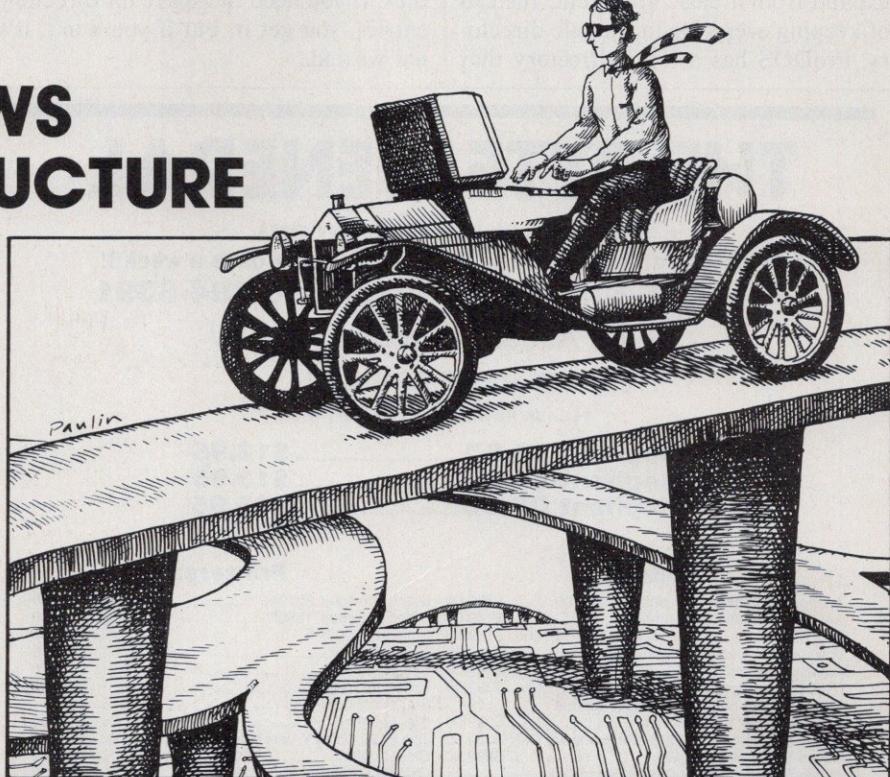
You may not have noticed any jack-hammers or bulldozers at work, or signs noting a detour, but as part of its campaign to enlarge the data capacity of the Apple II, Apple has designated the ProDOS operating system as the machine's main software route for the future. Just as the time comes when a freeway must replace a traffic-clogged local roadway, operating systems have to be upgraded when their load-carrying capacity fails to keep up with demand.

DOS 3.3 and DOS programs continue to work, of course—floppy disks may wear out, but programs don't suffer from overuse or the ravages of time—but like traffic on the new bypass, which will skirt around the main route through town, most of the new software traffic will pass up the DOS route, leaving principally old-timers, local traffic, and a few curious sightseers.

For its day, like many an old roadway, DOS was an engineering marvel. When Apple introduced its Disk II floppy-disk drive and controller in 1978, most personal computers were using cassette-tape mass storage. The industry had only limited experience with scaling down disk-operating systems to match microcomputer resources. Steve Wozniak had never even used a floppy disk.

DOS lets you load programs from a disk, store data, format disks, and print directories. It takes up a small part of the disk, works with both Applesoft and Integer BASIC, and rarely loses track of your files.

Relatively, and even absolutely, memory and processing power were far more expensive in the late 70s, and optimal performance was less of an issue. The marvel was that Apple was able to



produce and market a working, affordable disk system at all. Doing so meant taking advantage of every feature and idiosyncrasy of the hardware. In effect, DOS follows every shortcut and easy grade in the existing terrain it has to traverse. If the route has a few bottle-

necks or low clearances, it matters little if traffic is still light.

originally meant for other purposes, and generally bypass the posted rules. That's fine in a small community, but now that the Apple II series of computers is going big time, it needs more settled boundaries.

### The Worst Bottleneck

Disk capacity is the most crucial bottleneck in the older DOS 3.3 route. When DOS was written, no one suspected that an Apple user might ever have megabytes of storage accessible on a desktop. DOS's file structure lets it keep track of slightly more than 100 disk files and of a maximum of a quarter megabyte in any one file. With less than 200 kilobytes on a disk drive, these limits seemed generous.

Apple's own ProFile hard disks can store five megabytes each, however, and outside vendors offer five-inch hard disks with capacities in the scores of megabytes. Some database programs can productively use all the room, and most serious business packages need fast access to large numbers of files.

**In effect,  
DOS follows every  
shortcut and  
easy grade in  
the existing  
terrain it has  
to traverse.**

necks or low clearances, it matters little if traffic is still light.

DOS suffers from a dependence on public knowledge of what ought to be private matters. Just as in a small town, where anyone's business is everyone's business, programs in DOS tend to ignore boundaries, poke around in areas

Adding the internal record-keeping capacity to keep track of megabytes solves the immediate disk problem, but it doesn't fix the limits on numbers of files. But this problem is one that mainframe and minicomputer designers have spent years on, so Apple was able to adopt some of their solutions.

Rather than keeping a fixed number of positions for the directory entries each file needs, ProDOS allows you to expand from a basic allotment. Instead of keeping every file in a single directory, ProDOS has a main directory that

can point to subdirectories, which themselves can have directories beneath them.

Thus, instead of saving space for, say, 1000 files on a hard disk, ProDOS saves space for about 100. If you want to use more files, you open them in subdirectories. ProDOS makes room for directory entries by drawing on the same pool of empty disk blocks that it uses to allocate to programs and data files. If you need the space for directory entries, you get it, but if you don't, it's not wasted.

From the users' point of view, the hierarchical pattern of directory and subdirectory is relatively convenient. Although computers have no problem spotting a specified file in a list of hundreds or thousands, people are not particularly good at that sort of thing. People do better when information is organized in patterns and relations, with major topics, subtopics, and underlying details.

The use of subdirectories lets you organize files in logical groups. Instead of mixing your camping-trip packing list with the house game addict's 200 shoot-the-alien games, you can put each of these in a separate section. You can make further divisions (school writing projects vs. personal letters within a broad writing category, for example), grouping information by logical category, user, date, or other criteria.

The main drawback of subdirectories, aside from increased complexity of the processing ProDOS has to do, is the necessity for pathnames. If you can store increased numbers of files in more places, you have to go into more detail to describe where they are.

Under DOS, you have only one directory, so you can give a single filename and let the computer find the file you want. It's like being in a small town and saying that a message is for the doctor or the bank or the laundromat. With multiple directories and subdirectories, however, you have to give the Apple more specific location information if you want it to be able to find a file in a reasonable time. Instead of "the gas station," you now say "the gas station over on Third Street in the third block down from Main."

You don't always have to state location information fully—sometimes it can come in part from context. If you meet a man at work who says, "I live at Third and Park," you assume, unless he says otherwise, that he's talking about a corner in your city, state, country, and continent. On the other hand, if he says he comes from Australia, where he lives in Queensland, in South Haven at the corner of Third and Park, you know you can't expect to find him in your current neighborhood.

In ProDOS, the implied assumption about where files are located is called the prefix, and it's normally the name of an overall volume directory and possibly a subdirectory under it. If you give a so-called partial pathname, ProDOS adds the prefix to supply that missing overall location. If you want to refer to a file somewhere else or if you're just

## THE BYTE GENERAL

3 Sierks Lane • Roslyn Harbor, NY 11576

Technical and Order Lines Open 24 hours, 7 days a week!!!

Orders: **516-625-0920** Technical: **516-484-6391**

**FREE AIR SHIPPING!** on prepaid orders

**WE BEAT PRICES!!**

PLEASE REFER TO: AD # 35

**Elephant SS/SD .....** \$12.95  
**Elephant SS/DD .....** \$13.95  
**Elephant DS/DD .....** \$15.95

### Modems:

|  |          |   |          |
|--|----------|---|----------|
| Anchor Automation Signalman 300/1200 .....           | \$229.00 | C.Itoh Prowriter 8510ap .....           | \$310.00 |
| Anchor Automation Volksmodem .....                   | \$ 49.00 | C.Itoh Prowriter 1550P .....            | \$520.00 |
| Anchor Automation Volksmodem 12 300/1200 .....       | \$189.00 | Epson RX-80 F/T .....                   | \$290.00 |
| Volksmodem Cables (Specify Computer) .....           | \$ 15.00 | Epson RX-80 .....                       | \$239.00 |
| Hayes Smartmodem 300 .....                           | \$199.00 | Epson FX-80 .....                       | \$415.00 |
| Hayes Smartmodem 1200 Ext. (Standalone) .....        | \$399.00 | Epson FX-100 .....                      | \$599.00 |
| Hayes Smartmodem 1200B IBM Internal w/Smartcom ..... | \$380.00 | Star Gemini SG-10 .....                 | \$240.00 |
| Hayes Smartmodem 1200B IBM Hardware Only .....       | \$350.00 | Star Gemini SG-15 .....                 | \$379.00 |
| Hayes Smartmodem 2400 .....                          | \$699.00 | Juki 6100 Daisy Wheel Printer .....     | \$410.00 |
| Hayes Smartmodem 300 IIc w/Smartcom and Cable .....  | \$239.00 | Okidata 92ml .....                      | \$359.00 |
| Hayes Micromodem IIe w/Smartcom II .....             | \$215.00 | Okidata 92ml IBM Plug & Play .....      | \$359.00 |
| Novation Apple Cat II .....                          | \$205.00 | Okidata 92S Macintosh/IIc Version ..... | \$420.00 |
| Novation Apple Cat 212 System .....                  | \$375.00 | Okidata 93ml .....                      | \$625.00 |
| Novation Apple Cat 212 Upgrade .....                 | \$225.00 | Cables For Above Printer .....          | \$ 26.00 |
| Novation Smartcat Plus Macintosh .....               | \$349.00 | Okidata 92 Ribbons .....                | \$ 2.00  |
| Prometheus Pro-Modem 1200 Ext. .....                 | \$325.00 | C.Itoh Prowriter Ribbons .....          | \$ 6.00  |
| Prometheus Pro-Modem 1200A Apple Int. .....          | \$335.00 | Epson MX/FX/RX80 Ribbons .....          | \$ 5.00  |
|  |          | Silver Reed EXP-400 .....               | \$279.00 |
|  |          | Silver Reed EXP-500 .....               | \$350.00 |
|  |          | Silver Reed EXP-550 .....               | \$415.00 |

### Monitors:

|  |          |   |          |
|--|----------|---|----------|
| Amdek Color 300 Composite .....        | \$249.00 | Gibson Light Pen .....                                | \$165.00 |
| Amdek Color 600 RGB Hi-Res .....       | \$425.00 | Koala Pad Apple II/Ile Version .....                  | \$ 69.00 |
| Amdek 300 Amber .....                  | \$149.00 | Koala Pad Apple IIc Version .....                     | \$ 69.00 |
| Amdek 300 Green .....                  | \$129.00 | Kraft Apple IIc/Ile Joystick .....                    | \$ 34.95 |
| Princeton HX-12 RGB Color Hi-Res ..... | \$475.00 | Kraft Apple II/II Joystick .....                      | \$ 34.95 |
| Princeton MAX-12 Monochrome .....      | \$175.00 | Generic Kraft Joystick IIc/II .....                   | \$ 28.00 |
| Sakata Amber SA-1000 .....             | \$125.00 | Thunderclock .....                                    | \$109.00 |
| Sakata Green SG-1000 .....             | \$110.00 | ALS Z Engine Hardware w/CPM 2.2 .....                 | \$125.00 |
| Sakata Color SC-100 Composite .....    | \$230.00 | ALS Smarter II 80 Column Card .....                   | \$129.00 |
| Sakata Color Sc-200 RGB Hi-Res .....   | \$425.00 | Advanced Logic Systems Dispatcher Serial Card .....   | \$ 89.00 |
|  |          | MPC 64k Extended 80 Column Card IIe .....             | \$ 99.00 |
|  |          | MPC Parallel Printer Card .....                       | \$ 55.00 |
|  |          | Echo Speech Synthesizer .....                         | \$ 99.00 |
|  |          | Grappler Plus .....                                   | \$110.00 |
|  |          | Buffered Grappler Plus .....                          | \$170.00 |
|  |          | MA Systems Omnidraw .....                             | \$ 69.00 |
|  |          | (Same As Grappler Plus) .....                         | \$ 69.00 |
|  |          | 16k Ram Card .....                                    | \$ 55.00 |
|  |          | Z80 CPM Card .....                                    | \$ 69.00 |
|  |          | 6 Outlet Surge Protector .....                        | \$ 29.00 |
|  |          | Kensington System Saver Fan .....                     | \$ 65.00 |
|  |          | Super Cooling Fan (2 Outlet w/ Surge Protector) ..... | \$ 35.00 |
|  |          | Videx 80 Column Card w/Inverse/Soft Switch .....      | \$209.00 |
|  |          | Videx Ultraterm 160 Column Card .....                 | \$229.00 |

### Disk Drives:

|  |          |                                      |          |
|--|----------|--------------------------------------|----------|
| Apple Brand Disk Controller .....            | \$ 55.00 | Gibson Light Pen .....               | \$165.00 |
| Shugart Apple Disk Drive .....               | \$149.00 | Koala Pad Apple II/Ile Version ..... | \$ 69.00 |
| Rana Elite I .....                           | \$215.00 | Koala Pad Apple IIc Version .....    | \$ 69.00 |
| Tandon Tm-100-2 DS/DD Disk Drive (IBM) ..... | \$149.00 | Kraft Apple IIc/Ile Joystick .....   | \$ 34.95 |

### Diskettes:

|  |          |   |          |
|--|----------|---|----------|
| Elephant SS/SD 5 1/4 Diskettes .....           | \$ 12.95 | 6 Outlet Surge Protector .....                        | \$ 29.00 |
| Elephant SS/DD 5 1/4 Diskettes .....           | \$ 13.95 | Kensington System Saver Fan .....                     | \$ 65.00 |
| Elephant DS/DD 5 1/4 Diskettes .....           | \$ 15.95 | Super Cooling Fan (2 Outlet w/ Surge Protector) ..... | \$ 35.00 |
| Elephant Macintosh Diskettes .....             | Call     | Videx 80 Column Card w/Inverse/Soft Switch .....      | \$209.00 |
| Elephant Bulk SS/DD Diskettes (50 Disks) ..... | \$ 60.00 | Videx Ultraterm 160 Column Card .....                 | \$229.00 |

### DEALER INQUIRIES INVITED

**Terms:** Please use item numbers when ordering. NYS Residents add 8.25% sales tax. Personal/corporate checks — allow 2 weeks to clear. Prices do not include shipping and handling charges unless prepaid orders. Prices are subject to change without notice. We are not responsible for typographic errors. There is a 30 day time limit on all returns. After 30 days, all sales are final, and defective material must be sent directly to the manufacturer. All orders returned, refused, or ordered in error are subject to a 10% restocking fee. Prices reflect a 3% cash discount.

CIRCLE 306 ON READER SERVICE CARD

# INCREDIBLE DATABASE VALUE

VersaForm is ideal for business because it's based on the way you do business now — your own forms and ledgers.

## Powerful, Flexible, Versatile — This is a FULL DATABASE at a Fantastically Low Price!

Everyone knows how effective a database can be. But until now, they've either been powerful but hard to use, or just simple personal filing systems.

Now VersaForm has made the database both powerful AND easy to use. Because it's based on your own knowledge of business forms, you can tailor it to your own needs. And because it's a full-featured database, it can do the jobs that lightweights just can't handle.

### Proven In Thousands of Offices

For over 3 years, VersaForm has been used by manufacturers, bankers, doctors, farmers, and many others. It's THE program for serious business tasks such as invoicing, inventory, and purchasing — in fact, for whatever you've been doing using paper forms and ledgers.

### VersaForm can:

- Prevent errors by checking entries before accepting them, according to rules you set up. Saves on operator training!
- Save time by doing calculations automatically.
- Print on existing pre-printed forms — yours or the government's.
- Sort on any item, indexed or not.



Credit card members can order by phone.

**Toll-Free: 1-800-824-8145**

In California,

**Toll-Free: 1-800-854-4448**

APPLIED SOFTWARE TECHNOLOGY  
1350 DELL AVE. STE. #206  
CAMPBELL, CA 95008  
(408) 370-2662

- Store up to 4,000 characters in each record, up to 4,000,000 bytes per file.
- Produce the reports you need to manage your business.

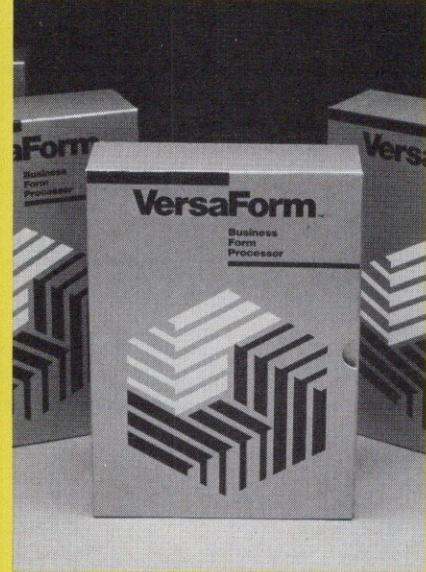
### 30 Day/1 Year Guarantee

- If you're not fully satisfied with VersaForm, return it within 30 days and we'll refund your money.
- Upgrade to our multi-file system, VersaForm XL, within one year, and get Full Credit for the price!

We've SLASHED our prices so you can get to know VersaForm! But hurry — these low prices won't last forever!

### BONUS OFFER

Order now and receive your choice of Application Templates for only \$24.95 each (regularly up to \$49.95) — or two for just \$44.95! Choose from Invoicing, Purchase Orders, Mailing List, Check Writing, Cash Receipts, or Expense Journal.



Compare at over

**\$300.**

Now just

**\$69**

Multi-File version \$99  
(IBM PC Only)

Note: Prices subject to change after 60 days.

#### Applied Software Technology

1350 Dell Ave., Ste. #206 Dept. A5, Campbell, CA 95008

Yes! RUSH me VersaForm for the IBM PC (\$69)

\* Apple II (+,e,c) (\$69)

VersaForm XL (MULTI-FILE) for the IBM PC (\$99)

Your application templates sound GREAT! I understand they cost just \$24.95 each, or \$44.95 for two. Send me the ones I've checked:

Invoicing  Purchase Orders  Expense Journal

Check Writer  Mailing List  Cash Receipts

Enclose check or money order with coupon. Include \$4.50 for U.S. postage and handling, \$7.00 for C.O.D. California residents add 6.5% tax.

My check or money order is enclosed.

Charge my:  MasterCard  Visa  C.O.D.

Acct. No.: \_\_\_\_\_ Expires: \_\_\_\_\_

PLEASE PRINT CLEARLY

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone \_\_\_\_\_ Sign here \_\_\_\_\_

\* APPLE II — 64K, 2 DRIVES.

IBM — 2 DRIVES OR HARD DISK. 128K for VersaForm, 196K for XL.



# MAIL ORDER PRICES !



A NEW KIND OF COMPUTER STORE — WE DISCOUNT EVERYTHING !

APPLECAT II 209.95  
APPLE WORKS 209.95

**AE** APPLIED ENGINEERING  
Z-80 PLUS 4.0 CP/M 129.95  
RAMWORKS IIe EXT 80 COL  
EXPANDS APPLEWORKS UP TO 1 MEG  
64K...159.95 128K...189.95  
256K...299.95 512K...419.95  
DESK TOP EXP DISK 34.95  
EXP A.W. UP TO 800K W/ABOVE CARD

AMDEK 300 COLOR 249.95  
AMDEK 300 AMBER 139.95  
AST 6 PAK + 64K 249.95  
BANK STREET SPELLER 49.95  
BANK STREET WRITER 49.95  
BEAGLE GRAPHICS 49.95  
BEAGLE TRIPLE DUMP 29.95

— DOLLARS & \$ENSE —  
APPLE II+, IIe ..... 69.95  
MAC....99.95 IIc.....59.95  
IBM W/FORECAST ..... 109.95  
FORECAST MAC..59.95 AP..49.95

COMPUSERVE 26.95  
**COPY II** AP/IBM/MAC 29.95  
CUT THROATS 29.95  
DAZZLE DRAW 36.95  
DISK NOTCHER 12.95  
D BASE II AP ★★ 199.95  
D BASE III IBM 349.95

★ DANA SUPER FAN 29.95  
SURGE SUPPRESSOR, 2 GR. OUTLETS,  
FRONT SWITCH FOR APPLE II, II+, IIe

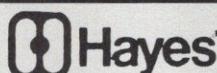
DB MASTER IV+ 189.95  
FORECAST MAC 59.95 AP 49.95  
FLIGHT SIMULATOR II 36.95  
FONTPAK 1 THRU 11 EA. 16.95  
FONTRIX IBM 79.95  
FONTRIX APPLE 49.95  
FORMAT II ENHANCED 99.95  
FRAMEWORK 359.95  
GIBSON LIGHT PEN 179.95  
GRAPPLER+ INTERFACE 79.95  
BUFFERED GRAPPLER 149.95  
HAYES MIII JOYSTICK 42.95

HOME ACCOUNTANT  
MAC...69.95 +IBM...89.95  
APPLE.....49.95

HEAD CLEANER KIT 8.95  
1/2 HGT DRIVE II+, IIe 149.95  
1/2 HGT DRIVE IIc 159.95  
HITCHHIKER'S GUIDE 29.95

Verbatim. MFG'S CLOSE OUT INCL  
FREE PLASTIC CASE  
13.95 100.00  
BOX of10 SSDD 10 BOXES  
(LABLED FOR SILVER REED) 5 YR. WARRANTY

HOME ACCT. EXP VER 49.95  
KOALA PAD (APP) 77.95  
KARATEKA 29.95  
MAC THE KNIFE I..29.95 II..39.95  
MOCKINGBOARD(STEREO) 79.95  
MATH BLASTER 39.95

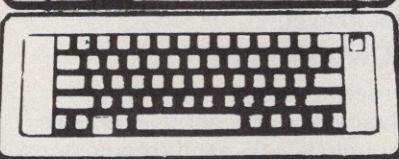


MICROMODEM IIe 239.95  
SMARTMODEM  
300 IIc W/SFTWRE 239.95  
1200B(IBM W/SW) 369.95  
1200 RS 232 399.95

## Rana

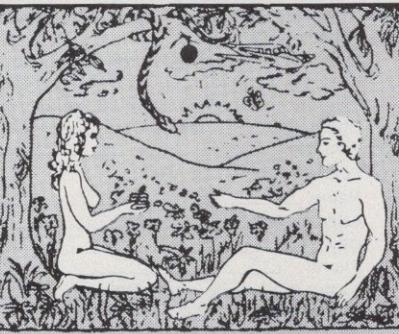
Elite One  
1/2 Hgt (AP) 159.95  
Rana Controller 89.95  
Rana 10 Meg (IBM) 799.95  
Rana 8086 1395.95  
RUNS IBM SOFTWARE ON THE APPLE IIe

**GARDEN OF EDEN COMPUTERS**  
16485 Magnolia  
Westminster, CA 92683  
1/2blk. N. of the 405 Fwy.  
Mon-Fri 10:30 Sat 10-5  
CLOSED SUNDAYS & TUESDAYS  
**800-762-3227**  
OUTSIDE CALIFORNIA ONLY  
714-841-4994  
**800-331-0045**  
INSIDE CALIFORNIA



## ★ PRINTERS ★

BROTHER HR 15 369.95  
EPSON FX 80+ 389.95  
EPSON FX 100+ 589.95  
NEC 8850 1695.95  
**OKIDATA**  
92P APPLE OR IBM 369.95  
93P COMPATIBLE 589.95  
92S IIc/MAC/LISA 449.95  
93S IIc/MAC/LISA 669.95  
PANASONIC 1091 269.95  
PROWRITER 8510 299.95  
SILVER REED 550P 419.95  
GEMINI SG 10 NEW !! 249.95  
COMPUTER PAPER PAK 4.95



MAXELL SSDD 19.95  
MAXELL DSSD 29.95  
MIND PROBE 29.95

## MICROSOFT

PREMIUM SOFTCARD 249.95  
MULTIPLAN AP DOS 69.95  
ALL MAC CHART 79.95  
FOUR MULTIPLAN 119.95  
PIECES MAC WORD 119.95  
399.95 MAC FILE 119.95  
FLIGHT SIMULATOR 36.95

MANAGING YOUR MONEY 109.95  
PEACHTREE BACK TO BASICS

APPLE GL,AR, AP 139.95

FILE//e, II+ or IIc 74.95

GRAPH IIe, II+, or IIc 74.94

REPORT IIe, II+, or IIc 74.95

WRITE IIe, or IIc 74.95

IBM VERS. EA. 84.95

PRINT SHOP 32.95

GRAPHICS LIBRARY 19.95

PRINT SHOP REFILLS 11.95

PROMETH PRO MODEM 299.95

SARGON III 36.95

SENSIBLE SPELLER IV 69.95

SIDEWAYS (AP/IBM) 44.95

SURGE PROTECTORS

LEMON..39.95 LIME..59.95

ORANGE..79.95 PEACH..49.95

KIWI..15.95

SKYFOX 34.95  
SPEED READER II 44.95  
SYSTEM SAVER FAN 64.95

## Videx ULTRATERM

40-80-96-132-160 COL  
BUILT-IN SOFTSWITCH/INVERSE CHIP  
SUPPORTS II, II+, IIc

SPECIAL LOW PRICE 189.95

TAKE 1 44.95  
TIME TRAX 79.95  
THINK TANK (APP) 89.95  
THUNDERCLOCK PLUS 109.95



ACCELERATOR II+, IIe 239.95  
128K RAMCARD APPLE 199.95  
III + II CARD (AP III) 299.95  
RUN ALL II+ SOFTWARE ON YOUR III  
INCL 128K RAM, II+ JOYSTICK PORT &  
RAMDISK SOFTWARE

TYPING TUTOR III 36.95

ULTIMA III 36.95

WORDSTAR W/FREE CP/M CRD 299.95

WORDSTAR 2000 259.95

WORDSTAR 2000+ 299.95

BECAUSE HARDWARE AND SOFTWARE  
PRICES ARE CHANGING SO RAPIDLY,  
WE URGE YOU TO CALL FOR OUR VERY  
LOWEST CURRENT PRICES !

WE APPRECIATE YOUR BUSINESS and will do  
everything we can to make you happy.

TERMS: F.O.B. Westminster, CA. We accept VISA,  
Mastercard, Cash, Money Orders, Checks. Certified  
Checks are better. Purchase Orders (2% 10-Net  
15). Add 2% for bank cards & P.O.'s. Ask about our  
return policy. Prices are subject to change and  
hopefully will go down. Subject to stock on hand.  
Unless otherwise noted, all prices are Apple.  
Apple is a registered trademark of Apple Computer.

trying to avoid any possibility of misunderstanding, you give the full pathname, which includes a prefix that you specify.

If you use only prewritten programs, you may never have to worry about pathnames or subdirectories (which your program may still use internally). If you're writing new applications or hacking away at your own little projects, on the other hand, you'll find that

► **In ProDOS,**  
**Apple defines**  
**and guarantees**  
**every entry point—**  
**like posting signs**  
**on a freeway.**

pathnames are a minor hassle, but the overall gain in structure and organization makes them worth the slight inconvenience.

#### Approved Entry Only

Fixing the disk side of the operating system was one major goal Apple set for ProDOS, and fixing the program side was another. Unlike in DOS, where your programs can enter and leave in almost any spot you want, ProDOS makes a serious attempt to insure that your programs enter and leave at clearly defined interchanges.

In a 32K Apple II, every byte of memory counted, so if you could make a DOS routine do double duty, all the better for you. Most serious programmers felt perfectly comfortable wandering through DOS, using pathways that were never intended for external access.

Many older programs expect to find those pathways, which makes changing DOS close to impossible without causing at least some programs to crash into the new structures.

In ProDOS, Apple defines and guarantees every entry point—like posting signs on a freeway. If your program appears at an approved entrance with the right information, you have a promise that it will return at the exit, having completed a certain task. That guarantee is valid even if Apple reroutes or reconstructs ProDOS.

In return, you're asked to stay out of ProDOS's private yard. Apple does not make the ProDOS source code available (though you can get disassembled and annotated versions from several sources). Your programs are expected to respect certain limits.

ProDOS actually offers your pro-



## What

computer has more memory than an IBM P.C.?

## What

computer can run Appleworks with only 1 disk drive with no disk swapping?

## What

computer will give you a 413K Appleworks desktop?

## What

computer will accelerate Appleworks 4 to 10 times?

## What

computer has 4 built-in RAM disks for use with Applesoft, Pro-DOS, DOS 3.3, PASCAL and CP/M?

## What

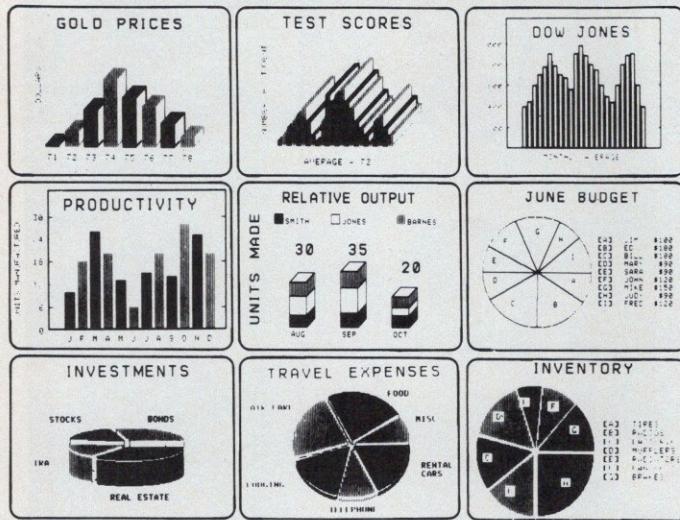
computer can run any CP/M program including Wordstar, dBASEII, Turbo PASCAL, Microsoft Basic, Cobol and Fortran?

## What

computer runs all Apple software, all CP/M software, has 640K of memory, 4 RAM disks and out performs the IBM P.C.?

**ANSWER  
ON  
NEXT  
PAGE . . .**

# MasterChart!



Don't pay more for less! The pictures shown above are examples of charts created with MasterChart!, perhaps the most powerful and friendly Apple II chart program on the market. Within seconds, keyboard-entered data can be converted into picture-perfect pie or bar charts, in 26 user-selectable styles, automatically scaled and labelled, and in color or black and white. And if you want to customize your charts by adding extra artwork or text, or display them in a slide show, MasterChart! comes with these valuable extras....

A **slide projector**, for orchestrating automated, stand-alone screen presentations of a series of charts, timed and sequenced by the user. This program alone is worth the cost of the disk. It can be used with any graphics files created with any program.

A **graphics editor**, for alteration and embellishment of charts. Besides standard point-by-point sketching, built-in structures permit push-button creation of circles, rectangles, lines, shape-table shapes, and exotic woven plaid patterns. If you wish to add clarifying text to the charts, you may type on the screen in several different letter font styles. For the artist, the graphics editor can also be used to sketch any imaginable scene from scratch.

A **shape table editor**, for creating special shapes for your charts. These shapes can also be used for animation in your programs! A sample animation program shows how to do it.

MasterChart! includes a screen-dump program for printing your charts on paper. MasterChart! is more! Just read what these people have to say about it...

*"I noticed the advertisements for Spectral Graphics' Master Chart! program and figured that, with a money-back guarantee, I would try it. Boy, am I glad I did! This is a fantastic program. You can master its many varied capabilities in less time than it would take to describe them. I would recommend it to everyone, even if you have absolutely no need for a graphing program. It's just fun to play with."* S.A. Smith, San Bernadino, Calif... letter to SOFTALK, June, 1984, page 14.

*"The software does much more than the advertisement suggests. Without question, this is among the best buys in software that I have ever come across, and certainly among the best written. It is extraordinarily easy to use, very well thought out, and priced to kill your competition (which I wish you every success in doing)." Anthony J. Scuffignano, North Caldwell, New Jersey.*

*"I have long been distressed by the lack of software available in the scientific/academic community. At last there is a simple yet robust graphics program applicable for our purposes: MasterChart!, by Spectral Graphics Software. Business folks and scientists alike will really appreciate how user-friendly it is; I was able to produce my first three-dimensional, multi-colored, labeled bar graph within five minutes of booting the disk-without reading my documentation. I would have had to pay a scientific illustrator much more than the whole program costs just to produce that one graph....you can't do without this gem." John B. Iverson, Richmond, Indiana... letter to SOFTALK, April, 1984, page 23.*

ONLY \$29.95 Apple II+ / IIe/IIc. Satisfaction guarantee or your money back (really!). Send a check or purchase order to **SPECTRAL GRAPHICS SOFTWARE**, 6333 Pacific Avenue, Suite 256, Stockton, California 95207. Or call (209) 463-7309 for COD orders and dealer inquiries. MasterChart! is not yet sold in most stores. All orders are shipped immediately and are in your hands within three days.

CIRCLE 109 ON READER SERVICE CARD

grams two connected routes to the hardware. The essential part of ProDOS, called the kernel, always stays in memory when ProDOS is in use. A second portion, the BASIC interpreter section, provides an interface by way of AppleSoft. For some applications, another intermediary more suited to the task can replace the BASIC interpreter. For example, on the ProDOS users' disk, Filer and Convert are alternative overlays.

The ProDOS kernel, sometimes called the machine-language interpreter, accepts about two dozen low-level commands, such as those that instruct it to read or write disk blocks or to set and read prefixes. The BASIC interpreter brings its own two dozen commands, most of which are defined at a higher level than the machine-language entry points. Most of the important commands will be covered in "Understanding ProDOS," which starts in this issue on page 26.

If ProDOS discourages tromping through its code for routines, it also takes a formal view on status information. In DOS, if you need to know the state of a hardware signal

► **You may miss poking around through the code, but remember that for efficiency and safety, freeways always have limited access.**

or parameter value, you peek around within DOS to find the value you need. You figure out where you need to look by consulting a table of "magic numbers"—the actual addresses DOS uses to store its working parameters.

This peeking method works fine, but it does mean that DOS can't change much if you expect programs to find the information they need. Since one byte looks just like another, using absolute addresses is the only way in DOS to locate needed values. In contrast, ProDOS defines a data interface as well as a program-entry point, allowing data values of possible interest to external programs to occupy fixed locations without fixing the absolute location of the internal code.

## Do You Need It?

Looking at the greater complexity of its file structure, code interface, and status values, you may say that ProDOS exacts a price in increased structure for its increased power. Consider though, that a high-capacity freeway needs a better foundation than a county road does. You may bemoan all the changes you'll have to make in your disks and programs to make the conversion—often in road construction, the price of moving utilities is higher than the cost of the visible surface. You may miss poking around through the code, but remember that for efficiency and safety, freeways always have limited access.

Because most games are copy-protected and self-booting, you can't transfer them to ProDOS—and don't need to. If a program you want was written for DOS, you don't have to pass it by, but if you're using an Apple II for business, the combination of time-and-date stamping of files, increased portability of data and programs between new models, and the ability to handle hard disks make ProDOS the clear eventual winner. The old ways have their place, but now it's time for a new direction. +

# The Apple IIc with Z-RAM



Applied Engineering and Apple computer have teamed up to take your IIc to new heights.

Applied Engineering's Z-RAM card for the IIc is available with 256K or 512K of additional memory and a powerful Z-80 microprocessor for running CP/M software.

Z-RAM fits neatly inside the IIc. Installation is easy, clear instructions show you how. You'll need a screwdriver and about 10 minutes (if you can change a light bulb you can install Z-RAM).

Z-RAM and Appleworks will knock your socks off.

A 256K Z-RAM will give you a 229K available desktop and Appleworks will be completely loaded into memory. Appleworks will now run about 10 times faster in your IIc with 1 disk drive than in other IIc's with two disk drives. A 512K Z-RAM will give you a 413K available desktop. A 256K Z-RAM can be upgraded to 512K at a later date when your needs grow.

Z-RAM is also a high speed solid state disk drive. With Z-RAM your programs will load and save over 20 times faster. Z-RAM's RAM disk is compatible with Applesoft, Pro-DOS, DOS 3.3, PASCAL and CP/M. And with Z-RAM you can copy a disk in one pass. Just insert the original, remove the original, insert blank disk! That's it! Z-RAM is another disk drive, only 20 times faster, 4 times larger capacity, and no whirring, clicking or waiting!

But before you start panting over all that extra memory, don't forget that the Z-RAM card has a built-in high speed Z-80 processor chip that allows you to run CP/M programs like Wordstar, dBASE II, Turbo PASCAL, Microsoft BASIC, FORTRAN and COBOL and over 3,000 other CP/M programs. So Z-RAM not only makes Apple programs run better and faster, it lets you run MORE programs.

With the Z-RAM card installed, your IIc is still your IIc only now you'll have that extra memory that Appleworks and other programs need. And you can run all that great CP/M software that others can only dream about.

Z-RAM is 100% compatible with all IIc software and hardware including the mouse, 2nd disk, modem and printer. Z-RAM is easily handled by the IIc power supply as power consumption is kept very low by using two custom integrated circuits and a patent pending power saving design. And Z-RAM is from Applied Engineering, the acknowledged leader and innovator of accessories for the Apple.

Z-RAM comes complete with manual, RAM disk software, Z-80 operating system, CP/M manual and a 3 year no hassle warranty.

So the next time somebody asks you why you didn't get an IBM P.C. tell him you bought a IIc because the IBM didn't have enough memory and was too slow and couldn't run CP/M software. And tell him you made it past the 8th grade.

## **Z-RAM with 256K**

**\$449**

## **Z-RAM with 512K**

**\$649**

## **Call (214) 492-2027**

9 a.m. to 11 p.m. 7 days a week

Send check or money order to:

Applied Engineering

P. O. Box 798

Carrollton, Texas 75006



MasterCard



VISA

Visa and C.O.D. welcome. No extra charge for credit cards. Texas residents add 5 1/2% sales tax. Add \$10.00 if outside U.S.A.



APPLIED ENGINEERING

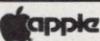
TELEX 910 380 3980

ALL MAIL: Conroy-LaPointe, Inc.  
12060 SW Garden Place, Portland, OR 97223

ORDER NOW (800) 547-1289

FOR YOUR APPLE

## COMPUTERS



SYSTEMS IN STOCK CALL

## FLOPPY DISK DRIVES



|  | LIST   | CONROY |
|--|--------|--------|
| MICRO-SCI, A2 Disk Drive, 143K         | \$ 345 | \$ 195 |
| A2 Controller Card                     | \$ 100 | \$ 99  |
| Half Height Drive for IIe              | \$ 269 | \$ 195 |
| Half Height Drive for IIc              | \$ 299 | \$ 209 |
| RANA, Elite I, 163K, 40 Track          | \$ 299 | \$ 199 |
| Elite II, 326K, 80 Track               | \$ 499 | \$ 369 |
| Elite Controller                       | \$ 145 | \$ 59  |
| TEAC, T40 Half Ht. Drive, 163K, Direct | \$ 249 | \$ 169 |
| Controller Card for T40 by ComX        | \$ 79  | \$ 45  |
| T80 Half Ht. Drive, 326K, Double       | \$ 399 | \$ 299 |
| Controller Card for T80 by Teac        | \$ 85  | \$ 59  |

## HARD DISKS

|                                | LIST    | CONROY  |
|--------------------------------|---------|---------|
| QUARK, QC10 for IIc/le/III/MAC | \$ 1995 | \$ 1595 |

## OTHER HARDWARE

|   | LIST   | CONROY |
|---|--------|--------|
| CCS, 7711 or 7710-A Interface, ea.              | \$ 115 | \$ 85  |
| CPS/EASTSIDE, Wild Card II (copier, II +/le) ea | \$ 140 | \$ 99  |
| COMX, 90 Col. + 64K RAM Card (le) ea            | \$ 199 | \$ 99  |
| 16K RAM Card (II+), 1 yr ldt w/ty               | \$ 119 | \$ 99  |
| HAYES, Mach. II/II+ Joystick (II+/le)           | CALL   |        |
| KENSINGTON, System Saver Fan                    | \$ 90  | \$ 65  |
| KEY TRONIC, KB200 Keyboard                      | \$ 299 | \$ 188 |
| KOALA, Muppet Keys                              | \$ 85  | \$ 49  |
| Touch Tablet w/Micro Illustrator (IIe/le)       | \$ 125 | \$ 75  |
| KRAFT, Joystick (II/II+ /le)                    | \$ 65  | \$ 49  |
| Gamer Paddles (II/II+ /le)                      | \$ 50  | \$ 39  |
| MICROSOFT, Z80 Premium Softcard (le) ea         | \$ 395 | \$ 275 |
| ORANGE MICRO, Grappler Plus (II +/le)           | \$ 149 | \$ 59  |
| Serial Grappler                                 | \$ 119 | \$ 79  |
| 16K Buffer Board for Grappler Plus              | \$ 99  | \$ 59  |
| Buffered Grappler Plus, 16K                     | \$ 239 | \$ 159 |
| PCPI, Aplicard, 6 MHz, 14 features              | \$ 375 | \$ 250 |
| RH ELECT., Super Fan II/w/ surge protector      | \$ 89  | \$ 59  |
| TITAN, Accelerator IIle                         | \$ 319 | \$ 219 |
| 128K RAM Card (II+)                             | \$ 269 | \$ 189 |
| TRACKHOUSE, Numeric Key Pad (II +/le) ea        | \$ 149 | \$ 94  |
| TG, Select-a-Port                               | \$ 40  | \$ 26  |
| Joystick or Game Paddles, each                  | \$ 35  | \$ 22  |
| VIDEX, UltraTerm (II +/le)                      | \$ 379 | \$ 229 |
| VideoTerm 80 Col. Card (II +/le)                | \$ 279 | \$ 175 |
| PSIO Interface Card                             | \$ 229 | \$ 145 |
| WICO, Smartcard (spec. II/II +/le)              | \$ 199 | \$ 159 |

## DISKETTES

| ★ CONROY-LAPOINTE™ DISKETTES ★  |        |  |
|---|--------|--|
| We guarantee these top quality products with our name. 5 YEAR LIMITED WARRANTY. Discounts on orders w/o labels. |        |  |
| 10 ea. SS/DD, (Apple, etc) 5 Trk, W/FIP BOX   |        |  |
| 100 ea. SS/DD, (Apple, etc) 35 Trk  | \$ 12  |  |
| 1000 ea. SS/DD, (Apple, etc) 35 Trk   | \$ 99  |  |
| 10 ea. DS/DD, (IBM, H/P) 48 Trk, W/FIP BOX  | \$ 840 |  |
| 10 ea. DS/DD, (IBM, H/P) 48 Trk   | \$ 15  |  |
| 1000 ea. DS/DD, (IBM, H/P) 48 Trk   | \$ 119 |  |
| 50 ea. DS/DD, 31/2" (MAC, H/P)  | \$ 859 |  |
| 50 ea. DS/DD, 31/2" (MAC, H/P)  | \$ 140 |  |
| 100 ea. DS/DD, 31/2" (MAC, H/P)   | \$ 270 |  |

## SINGLE-SIDED, DOUBLE DENSITY

|  | LIST   | CONROY |
|--|--------|--------|
| CCD, 10 ea. SS/DD, 40 Trk (Apple, etc) \$ 55 | \$ 19  |        |
| 100 ea. SS/DD, 40 Trk (Apple, etc) \$ 550    | \$ 355 |        |
| DYSAN, 10 ea. SS/DD, (Apple, etc) \$ 40      | \$ 27  |        |
| MAXELL, 10 ea. SS/DD, MD1 (Apple) \$ 55      | \$ 19  |        |
| VERBATIM, 10 ea. SS/DD (MAC, H/P) \$ 49      | \$ 25  |        |

## 3 1/2" MICRO DISKETTES

|  | LIST  | CONROY |
|--|-------|--------|
| CONROY-LAPOINTE, 10 ea. DS/DD, MAC, H/P) | \$ 29 |        |
| MAXELL, 10 ea. SS/DD, (MAC, H/P) \$ 60   | \$ 35 |        |
| MEMOREX, 10 ea. SS/DD, (MAC, H/P) \$ 60  | \$ 35 |        |
| VERBATIM, 10 ea. SS/DD (MAC, H/P) \$ 65  | \$ 35 |        |

## ★ GENERIK DISKETTES ★

|  | LIST   | CONROY |
|--|--------|--------|
| Top quality, w/jackets, no labels. Quantity discounts. 90 day "No Hassle, money back guarantee." |        |        |
| 0 ea. SS/DD, 35 Track (Apple, etc)   | \$ 80  |        |
| 250 ea. SS/DD, 35 Track (Apple, etc)   | \$ 199 |        |
| 100 ea. DS/DD, 48 Track, (IBM, H/P)  | \$ 95  |        |
| 250 ea. DS/DD, 48 Track (IBM, H/P)   | \$ 229 |        |

## MODEMS

|  | LIST   | CONROY |
|--|--------|--------|
| Stack Chronograph (RS-232)                 | \$ 249 | \$ 189 |
| Smartmodem 300 (RS-232)                    | \$ 289 | \$ 219 |
| Smartmodem 1200 (AP or IBM)                | \$ 599 | \$ 429 |
| Micromodem IIe/wSmartcom (AP)              | \$ 329 | \$ 239 |
| KENSINGTON, Portable Modem, 300 Baud (MAC) | \$ 140 | \$ 109 |
| NOVATION, J-Cat, 300 Baud Modem            | \$ 149 | \$ 104 |
| Apple Cat II 300 Baud (AP)                 | \$ 389 | \$ 219 |
| 212 Apple Cat, 1200 Baud (AP)              | \$ 725 | \$ 419 |
| SmartCat Plus w/software (MAC)             | \$ 499 | \$ 349 |
| PROMETHEUS, 1200 Standalone Modem          | \$ 495 | \$ 345 |
| ProModem 1200 w/software (MAC)             | \$ 549 | \$ 429 |
| ProModem 1200 (AP)                         | \$ 449 | \$ 349 |

## MONITORS

|                                 | LIST   | CONROY |
|---------------------------------|--------|--------|
| AMDEK, Color 300 Comp/Audio     | \$ 349 | \$ 249 |
| Color 500 Comp/VCR/RGB/Audio    | \$ 525 | \$ 385 |
| Color 600 Hi Res, RGB/Audio     | \$ 599 | \$ 459 |
| Color 700 Ultra Hi Res, RGB     | \$ 749 | \$ 549 |
| Color 710 Ultra Hi Res, Phos    | \$ 799 | \$ 599 |
| 300G, 12" Green                 | \$ 179 | \$ 120 |
| 300A, 12" Amber                 | \$ 199 | \$ 149 |
| 310A, 12" Amber, (IBM)          | \$ 230 | \$ 159 |
| PRINCETON, HX-12, Hi Res, RGB   | \$ 799 | \$ 495 |
| SR-12, Hi Res, RGB              | \$ 799 | \$ 495 |
| Scan Doubler for SR-12          | \$ 249 | \$ 179 |
| MAX-12, Amber (monochrome)      | \$ 249 | \$ 199 |
| QUADRAM, Amberchrome, 12" Amber | \$ 250 | \$ 165 |
| Quadchrome 12" RGB Color        | \$ 695 | \$ 495 |
| Quadchrome II, 14" RGB Color    | \$ 650 | \$ 450 |
| ZENITH, ZVM122, 12" Amber       | \$ 159 | \$ 95  |
| ZMV123, 12" Green               | \$ 149 | \$ 89  |
| ZMV124, 12" Amber               | \$ 200 | \$ 139 |
| ZMV135, 12" Color               | \$ 599 | \$ 499 |

CIRCLE 129 ON READER SERVICE CARD

## MACINTOSH

## BUSINESS SOFTWARE

## UTILITIES SOFTWARE

|   | LIST   | CONROY |
|---|--------|--------|
| ALS, Word or List Handler, ea.          | \$ 80  | \$ 36  |
| Handler Pak (Word/List/Spell)           | \$ 89  | \$ 73  |
| APPLIED SOFT TECH., VersaForm           | \$ 280 | \$ 179 |
| ASHTON-TATE, dBase II (Reg CP/M 80)     | \$ 495 | \$ 265 |
| BPI, Job Cost                           | \$ 595 | \$ 365 |
| AR, AP, PR or INV, each                 | \$ 395 | \$ 245 |
| BRODERBUND, Print Shop                  | \$ 50  | \$ 29  |
| Print Shop Graphics Library             | \$ 25  | \$ 18  |
| Bank St. Writer or Speller, ea          | \$ 20  | \$ 12  |
| (specify II +/le/llc)                   |        |        |
| CONTINENTAL, Home Accountant            | \$ 100 | \$ 65  |
| CREATIVE SOLUTIONS, MacForth Level I    | \$ 149 | \$ 95  |
| DOW JONES, Market Manager Plus          | \$ 349 | \$ 265 |
| HAYDEN, Sizer Writer (v2.2)             | \$ 99  | \$ 66  |
| HAYDEN, Word Writer (v2.2)              | \$ 150 | \$ 100 |
| HOWARD SOFT, Tax Preparer for '84 taxes | \$ 250 | \$ 165 |
| Kit for California                      | \$ 95  | \$ 63  |
| HUMAN EDGE, Sales or Mgmt Edge, ea      | \$ 250 | \$ 165 |
| LIVING VIDEO/TEXT, Think Tank           | \$ 145 | \$ 89  |
| MECA, Managing Your Money               | \$ 200 | \$ 125 |
| MEGAHAUS, Megawriter                    | \$ 125 | \$ 75  |
| Megaworks                               | \$ 350 | \$ 189 |
| MICROPRO, WordStar                      | \$ 495 | \$ 265 |
| WordStar w/ Starcard                    | \$ 495 | \$ 265 |
| WordStar Professional, 4 Pak            | \$ 495 | \$ 265 |
| WordMerge, SpellStar, or StarIndex, ea  | \$ 99  | \$ 54  |
| InfoStar and StarCard Combo             | \$ 595 | \$ 295 |

|                                    | LIST   | CONROY |
|------------------------------------|--------|--------|
| EINSTEIN/ALISON, Compiler          | \$ 129 | \$ 95  |
| EPSON, Graphics Dump               | \$ 80  | \$ 49  |
| FUNK, Sideways                     | \$ 60  | \$ 40  |
| MICROSOFT, Full Line in Stock      | \$ 99  | \$ 65  |
| CALL                               |        |        |
| BRODERBUND, Print Shop             | \$ 50  | \$ 29  |
| CONTINENTAL, Home Accountant       | \$ 75  | \$ 43  |
| DOW JONES, Home Budget             | \$ 99  | \$ 69  |
| KOALA, Full Line in Stock          |        |        |
| MICROSOFT, Typing Tutor II         | \$ 25  | \$ 17  |
| MONOGRAM, Data Sense or S.A.M., ea | \$ 100 | \$ 59  |
| Dollars & Sense for IIc            | \$ 120 | \$ 69  |
| SCARBOROUGH, MasterType            | \$ 40  | \$ 27  |
| Your Personal Net Worth            | \$ 80  | \$ 50  |
| SIERRA/ON-LINE, Homeworld          | \$ 50  | \$ 45  |
| SIMON & SCHUSTER, Typing Tutor III | \$ 50  | \$ 33  |

PLUS: BARRONS, CBS, DAVIDSON, EDU-WARE, HARCOURT, LEARNING CO., TERRAPIN

## RECREATIONAL SOFTWARE

|  | LIST   | CONROY |
|--|--------|--------|
| BEAGLE, GPLE, Alpha Pilot or B. Basic, ea            | \$ 50  | \$ 62  |
| SOFTWARE PUBL., (specify II + or le for all)         | \$ 180 | \$ 127 |
| SENSIBLE, Sensible Speller                           | \$ 125 | \$ 79  |
| SIERRA/ON-LINE, Homework                             | \$ 50  | \$ 45  |
| GENERAL MANAGER II                                   | \$ 230 | \$ 155 |
| Screen Writer II, 2 Pak w/Dictionary                 | \$ 130 | \$ 89  |
| SOFTWARE PUBL., (specify II + or le for all)         | \$ 125 | \$ 79  |
| PFS-File or Write, each                              | \$ 125 | \$ 79  |
| PFS-Graph or Report, each                            | \$ 125 | \$ 79  |
| STONEWARE, DB Master, v. 4                           | \$ 350 | \$ 225 |
| DB Utility Pak I or II, each                         | \$ 125 | \$ 82  |
| UTILITIES SOFTWARE                                   |        |        |
| BEAGLE, GPLE, Alpha Pilot or B. Basic, ea            | \$ 50  | \$ 62  |
| PRonto DOS, Disk Quick, AP. Mech. or I.O. Silver, ea | \$ 30  | \$ 19  |
| Full line in STOCK                                   |        |        |
| BORLAND, Turbo Pascal                                | \$ 55  | \$ 33  |
| 3 Pak (Pasc, Turbo, Tut, Toolbox)                    | \$ 105 | \$ 59  |
| CENTRAL POINT Copy II Plus (bit copier)              | \$ 40  | \$ 23  |
| CENTRAL POINT Copy II Plus (bit copier)              | \$ 105 | \$ 59  |
| Central, Filer, Utility & DOS 3.03                   | \$ 20  | \$ 15  |

PLUS: BRODERBUND, DATAMOST, MUSE, SIR-TECH, SPINNAKER

## PRINTERS

## DOT MATRIX

|   | LIST    | CONROY  |
|---|---------|---------|
| EPSON, RX80-100 cps/quiet model/128 type      | \$ 269  | \$ 219  |
| FX80-100 - F/T - frict or tractor             | \$ 360  | \$ 299  |
| FX80-100 - 100 cps/136 col/pin & fr.          | \$ 499  | \$ 449  |
| FX80-100 - 160 cps/80 col.                    | \$ 560  | \$ 489  |
| JX80-100 - 160 cps/136 col.                   | \$ 849  | \$ 749  |
| JX80-100 - Color Printer, 160 cps.            | \$ 799  | \$ 699  |
| LO1500-100 - 200 cps/136 col/pin & 72 col/pin | \$ 1395 | \$ 1095 |
| Tractor Feed for LO 1500                      | \$ 70   | \$ 70   |
| MT160 - 160 cps/132 col.                      | \$ 269  | \$ 219  |
| MT160 - 160 cps/80 col/pin.                   | \$ 799  | \$ 568  |
| OKIDATA, Okimate 20 - Color, Hi Res           | \$ 268  | \$ 208  |
| 82A - 120 cps/80 col/para.                    | \$ 349  | \$ 319  |
| 83A - 120 cps/132 col/para.                   | \$ 499  | \$ 399  |
| 84 - 200 cps/136 cps/para.                    | \$ 999  | \$ 729  |
| 92 - 160 cps/80 col/para.                     | \$ 499  | \$ 399  |
| 93 - 160 cps/136 col/para.                    | \$ 799  | \$ 639  |
| 2410P - Packmark/350 cps/para.                | \$ 2995 | \$ 1975 |
| QUADRAM, Quadjet - Inkjet Color Printer       | \$ 895  | \$ 795  |
| STAR MICRO, SG10-120 cps/DO, 30 cps/NLQ, NEW  | \$ 299  | \$ 249  |
| SG15 - 120 cps/DO, 30 cps/NLQ, 16K NEW        | \$ 499  | \$ 419  |
| SD10 - 160 cps/DO, 40 cps/NLQ, NEW            | \$ 499  | \$ 379  |
| SD15 - 160 cps/DO, 40 cps/NLQ, 16K NEW        | \$ 599  | \$ 509  |
| SR10 - 200 cps/DO, 50 cps/NLQ, NEW            | \$ 649  | \$ 499  |
| SR10 - 200 cps/DO, 50 cps/NLQ, 16K NEW        | \$ 799  | \$ 679  |

## LETTER-QUALITY:

|                          | LIST   | CONROY     |
|--------------------------|--------|------------|
| JUKI, 6300 - 40cps/para. | \$ 995 | \$ 795</td |

# WORDS TAKE VOICE

## ► APPLEWORDS BY STEVE ROSENTHAL

A short glossary of terms

### ALLOPHONE

One of a set of variations of a single phoneme (basic speech sound). More-sophisticated speech systems allow the selection and construction of allophones to take into account the effects of any preceding or following sounds.

### CONTINUOUS SPEECH RECOGNITION

Recognizing words or phrases as they are used in normal speech, without requiring added pauses or breaks between words.

### DIGITIZED SPEECH

Speech recreated from an encoded form of the actual sound waves, in contrast to speech synthesized with a circuit that models voice production. Digitized speech can be higher in quality, but it takes a great deal of memory to record it (up to several kilobytes per second of speech).

### ENROLL

To provide samples for a speech-recognition system. Since the recognition process is based on matching new inputs to a set of stored templates (patterns), the reference values must first be established. For speaker-dependent systems, each user must go through an enrollment process. Speaker-independent systems use an average of larger groups of people, allowing new users to access the system without going through an enrollment period (albeit usually with less accuracy).

### FORMANT

One of the resonances or bands of tonal energy in speech. Speech-output

systems that model the workings of the vocal tract generally can produce up to three formants at a time. In speech recognition, the incoming sound may similarly be broken out into dominant tones for matching with stored patterns.

### FRICATIVE

The class of speech sounds that consist of pulses of high-frequency noise rather than sounds with particular tones. In most classifications, this group includes the sounds normally spelled with *f*, *s*, *sh*, *th*, and *zh*.

### ISOLATED WORD RECOGNITION

The decoding of words or phrases spoken with at least brief pauses between each one. The pauses may be as brief as a tenth of a second or less on most systems, but they are required for most speech-recognition systems in the Apple class.

### LEXIGRAPHIC

Pertains to the spelling of individual words. Lexigraphic emphasis, for example, is the stressing of syllables based on the spelling of the word (in contrast to syntactic stress, which takes into account the position of the word in a phrase or sentence).

### LINEAR PREDICTIVE CODING (LPC)

A method of producing speech, using a set of parameters to control a system that models the workings of the human vocal tract. Because only the changes in these few parameters must be stored—rather than the detailed sound wave itself—LPC can produce understandable speech with just 500 to 2000 bits per second of speech, which is less than a tenth of that needed to store the complete sound patterns.

### LIQUID

The class of sounds that have some tonal value but less than fully voiced patterns. In most classifications, these include *l*, *r*, and *y*.

### PHONEME

The simplest sound units that make up human speech. English can be described with about 40 or 50 of these patterns. Most speech synthesizers actually work by translating phonemes into sound patterns, with a prior translation from text to phoneme done either by the software or by the user.

### SPEAKER-DEPENDENT

Referring to voice-recognition systems that are set up for use by a particular person, who must first train the system to recognize his or her speech patterns. Speaker-dependent systems can be made more accurate than those intended for general use.

### SPEAKER VERIFICATION

The use of voice-recognition systems to confirm the identity of a person, rather than decoding what he or she is saying. The procedure is based on an overall pattern match with a previously stored vocabulary. Proponents claim that voice patterns are as individual as fingerprints and thus are usable for security applications.

### SPEECH RECOGNITION

The translation of a vocal input into a corresponding selection or code. In most systems, the user first trains the system (enrollment), creating templates (patterns). A new input utterance (sound) is then routed into a combination of hardware and software that normalizes the rate, extracts features, and then compares the input against the templates. If the similarity

measurement is good enough, the input is then considered recognized.

### SYNTHETIC SPEECH

Speech based on the translation of input parameters rather than on the replaying of digitized sounds. Synthetic speech needs less memory per second of speech but may not always have equally good sound quality.

### TEMPLATE

A stored pattern against which new inputs to a speech-recognition system are tested. Most systems build up a set of patterns during an enrollment procedure and then test new inputs to find which template provides the closest match.

### TEXT-TO-SPEECH

A system that produces voice output from a text input. Because English is only a partly logical language, the system is usually based on some hundreds of rules plus a list of exceptions. Larger, more expensive systems use both greater numbers of basic rules and greater numbers of exceptions.

### THRESHOLD

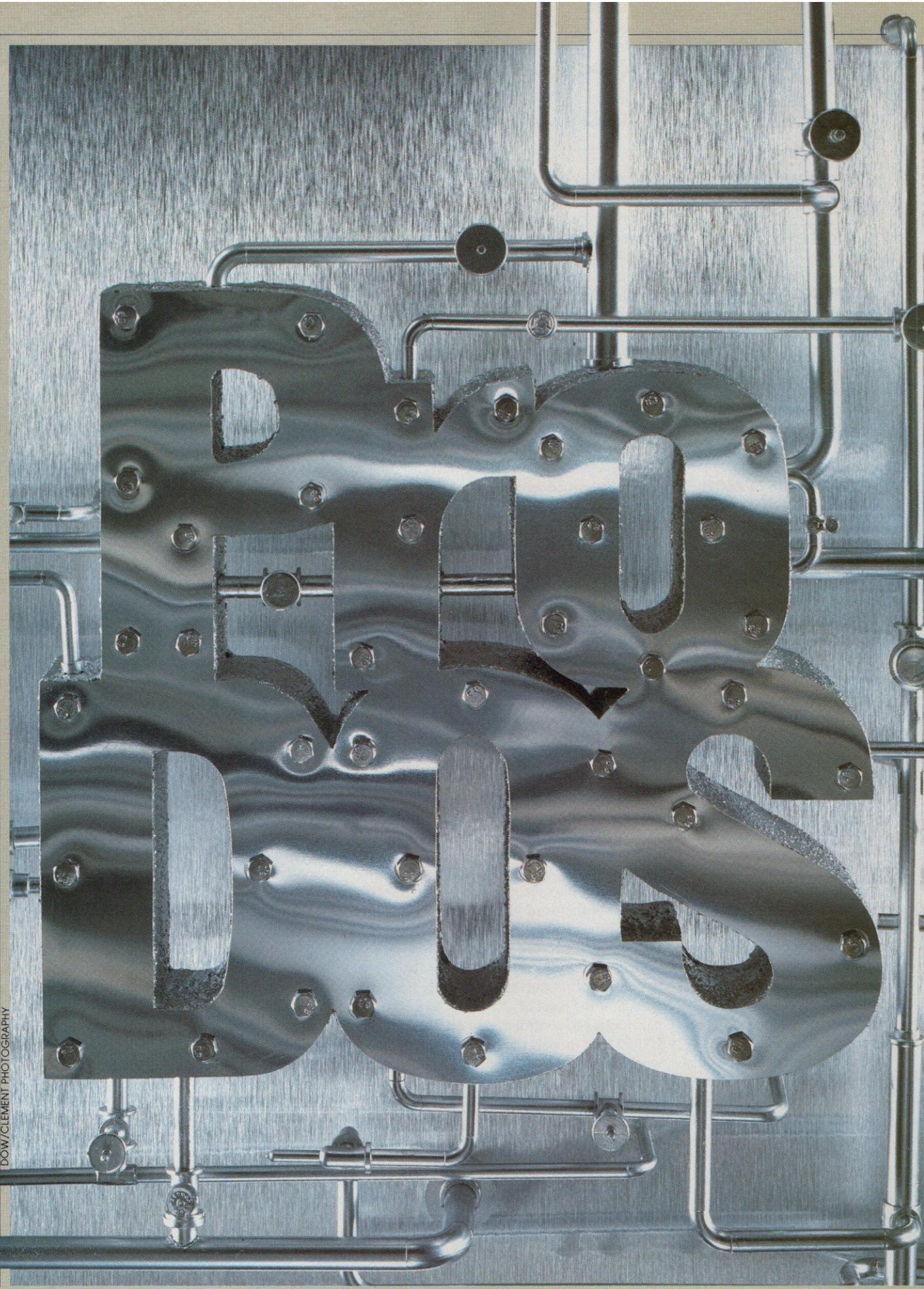
How close a new speech input must be to the closest existing templates to be considered a match. Some threshold is necessary to take care of noise or unknown inputs.

### UTTERANCE

A phrase or word to be processed by a speech-recognition system. Because the system works on sound patterns rather than on understanding, any utterance may be used for any meaning, as long as it is consistently used.

### VOICED

Sounds that have a definite pitch. Most of the vowels are voiced, as are many of the consonants.



BY STEVE ROSENTHAL  
AND  
KEN KASHMAREK

Almost like an organism adapting to changing ecological conditions, the Apple II family of computers has kept up with currents in personal-computer technology through a continuing series of evolutionary steps. One of the most significant of those adaptations is ProDOS, the operating-system program that Apple now supports as the future standard for Apple II programs.

If you're using only store-bought, self-starting programs on your Apple II, you may not notice the switch to ProDOS at all. If you write any of your own programs, need to format disks, make masters, or want to know something about what goes on inside that sloping case, however, you may benefit from a complete rundown on how ProDOS works and what makes it different from the previous standard, DOS 3.3.

In this discussion, we will examine ProDOS from four perspectives: files, commands, interfaces, and utilities (for an overview of why Apple is switching to ProDOS, see this month's "Thoughtware" column, "ProDOS Renews the Infrastructure," pages 17-22). We'll assume only that you know some simple Applesoft BASIC and a few DOS 3.3 commands—and you might be able to get by even without them.

#### ProDOS Files

Just like DOS 3.3 and most other operating systems, ProDOS organizes information stored away on a disk in files, which are ordered collections of bytes grouped under an identifying name. Like a file folder that contains individual sheets or long scrolls filled with characters, a file can contain anything that you can store in the Apple's memory.

In DOS 3.3, a single disk directory contains the names and locations of

each file on a disk. A disk is presumed to be 143K (143,000) bytes long and is considered full if either the space allocated to files or the space set aside for directory information is entirely in use.

ProDOS has some improved features that let you use high-capacity floppies or hard disks with your computer. Rather than employing the fixed file and disk information DOS uses, ProDOS takes its cue from the charac-

ry, and a single disk may contain more than one volume. So instead of using the disk-drive number as the file-location identifier, ProDOS uses the volume name. Thus, ProDOS programs need not be tied to a specific drive or slot—if a program describes a file it needs by volume name, ProDOS can retrieve it, regardless of which drive it is on or whether it is on a floppy or a hard disk.

In a ProDOS volume, which, you'll recall, can be up to 32 megabytes long, you can store as many as a thousand different files. So that you and the computer don't have to look through all the directory entries every time you want to find a file, ProDOS allows you to divide up each volume by creating one or more subdirectories. In this system, you can put certain files in each subdirectory and look in that one place alone when you want a file of that type.

For example, if you generally keep all your files on a hard disk, you may have all of your AppleWorks programs and files within one subdirectory; you can put all

teristics of the hardware.

First, ProDOS divides each storage device into one or more volumes. A volume consists of a main directory, along with a space that you can use to store subsidiary directories and files. Generally, each floppy disk is set up as a single volume, whereas a hard disk might be partitioned into more than one volume. ProDOS can keep track of up to 32 megabytes in each volume, of which a maximum of 16 megabytes can be in any one file.

When you have only one or two disk drives with DOS, telling the computer to look in a certain slot and drive number is a fine way to locate files that you need to access. In ProDOS, on the other hand, each volume has its own directo-

ry, and a single disk may contain more than one volume. So instead of using the disk-drive number as the file-location identifier, ProDOS uses the volume name. Thus, ProDOS programs need not be tied to a specific drive or slot—if a program describes a file it needs by volume name, ProDOS can retrieve it, regardless of which drive it is on or whether it is on a floppy or a hard disk.

This capability to divide the total file space into volumes, each volume further into subdirectories, and the subdirectories still further into subsubdirectories results in a "hierarchical" or "tree-shaped" file structure. A tree in the computer world grows upside down,

# UNDERSTANDING ProDOS

**PART ONE THE APPLE II FAMILY HAS KEPT UP WITH CURRENTS IN PERSONAL-COMPUTER TECHNOLOGY THROUGH A CONTINUING SERIES OF EVOLUTIONARY STEPS. ONE OF THE MOST SIGNIFICANT OF THOSE ADAPTATIONS IS THE OPERATING-SYSTEM PROGRAM ProDOS.**

# THE BEST FOR LESS

## Macintosh

| Games                    | Retail         | Your Price     |
|--------------------------|----------------|----------------|
| Hayden Sargon III        | 49.95          | 39.95          |
| Infocom Deadline Suspect | 49.95<br>44.95 | 39.95<br>35.95 |
| Penguin Xyphus           | 39.95          | 31.95          |
| Videx Mac Vegas          | 59.95          | 47.95          |

## Business/Utilities

| Assimilation Process          | Retail | Your Price |
|-------------------------------|--------|------------|
| Mac Keystroke Recorder        | 29.95  | 23.95      |
| Mac Lockit                    | 29.95  | 23.95      |
| Mac Memory Disk               | 29.95  | 23.95      |
| Axon Art Portfolio            | 59.95  | 47.95      |
| Dow Jones Market Manager Plus | 199.95 | 160.00     |
| Spread Sheet Link             | 99.95  | 80.00      |
| Strait Talk                   | 79.95  | 64.00      |
| Expertelligence Exper Logo    | 150.00 | 130.00     |
| Palantir Mac Type             | 49.95  | 39.95      |
| T-Maker Click Art Effects     | 49.95  | 39.95      |
| Click On                      | 79.95  | 64.95      |

## Hardware

|                         |        |        |
|-------------------------|--------|--------|
| Koala MacVision         | 395.00 | 319.95 |
| Thunderware Thunderscan | 250.00 | 200.00 |

## Apple

| Central Point Hardware                      | Retail           | Your Price       |
|---|------------------|------------------|
| Copy II plus 50                             | 39.95            | 31.95            |
| CBS Mastering SAT                           | 150.00           | 120.00           |
| Data Transform Fontrix                      | 95.00            | 76.00            |
| Font Paks (Vol. I Through 9)                | ea. 24.95        | ea. 19.95        |
| Howard Soft Tax Preparer                    | 250.00           | 199.95           |
| Hayes Joystick Mach III IIe/IIc             | 59.95            | 43.95            |
| Krell Krell SAT                             | 299.95           | 240.00           |
| MicroSci A2 Disk Drive IIe/II+ A5 Drive IIc | 300.00<br>350.00 | 187.50<br>219.95 |
| Spring Board News Room                      | 49.95            | 39.95            |
| SEI Spanish, French or German               | 39.95            | 34.95            |

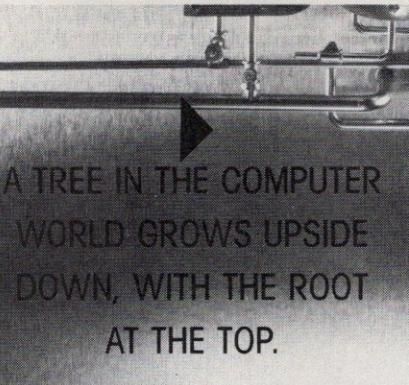
In Bay Area Visit  
**SOFTWARE SOLUTIONS**  
 11185 San Pablo Ave.  
 El Cerrito, CA 94530  
 Hours: 10 AM-6 PM



For free catalog write to:  
**NOVAGON SOFTWARE**  
 For technical information & order status call (415) 237-5283

CIRCLE 125 ON READER SERVICE CARD

800-942-2058  
 In Calif. 800-223-8327  
 Hours 8 AM-6 PM PDT



with the central root at the top, various branches below, and individual leaves coming off the branches. In ProDOS, the volume is the root, each subdirectory is a branch, and each file is a leaf. Note that ProDOS trees don't have to be perfectly trimmed—you can have individual leaves (files) growing right out of the root (the main volume directory) as well as on branches (subdirectories).

To tell ProDOS how to find a file, you specify which volume it should look in and, if the file is part of a subdirectory, which subdirectory. The file specification, in fact, is the path you take down the tree starting at the root (the main volume directory) to the leaf (the file). You start with a / for the root, then the volume name, and then down through the tree as necessary with a / setting off each level. For example, the pathname for your favorite editor program might be /MYVOLUME/HIT-PROGRAMS/EDITOR.

Since one of the purposes of the tree structure is to allow you to group related files together, it's not surprising that the files you access during a ProDOS session are often all in the same branch or subbranch of the tree. ProDOS allows you to specify a default-reference starting point and then specify only the path you need from there. This new starting point, which acts as if you had typed it in before each file specification, is called a prefix, and the relative path is called a partial pathname.

As an example, if the prefix is /LOOKHERE/FIRST and the file specification you give is MYFILE, the system will look in the volume LOOKHERE for a subdirectory named FIRST and in that directory for a file named MYFILE.

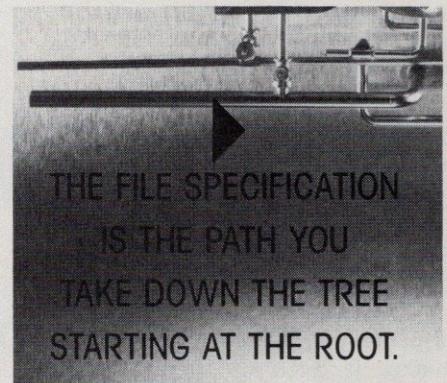
You set the current prefix in ProDOS with the Prefix command. You can also record prefixes on ProDOS system disks, and they will act as the default value when you use the system disk to boot the computer. If you want

to use a file without referencing the current prefix, you use a full pathname, which starts with a / and the name of the root volume directory.

In theory, a prefix or path can be as long or complex as you like, with one limitation: a full pathname, prefix, or partial pathname can contain no more than 64 characters. In practice, you'll find one or two levels of branching (subdirectories or sub-subdirectories) sufficient for normal applications.

## New File Types

Not only does ProDOS have a more sophisticated way of describing where to find a file than DOS does, but it also has more types of files to find. An invisible byte in each directory entry labels each file with one of 255 possible file types. Only about a dozen of these are defined so far, another dozen or so provide compatibility with the SOS op-



erating system on the Apple III, and eight values are available for user definition.

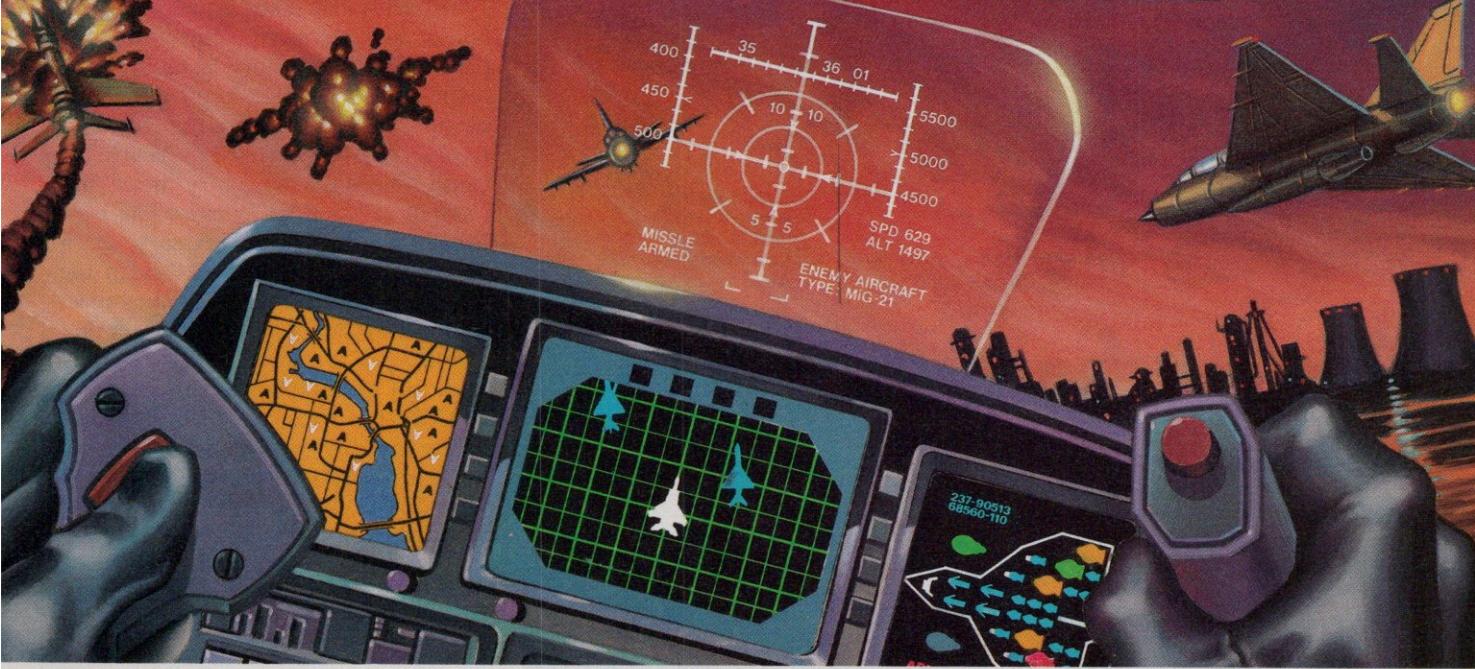
The dozen common file types and the 240+ other possibilities are another factor that lets ProDOS concentrate on files that may be relevant in a particular situation and temporarily ignore the rest. This capability comes into play mostly for selecting only the appropriate values for menu displays or processing and for providing error-specific types of error checking.

In terms of the external file form, rather than its contents, ProDOS looks at all fields as being in one of three classes, depending on file size. In an analogy somewhat like that of directory paths, the classes are "seedling," "sapling," and "tree."

A seedling file has 512 bytes or less and is stored in a single logical block. The pointer in the directory entry that tells ProDOS where on the disk the file is stored can point right to that single data block. In the tree analogy, it has only a single root or main stem.

A sapling file consists of 513 bytes to

# F-15 STRIKE EAGLE



**Put a \$20,000,000 Thrill in  
your Computer!!!**

The F-15 STRIKE EAGLE, one of the world's most sophisticated fighters, costs the Air Force more than \$20,000,000.00 each. Now you too can strap into your ejection seat and prove how good you really are in exciting modern jet fighter combat. Fly combat missions, engage enemy aircraft, and destroy enemy ground targets from historic missions over Southeast Asia to today's defense of the strategic oil routes through the Straits of Hormuz.

F-15 STRIKE EAGLE (simulator) has all the features that makes the real EAGLE the great fighter aircraft it is — afterburners, multiple radars, air to air missiles, high explosive bombs, cannon, drop tanks, Electronic Counter Measures (ECM) flares, electronic ground tracking maps, Heads Up Display (HUD), outstanding 3-dimensional cockpit visibility, and realistic F-15 maneuverability. Your mission is to take off from your base, fly to and destroy your primary target through all the dangers of enemy territory including Surface to Air Missiles and enemy aircraft. Of course, you have to get back home again, too!!

F-15 STRIKE EAGLE is a very real simulation, accom-

plished with the guidance of real fighter pilots, and includes seven different combat missions, four skill levels, and an infinite number of exciting scenarios. F-15 will thrill and challenge you and give you the chance to prove you have the "Right Stuff" of an EAGLE fighter pilot!!

F-15 STRIKE EAGLE is available for Commodore 64, ATARI (48K), and Apple II (64K) computers. Suggested retail price is only \$34.95. Find STRIKE EAGLE at your local retailer, or call or write for MC/VISA, or COD orders. Add \$2.50 for Postage and Handling (Int'l add \$4.00USD). MD residents add 5% sales tax.

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



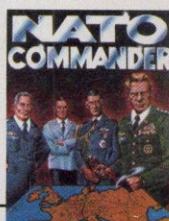
**MicroProse Software**  
The Action is Simulated — the Excitement is REAL!!

120 Lakefront Drive  
Hunt Valley, MD 21030  
(301) 667-1151

CIRCLE 111 ON READER SERVICE CARD



As close to the Real  
Thrill of Flying as You  
Can Handle!!!



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



Sensational Assault  
Chopper Rescue  
Raids for Daring  
Pilots!!!

Commodore 64, ATARI, APPLE, and IBM are registered trademarks of Commodore Business Machines Inc., ATARI Inc., APPLE Computer Inc., and International Business Machines Inc., respectively.

# Critics sing Songwriter's™ praises.

"I learned more about music in one hour from Songwriter than I ever learned in two years of piano lessons."

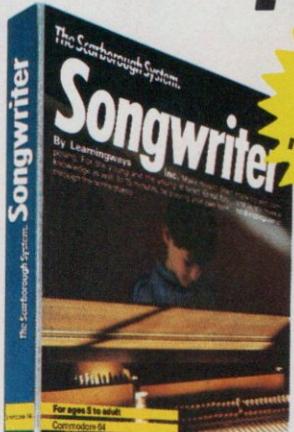
—Knight Ridder  
News Service

"It takes no musical ability whatsoever to play with Songwriter... Best of all, it's almost impossible to sound bad..."

—Electronic Games

"Recommended for purchase without reservation."

—Media  
Review



Specially designed to make the most of your Apple IIc's musical talent.

"Exemplifying fun learning at its best... a first-rate piece of software."

—Family  
Computing

Available for:  
Apple II family  
IBM PC/PCjr  
Commodore 64/128  
Atari

For the dealer nearest you, call 1-800-556-2283.

## The Scarborough System.

© 1985, Scarborough Systems, Inc., 55 S. Broadway, Tarrytown, N.Y. 10591

CIRCLE 206 ON READER SERVICE CARD

### Add a smart Print Screen Key to your Apple.

The FingerPrint+™ Serial and Parallel Printer Interface card lets you print whatever you have on the screen, just by the push of a button, without interrupting your program.

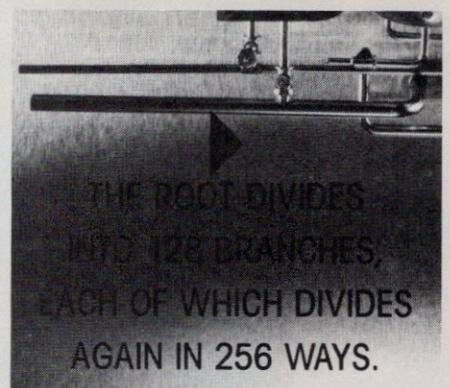
- Compatible with most popular parallel and serial printers.
- Connect 2 printers to the same FingerPrint+™
- Jump from one printer to the other with a single keystroke command, without interrupting your program.
- Fully software compatible, including Apple Works and Apple Mouse.
- Over 30 command functions available at the touch of a button.
- Graphics/Text dump, Hi and Lo-Res graphics, rotated 90 degrees and double size graphics.

FOR MORE INFORMATION AND THE DEALER NEAREST YOU CONTACT:

**(305) 592-7522**

**THIRDWARE**  
COMPUTER PRODUCTS™  
4747 NW 72nd Avenue, Miami, FL 33166

Apple, FingerPrint+ and Thirdware Computer Products are registered trademarks, respectively, of Apple Computer, Inc. and Precision Software.



128K bytes and takes 2 to 256 logical blocks to store away. This time, the pointer in the directory leads ProDOS to an index block that, in turn, contains up to 256 pointers to the file-data blocks. ProDOS takes this route because the directory entry itself has room for only a single pointer. This way, ProDOS grabs the necessary extra pointer space by using a block in the data area of the disk. In botanical terms, the root here leads to a stem that can have up to 256 branches.

A full tree file holds between 128K and 16 megabytes. The directory entry points to a first-level index block that, in turn, points to a maximum of 128 second-level blocks. Each second-level block can point to as many as 256 logical data blocks. In the tree analogy, the root divides into 128 branches, each of which divides again in 256 ways at most.

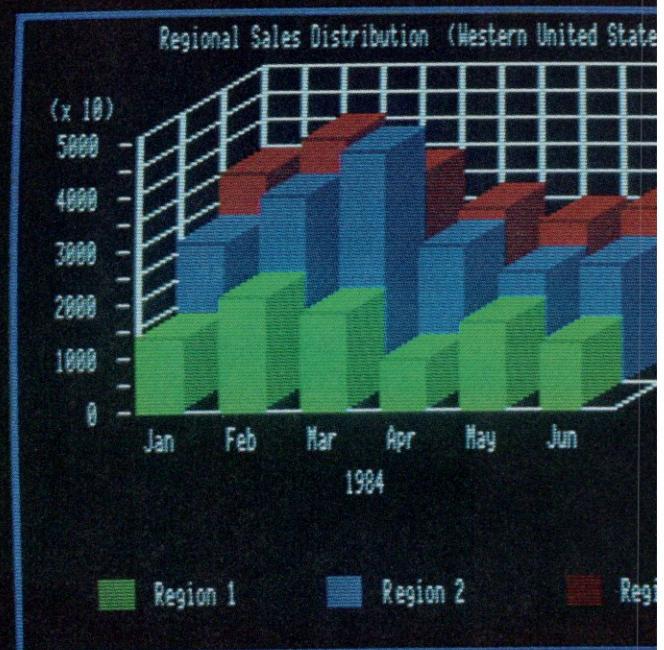
#### Bytes about Files

The ProDOS directory isn't content to record just the filename, file type, and a pointer to a file's location. In addition, each file entry has room for time and date stamps, numeric values showing when you created and last modified the file. These values can appear on directory (catalog) listings and come in handy for utility programs or special applications.

Two version-number fields comprise a more unusual set of values. Each file in ProDOS carries a byte that specifies which version of ProDOS created the file and the minimum version you need to use it. Thus, five years from now, your Apple will be able to find out if a file you created in 1985 is still usable and, conversely, whether your old ProDOS can run an application you created at that later time.

The access byte is more familiar. This byte in each directory entry acts to protect individual files, much like the locked function in DOS 3.3 does. In ProDOS the protection is slightly more





*video7*

# BEST COLOR TALENT IN THE SCREEN BUSINESS

## Critics' Choice

The favored nominee for "Best Color on any Apple™ II Screen": Professional Color from Video 7™!

The name of the technology is "RGB," the highest standard in computer color.\*

No longer is your Apple II trapped in the past of compromising "composite" color.

## Professional Color, and the "Big Screen," too

Playing the dual role of "RGB" and "80-column text," Professional Color gives screen performance that's especially vivid and alive.

## An Original Screenplay

Video 7 is the author of Apple's own RGB interface. In fact, Video 7 has set the standard for RGB color and 80-column text on the Apple II family.

So for Professional Color on your Apple II screen, get a V-Color™ card from Video 7. Call (800) 238-0101 (In California, (408) 943-0101) for the dealer nearest you.

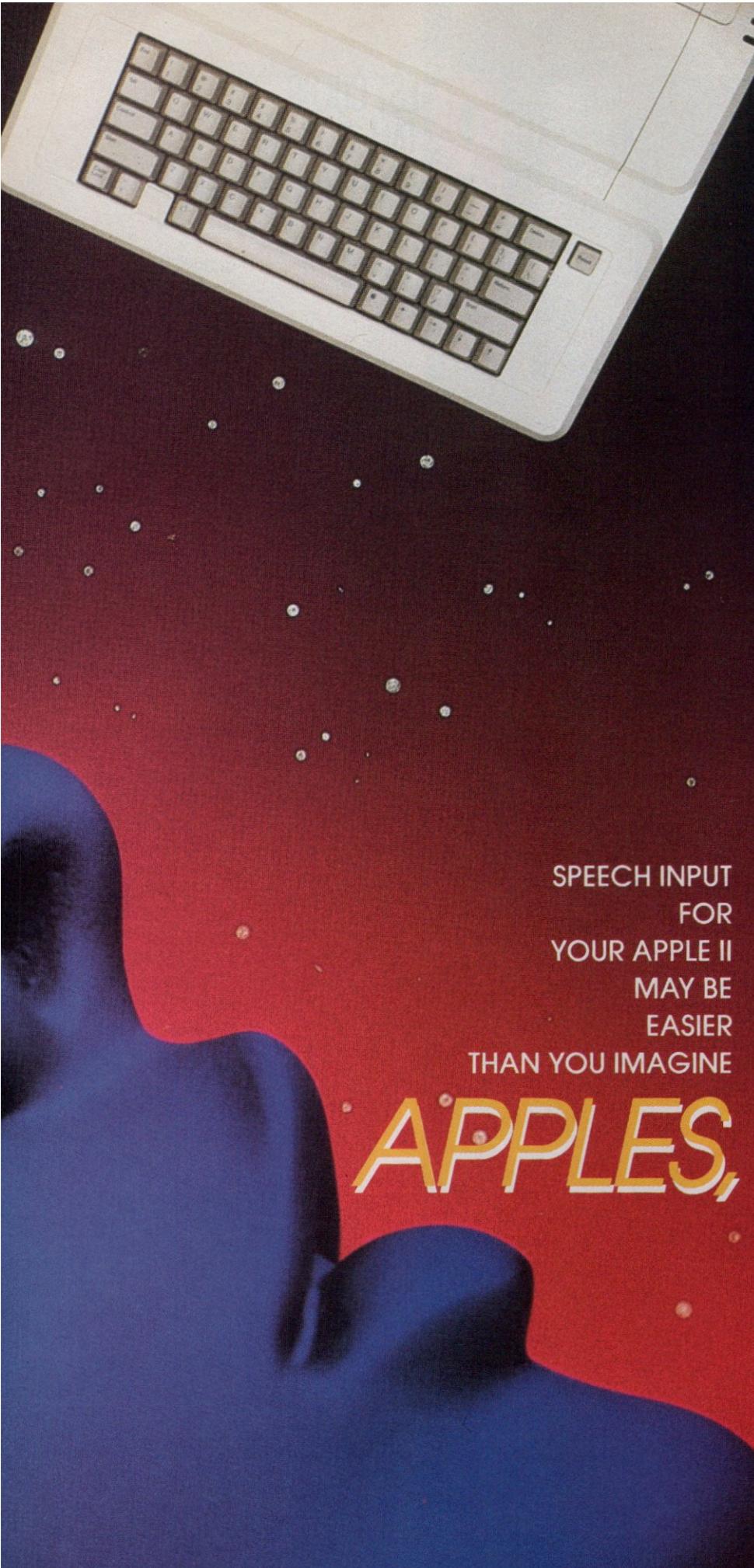


CIRCLE 195 ON READER SERVICE CARD

\*"RGB" (red, green, blue) is also the color standard of the IBM PC.

Apple is a registered trademark of Apple Computer, Inc.

V-Color, Video 7 and Professional Color are trademarks of Video 7, Inc.



Talking to your computer isn't a sign of mental disturbance if your machine is equipped with a speech-recognition system. These combinations of hardware and software let your Apple II identify and respond to certain prerehearsed words or phrases. The computer doesn't know what you say, nor does it care what you mean—but it will translate a consistent vocal pattern into a stored pattern of keystrokes.

On the personal level, speech recognition allows people who cannot or will not use a keyboard to give commands to their Apple through a microphone. In commercial and industrial settings, it allows people who need to keep their hands on their work to enter data into a computer. In educational use, it enables the computer to help with oral drill and practice. For experimenters, it's one more way to see how much you can do with a desktop computer system.

At this stage in personal-computer technology, speech recognition is really *sound* recognition. All of the available products for the Apple work by finding the closest match for the sound pattern of your command among a group of patterns you've previously created during a learning session (see "Electronic-Ear Technology," page 38). Artificial-intelligence (AI) techniques that actually consider the content of the speech in any but the most restricted context are still to be found only in fic-

tion and experimental labs.

You don't need a great deal of wisdom in a speech board to make it work, however. With some patience, a willingness to poke around inside your Apple, and some help or some computer expertise, you can have your Apple II, II Plus, or IIe listening to your words within one evening.

If you're a IIc user, you may have to wait a bit for a good solution. As you'll see, it's a lot easier to integrate voice recognition into a machine with slots



and an accessible circuit board. You can buy stand-alone voice-recognition units, but the cost might be comparable to what you paid for your computer. Considering the increasing numbers of IIc's and the interest in voice communication, however, products tailored for the IIc should soon start to appear.

#### Plugging in the Hardware

Rather than have you completely rewrite all your programs for audio input, most voice-input vendors have designed their boards to simulate the operation of the keyboard. Some boards, such as the Micromint Lis'ner 1000, do this with software. Others, such as The Voice Connection's IntroVoice, actually supply the electronic pulses that your Apple expects from the keyboard.

Even the more hardware-oriented approaches need a good bit of software to set up the voice-recognition system, but the software-based systems need their instructions both during setup and during use. Thus, although the hardware solutions operate with applications written under DOS, ProDOS, CP/M, Pascal, or whatever, the software solutions are limited to a single operating system (usually DOS).

Naturally, hardware installation is much easier if you use the software-linking approach. With the Lis'ner 1000, you plug it into slot 4 (or any other slot if you want to adapt the software) and route the microphone cable

better fidelity of a good desktop microphone (an option for the IntroVoice products).

#### Then Comes the Software

The speech-recognition software gives you the chance to teach the board the sound of your voice, to select a vocabulary, and to tell the system what you want the Apple to do when it recognizes one of your phrases. The quality, ease of use, and effectiveness of the software varies greatly among speech-system vendors.

Speech-recognition systems for the Apple are generally limited to isolated word-dependent and speaker-dependent technologies (see "How to Talk to an Apple," page 36). Thus, before a board can attempt to recognize your vocal commands, you must first go through a brief training period during which you speak into the system the



**With some patience  
and a willingness to  
poke around,  
you can have your  
Apple listening  
in one evening.**

want to use AppleWorks, for instance, you load into the system your disk of AppleWorks sound patterns. The system then has to find only the closest match in that context, rather than also checking for matches with VisiCalc terminology.

Typically, an on-line vocabulary comprises half a dozen to a hundred words. For even better control, the Micromint Lis'ner, for example, lets you specify subclasses and requires that words from one subclass occur immediately after another defined class.

Once you've selected your vocabulary, you tell the computer what you want it to do in response to the word or phrase, in much the same way that you set up keyboard macros. You tell the system what keystrokes to send to your program for each phrase in your vocabulary. For example, if you're creating a vocabulary for DOS, you might specify that the system respond with C-A-T-A-L-O-G <return> when you say the word *catalog*.

Note that you can match any keystrokes with any phrase, so you can just as well train the system to output DIR <return> for your CP/M programs or even respond with either of these commands when you say "Files, please." The vocabulary word or phrase is merely a guide for your use in associating sounds with keystroke patterns.

The next step is to "enroll" your

# LEND ME YOUR EARS

out the back. With The Voice Connection's IntroVoice, however, you have to remove four chips from their sockets on the Apple motherboard, plug them into the IntroVoice card, connect the card to the motherboard with three jumper cables, and then plug the card into slot 4.

If you're working in a busy office or industrial setting, you'll need to use a headset-style microphone, which most products offer as standard equipment. If you work in a quiet environment, you may be able to take advantage of the

words you'll want to use.

At any level of technology, vocabulary size and accuracy represent a trade-off. Because the systems reduce the sound to a string of numbers, the more words to be stored, the fewer the digits the system can allocate to each utterance. Because the system looks for the closest match, large vocabularies usually result in several close choices.

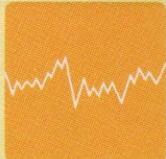
One tactic that all voice-recognition systems use is to format their word lists into separate vocabularies. When you

voice patterns. Some of the more simple software asks that you repeat each word or phrase you want to use a set number of times. More often, the software keeps track of how consistently you speak and has you repeat the word only enough times to establish a sufficiently accurate pattern. Normally, the software also has a test mode, so you can see how well it recognizes your inputs before you save the patterns on disk.

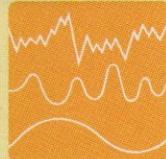
On hardware-oriented systems, you're now ready to go. With the sound



SOUND WAVES



PATTERN EXTRACTION



PATTERN MATCHING

CATALOG

ASCII TEXT

Figure 1: Speech-recognition boards extract patterns from sound-wave inputs, match the patterns against stored templates, and produce characters equivalent to the keystrokes that correspond to the word or phrase best matching the sound-wave inputs.



SOUND WAVES



VOICE-INPUT DEVICE



DATA STREAM



CIRCUIT BOARDS



KEYBOARD INPUT



DATA STREAM



CIRCUIT BOARDS

Figure 2: A hardware-based voice-input system simulates the signals sent by the keyboard input circuitry to the rest of the main circuit board.

patterns and keystrokes stored away, you can boot up your application program and run it. Whenever the system expects a keyboard entry and you have a vocal equivalent in storage, you speak your phrase instead. On-screen, you see the stored keystroke patterns appear, as if an invisible hand were entering them; your software doesn't know the difference, though, and it's off and working.

The software-oriented systems work almost the same way, but you do have to go through an additional step each time. With the hardware systems, you

simply load your phrase and run your applications each time, once you've set up the system. With the software systems, however, you must also link the voice software to the operating system. This operation is a simple, two-step, menu-driven task with the Lis'ner, for example, but it does mean that the software takes up some of your system's memory and makes certain changes to DOS. If you've already nearly hacked your DOS to pieces, or if you use other programs that make DOS changes (including some copy-protected games),

## HOW TO TALK TO AN APPLE

Recognition is the key word in voice recognition. The success of these systems depends on their being able to match your voice input against your previous recitation of a word or phrase. So it's important that you say your vocabulary in the same way during the training phase as during actual use. If you're normally somewhat of a mumbler, enunciating clearly during the training part may be admirable—but it won't work if you don't speak that way when you use the result. And because of the variation between voice and speech patterns, you probably won't be able to use the vocabulary recorded by a friend or family member, even though everyone says they sound exactly like you.

Furthermore, voices change in response to illness, stress, or perceived audience. If you're having a particularly bad—or good—day, if you get a cold or have a fever blister on your lip, you may have to retrain the system to accept your voice.

## WHAT CAN YOU DO WITH A VOICE RECOGNIZER?

Imagine you're examining cell cultures under a microscope. Rather than look away, pick up your pen, refocus your eyes, and write down what you see, you call out to your Apple the sample number and your findings. You might want voice output as well for confirmation, but just being free of the keyboard or pencil is a productivity booster.

Voice recognition's biggest market, so far, is in this kind of inspection, inventory, and data-entry operation. If you need to enter data but your hands are already busy, voice recognition can let you keep your hands on your work.

For ordinary business software, voice recognition lets you pull up data from

your system with a vocal command, which lets you make notes, do other work, or even type results into another computer. In the case of word-processing or spreadsheet software, you can use the voice commands for cursor positioning and keep your hands on the keys.

In education, voice input can supplement the teacher's attention for oral drill and practice. For example, Chatterbox from Voice Learning Systems allows an Apple to supply the thousands of repetitions that a learning-disabled child might need to learn to read a new word. Because it asks the child to speak out loud only the word shown on

the screen, it can be used with children who cannot type or even select regions on a touchpad.

At current prices, voice input for games is somewhat of a luxury item. If you're a game fanatic, you might want to pay the price. Be sure to look into compatibility issues before you buy, however.

Last, and perhaps more important, voice input can open up the world of computers to people with sufficiently impaired mobility that they are not able to use a keyboard. Through the computer, they can control other devices, increasing the activities they can do independently.

# The Number One, Best Selling, Expandable Ram Card for the Apple Is RAMWORKS™



## *A Few Reasons Why!*

### **It's Appleworks' Best Friend**

A 64K RAMWORKS will add 46K to your available desktop memory, a 128K RAMWORKS will add 91K, a 256K RAMWORKS will add 182K, and 512K RAMWORKS will add 364K and a 1 meg RAMWORKS will give you nearly an 800K DESKTOP. But RAMWORKS does more than just increase the desktop memory (as if that weren't enough). With RAMWORKS, Appleworks will be able to run up to 20 times faster. And now only RAMWORKS does this all automatically with no need for any optional software. Appleworks is a very large program. So large, in fact, that it won't all fit in a 128K Apple, so Appleworks has to constantly go back to the disk drive for more data. When you have a RAMWORKS card, you can have enough memory so that the entire Appleworks program can be loaded into the computer. This greatly increases the speed at which Appleworks operates because the disk drive operates at 300 RPM. RAMWORKS operates at the speed of light!

### **It's Compatible**

The simple fact is that RAMWORKS is compatible with more off-the-shelf software than any other RAM card. RAMWORKS is 100% compatible with ALL software written for the Apple 80 column and extended 80 column card. Additionally, RAMWORKS can emulate other RAM cards so software written for other cards will run without modification. Software written for RAMWORKS will not work on other cards. We can emulate others, but others can't emulate us.

### **It's Easy**

RAMWORKS just plugs in and clear instructions show how to plug more memory chips into RAMWORKS as your needs increase.

### **It's Popular**

Popularity translates into great software support because software companies can't support all RAM cards, they can only support the ones their customers are likely to own.

### **It's Reasonable**

Applied Engineering's years of experience and wide product line really pays off, and because of our high sales levels we buy most of our I.C. chips factory direct. So don't let our low prices fool you, they're caused by high volume production. That's why we can offer the most memory for the least money.

When you want to expand your IIe's memory and make Appleworks and other programs have more memory and go faster, why not do what Apple computer does, call Applied Engineering and ask for RAMWORKS.

### **It's In Color**

For only \$129 an RGB option can be added to RAMWORKS to give you double high resolution color graphics and sharp 80 column text on any Apple compatible RGB monitor. The RGB option does not take up another slot, but rather it plugs into RAMWORKS. You can order the RGB option with your RAMWORKS or add it on at a later date.

### **It Corrects Mistakes**

Let's say you bought some other RAM card (and that's a mistake) and your RAM card is not being recognized by Appleworks, Advanced VisiCalc, FlashCalc or other programs and you want RAMWORKS. No problem. The memory chips on the card that you have now, which is where most of the money is, can be unplugged and then plugged into the expansion sockets on RAMWORKS.

### **It's Got It All**

- 80 Column Text
- Double high resolution graphics  
(with or without RGB option)
- User Expandable to 1 Megabyte
- Can Use 64K or 256K RAMS in any combination
- Adds Memory to Appleworks
- Accelerates Appleworks
- 100% Compatible with All IIe software
- RAM Disk software available, compatible with  
PRO-DOS, DOS 3.3, and PASCAL (\$29.00)
- RAM Disk available for CP/M (\$29.00)
- Visicalc preboot available (\$29.00)
- RGB option
- Takes only one slot
- 3 year no hassle warranty

|                                       |        |
|---------------------------------------|--------|
| Ramworks™ with 64K Installed .....    | \$179  |
| Ramworks™ with 128K Installed .....   | \$249  |
| Ramworks™ with 256K Installed .....   | \$399  |
| Ramworks™ with 512K Installed .....   | \$649  |
| Ramworks™ with 1 MEG Installed .....  | \$1199 |
| RGB Option (can be added later) ..... | \$129  |

### **Call (214) 492-2027**

9 a.m. to 11 p.m. 7 days a week or  
Send check or money order to:

P. O. Box 798

Carrollton, Texas 75006

MasterCard, Visa and C.O.D. welcome.

No extra charge for credit cards.

Texas residents add 5 1/2% sales tax. Add \$10.00 if outside U.S.A.

you may at times find some software conflicts.

### Chips Are the Key

As with most specialized computer functions these days, the key to most voice-recognition products is a voice-recognition chip. Now that a mass market is developing for voice recognition in home appliances and electronics, many of the major semiconductor houses have voice chips either out or in the works.

As with other computer functions, voice chips themselves are becoming increasingly sophisticated and doing more of the job in a single piece of silicon. For example, the General Instrument SP 1000, used in Micromint's Lis'ner 1000, not only converts the incoming sound wave into a matrix of values reflecting the essential features of the utterance, but it also controls the



## The key to most voice-recognition products is a voice-recognition chip.

levels on the input amplifiers for automatic gain control, runs the analog-to-digital converter chips that change the sound waves to digital bits, and accepts replies for the system processor for audio output.

You won't have to worry about the chip level if you don't want to; the boards I tested automatically set all the

needed chip parameters with their included software. If you're a true hacker, though, you may want to work down at the chip level as well.

### More Programs

Should voice recognition become more popular, we will probably see an increasing number of programs that offer voice options. Right now, most software specifically written for voice involves inventory, education, and specialized business applications (see "What Can You Do with a Voice Recognizer?" page 36). Who knows, it may be an *A+* reader, such as you, who delivers the voice-based software that will make the rest of us all sit up and listen. +

*Steve Rosenthal is a lexicographer, writer, TV producer, and bicycle rider who writes regularly for A+.*

## ELECTRONIC-EAR TECHNOLOGY

Several million years of evolution have gone into programming our ability to recognize spoken words. Computers, still lagging far behind, use a fairly primitive aural technology.

The immediate object during the data-capture phase is to turn the speech input into a small but representative pattern of data values. In general, this process is called feature extraction.

In the early days of speech recognition, a system applied the microphone's analog signal, representing the sound-waves, to a leveling amplifier and then routed the signal through a series of filters tuned to different frequency (pitch) bands. Sampling the filter outputs at regular intervals in digital form created a matrix of values, which then became either a reference template or a value to check against existing entries.

Conceptually, most voice systems go through a similar process, but instead of actually breaking down the signal into frequency bands through circuitry, the process is now accomplished electronically by mathematical transformations. Some speech systems still use frequency bands, but others cast the results in terms of the parameters that a linear-predictive-coding (LPC) speech-output chip would need to produce the same sound pattern.

Unfortunately, people do not say the same words the same way each time

they speak. Finding out which part of a phrase to compare, when to start, and how to make the comparison is the central element in the art and science of voice-system design. Requiring isolated word input from the user takes care of the selection part (and that's why phrases must be run together as if they were a single word), but many challenges still remain. Because words are sampled over a period of time, for example, each input must be normalized to the same time base to take into account variations in the rate at which the user speaks the word.

To further lessen the effect of minute variations, during the initial training period the software collects enough samples to form average values for each phrase or word. The average values then become the templates against which new inputs are compared. Comparison takes place by selection of the best match and comparison of the closeness of the match to a programmed minimum-acceptance level.

Making the comparison is a function currently in flux. Older systems rely on software operations in the host system to compute an index value for the closeness between the current input and existing templates. Newer systems use special comparison chips, allowing faster results and putting less demand on the host system's resources.

## ► PRODUCT INFORMATION

### Lis'ner 1000

The Micromint, Inc.  
25 Terrace Drive  
Vernon, CT 06066  
(800) 635-3355

**List Price:** \$189 and up

**CIRCLE 490 ON READER SERVICE CARD**

### IntroVoice I and II

The Voice Connection  
17835 Sky Park Circle, Suite C  
Irvine, CA 92714  
(714) 261-2366

**List Price:** IntroVoice I, \$595-795; IntroVoice II, \$795-995

**CIRCLE 491 ON READER SERVICE CARD**

### Voice-Driver

(Repackaged version of IntroVoice I and II)  
Voice Recognition Systems  
550 Battery Street, Suite 1716  
San Francisco, CA 94111  
(415) 788-2007

**List Price:** \$995

**CIRCLE 492 ON READER SERVICE CARD**

### Chatterbox

(special-education software, requires Echo+ [see "Season'd with a Gracious Voice," pages 40-44] and IntroVoice)  
Voice Learning Systems  
29 Elk Ridge Lane, Dept. B  
Boulder, CO 80302

Nationwide (800) 531-5314, Texas  
(800) 292-5619, Hawaii or Alaska  
(800) 821-0728

**List Price:** \$295 and up; with Echo+ and IntroVoice 1, \$995

**CIRCLE 493 ON READER SERVICE CARD**

# SOFTYME

• THE MAGAZINE ON A DISK •



FREE OFFER!

## YOUR FAITHFUL NEW COMPANION

SOFTYME, THE MAGAZINE ON A DISK, BRINGS EXCITING NEW PROGRAMS AND FEATURES TO YOUR HOME EVERY SINGLE MONTH.

Now, for about the price of a disk, you can receive a floppy that's chock full of fascinating programs for personal enrichment of the whole family. Monthly programs include: home finance, education, utilities, tutorials, entertainment, even adventure. Every SOFTYME issue brings you at least 12 new programs, plus plenty of electronic news and features. What's more, each program is unlocked, opening the door to fuller enjoyment of your Apple computer.

SOFTYME makes ordinary magazines seem, well, pretty ordinary. SOFTYME is friendly, interactive and totally absorbing. Like no other magazine, SOFTYME lets you evaluate your stock portfolio, write your own cookbook, learn a winning sports strategy

or challenge a master in a quick hand of cards. With SOFTYME you can follow the adventures of a fellow user charting new keyboard territory.

Start getting more out of your Apple II Series computer. Every single month.

Get SOFTYME.  
We deliver two sides of fun!

### Take Advantage Of This Introductory Offer!

Subscribe to SOFTYME for a full year and get a FREE copy of our "Mail Magic Labelmaker" program (an \$11.95 value). Add, edit, or delete names and addresses; sort by name, city, state, or zip; print labels and more! Yours free with a one-year subscription to SOFTYME.

FOR IMMEDIATE SERVICE CALL US TOLL FREE 24 HRS

**1-800-437-0033**

I'LL BYTE! Start my subscription to SOFTYME immediately.

I want:

12 months    6 months    3 months    1 month  
\$54.00              \$36.00              \$24.00              \$8.50

(Add \$12.00 per year in foreign countries, except Canada and APO)

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Payment enclosed (please make checks payable to SOFTYME).

Visa    MasterCard   Acct. No. \_\_\_\_\_

Signature \_\_\_\_\_ Exp. Date \_\_\_\_\_

Send to: **SOFTYME • Dept. AP-05, PO Box 299 • Newport, RI 02840**

**GUARANTEE**  
If for any reason SOFTYME does not meet your expectations, return your first issue to us for a full refund.

IRCLE 117 ON READER SERVICE CARD  
SOFTYME is the registered trademark of Viking Data Base Technologies, Inc. Apple is the registered trademark of Apple Computer, Inc. SOFTYME uses DOS 3.3 and runs on Apple II+, IIe and IIc.



GETTING  
VOICE  
OUTPUT  
FROM  
YOUR APPLE II  
COMPUTER

SEASON'D

WITH A

speech devices exist that link up to the Apple with a serial connection.

**Good News and Bad News**

To see how practical speech has become on the Apple II, I looked at a sample of available products. In general, each package included the speech-output hardware, software for creating and editing sound codes, and a program for translating text in the computer to spoken words.

The good news about voice boards for the Apple computer is that you can buy a number of boards and boxes that will produce understandable output, even from normal text. None of the products sound completely human, and for best sound quality you need to edit the input text with all sorts of special codes. For most text, though, if you have some idea of the context and the vocabulary, it is not difficult at all to

To hear an Apple II speak its first phrases may not have quite the emotional impact that hearing a child's first halting words has, but in both cases the power of speech opens up new frontiers of communication. With the right hardware and software, an Apple can speak out loud, reciting text files, programs, and numeric values.

Speech output makes computer use possible for people who cannot read a video screen. It helps in applications where a sighted user cannot look at the monitor. Oral cues can reinforce educational programs; words, and even songs, can be added to games; and, for many people, making the computer speak becomes a fascinating project in itself.

Every Apple II-series computer comes equipped to make simple musical sounds, but its tiny speaker and output circuitry were not designed for the demands of spoken output. Adding speech to the computer means adding hardware, usually a card that plugs into an Apple II, II Plus, or IIe. For the Apple IIc, or for the other models equipped with a serial card, several



follow the audio output.

The bad news is that you have to be somewhat of a hacker, or very patient and determined, to make sense of these products. Of the half-dozen speech products that I looked at, not a single one had a manual that was clear, accurate, and complete. Most products, in fact, assume that you're an accomplished Applesoft-BASIC programmer, ready to PEEK and POKE your way through memory. That's fine if you're an experimenter at heart, but if you're only a computer user, you may need some help from your dealer, a friend, or a paid expert.

A good way to start looking at speech boards is to determine how they plug in. Some products, such as Street Electronic's Echo+ or Don't Ask Software's S.A.M., plug into an Apple II, II Plus, or IIe just like any other peripheral card does. Electrically, the cards will go in any slot, but if you want to use the provided software, you have to select the slot it specifies—which in most cases is slot 4.

If you have a IIc model, or you can't

Automated Mouth, indicates, it is basically a software system (and on several other brands of computers it uses only the computer's built-in hardware). Instead of a special speech chip, S.A.M. does all the speech processing in software, leaving only the conversion from digital form to the electrical waves needed for sound, as a task for the hardware. In my listening tests, the resulting quality was surprisingly good.

The SC-01 chip from Votrax has been one of the more popular speech-output chips, used not only in Votrax's



**With the right hardware and software, an Apple II-series computer can speak out loud.**

The speech chip or data converter determines only how good the speech quality is if you send the chip codes for the right sounds. In normal use, however, you want merely to send English text to the speech system, rather than painstakingly translating what you want to say into sound codes. We'd like the computer to do any needed translations from text to code values.

Unfortunately, figuring out how to pronounce the English language is somewhat of an inexact science. Although some general rules work for most words and phrases, an endless number of exceptions seems to exist. Even the computer, as it turns out, can't keep track of all the possibilities.

All of the units I looked at came with text-to-sound-code software. Normally, this software consisted of some dozens or hundreds of general-pronunciation rules, with the hooks needed to link the software to Applesoft, routines for direct entry of text for oral output, and a demonstration or two. The exception was the two Votrax units, which had their software built in.

# GRACIOUS VOICE

spare the slot, or you'd rather use a serial card and keep the cover closed on your Apple, several firms make speech-output units with serial connections. Votrax's Type 'N Talk and Personal Speech System and the Intex-Talker are all in this class. Naturally, these units tend to be more expensive because they need a case and power supply as well as a circuit board.

Another approach to making sense out of the various speech systems is to look at the hardware technology. Speech boards use a number of different technologies (see "The Dialects of Speech Output" on page 42), usually embodied in a speech-output chip. A better chip means more understandable speech, with lower memory-storage requirements.

The S.A.M. board is an exception to this pattern. As its full name, Software

own Type 'N Talk and Personal Speech System, but also in the Intex Talker. Apparently, you can expect usable, but not outstanding, sound quality from a system based on the SC-01.

Several successors to the SC-01 seemed to do a better job. The SSI-263 appears to be the current favorite, used in the Sweet Microsystem Mocking-board and the Micromint SweetTalker II. Speech produced by this chip is reasonably understandable. Unbelievably enough, this chip also adds musical tones to words, on command, letting boards that use this chip literally sing.

The TMS 5520, used in the Echo Cricket and the MultiTech SSB-Apple, also seems to do a creditable job. This chip comes from the same people who developed the Speak 'N Spell toy, so they've had a lot of experience in speech development.

If you're willing to live with some strange-sounding locutions, you can accept what you get from this automated translation process with no further efforts. Once you've linked the software to Applesoft, you can output text almost as if you were sending it to the printer. If that's not good enough for you, however, all of the boards have provisions to let you overrule what would otherwise be the result.

The easiest method to change the way the word gets pronounced is to change the spelling. If you want to make sure that the system says the name of the language correctly, spell it *English* rather than *English*. Similarly, say you *red* a book *yester day* and found what was *alloweed*.

If you want to go further, the Echo+, for example, lets you change the pronunciation rules. All of the

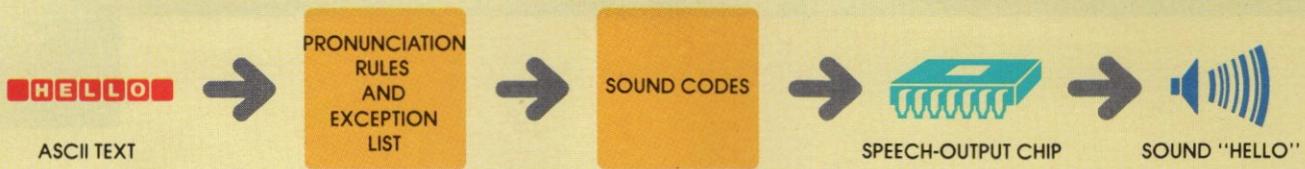


Figure 1: A speech-output system turns text into sound codes, which drive a speech-output chip to produce the appropriate sound waves.

boards let you enter text as phonemes, and some, such as the Votrax Personal Speech System, let you enter a list of exceptions to be pronounced as specified instead of by the rules.

#### Voices

Should you be planning to use a voice board to add speech to an existing application, note that even when the speech programs integrate with AppleSoft, they still require added memory and disk space. You may have problems with protected software, which generally cannot run with other programs in

memory and is often not very graceful about sharing disks.

To add a voice for the use of a visually impaired person, remember that most existing programs, particularly word processors, rewrite the same information quite frequently. It's worth the trouble to get a program specifically designed for oral use.

#### Learning from Experience

In researching this article, a friend and I spent a lot of time plugging in various speech boards and seeing what we could get them to do. Here's a selec-

tion from some of our notes.

#### S.A.M. Board

The S.A.M. board wasn't hard to install, but it ended in stripped wires rather than a speaker jack. The board itself was a tiny bit oversized, so we had a lot of trouble getting it back out of slot 4. The manual was easy to read if you knew Applesoft, a bit mysterious otherwise. We liked the liberal use of examples and had no problem making the board pronounce the words of text files and programs. Voice quality was good, with enough inflection to keep it from sounding oppressive.

#### Echo+

The Echo+ uses ProDOS for its software, and it assumes you know how to back up disks and otherwise run ProDOS functions. The manual seems intended more for assembly-language hackers than for casual users. If you want to use the female voice, which seems to speak with more clarity and inflection, you have to have an Extended 80-Column Card; otherwise you're limited to the more mechanical-sounding male voice. This board also plays musical tones and sound effects. If you ever need to simulate a train going through your living room, you can ask the Echo+ to do it between recitations.

#### SSB-Apple

SSB-Apple assumes the board is in slot 2 rather than slot 4. Because this system uses preencoded words, you have to swap the four vocabulary disks back and forth to build up your sentences. You can save the "compiled" sentences to disk. Again, this manual is more for dedicated users, having no in-

## THE DIALECTS OF SPEECH OUTPUT

Three techniques for producing speech output account for almost all current designs. One, called linear predictive coding (LPC) models the way the human voice actually works. The other two store and reproduce speech based on the waveforms of the component sounds.

With linear predictive coding, a set of sound generators creates initial tones, much like the resonating of the human vocal chords and the rushing sounds of air. Next, these initial sounds pass through a set of filters that shape the sounds further, in much the way that the tongue, lips, and teeth modify sounds in human speech.

It takes many fewer bits to specify the sound generators and filter positions than it does to record the actual soundwaves, so LPC lets an Apple speak for longer periods, using fewer bits of storage. There's a slight cost in speech qual-

ity, unfortunately, because the modeling of the speech process is not perfect, and the parameters don't cover all the fine gradations. LPC requires between 400 and 2000 bits per second of speech.

When speech must be recorded for playback, or as an alternative to LPC for synthesizing messages, another popular choice is digitized speech using CVSD. This method does record sound waves rather than throat positions, but it saves memory space by encoding only voice changes. It offers higher-quality output than LPC does, but only at greater numbers of bits per second.

For the ultimate in simplicity and quality, actual sound waveforms can be converted to digital codes, stored, and replayed. This requires some 3000 to 20,000 bytes for each second of speech—far more than is practical for general personal-computer applications.

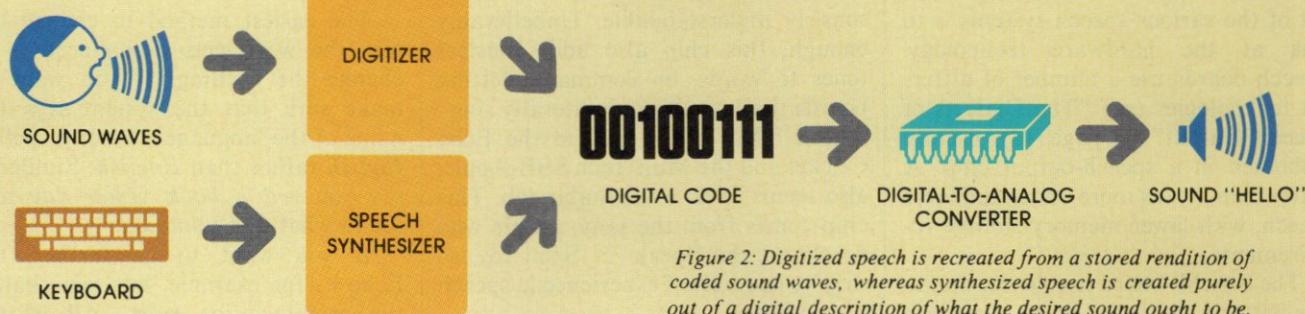
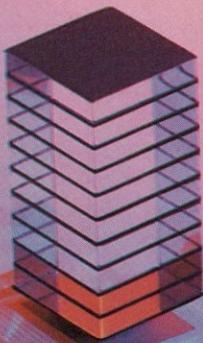


Figure 2: Digitized speech is recreated from a stored rendition of coded sound waves, whereas synthesized speech is created purely out of a digital description of what the desired sound ought to be.

# What every Apple owner should know about

# WORD JUGGLER.<sup>TM</sup>



If you own an Apple IIe or IIc—or you're planning to buy one—here are a few things you should know about Quark's Word Juggler word processor.

First of all, Word Juggler is the only word processor that gives you a powerful spelling checker *and* a built-in telecommunications feature. So you can create a document—check it for spelling errors—and then send it via electronic mail. All with just one program.

Plus, Word Juggler is the most easy-to-use, professional word processor you can buy for your Apple. Virtually every function—even complicated "cut-and-paste" tasks—can be accomplished with a single keystroke.

There's nothing to memorize, either. Because Word Juggler comes with replacement keycaps—and a special keyboard template—which identify principal editing and formatting commands. So you can focus your efforts on using the program, not learning it.

Fact is, no other word processor for your Apple IIe or IIc gives you this unique combination of power, functionality and ease of use. And if all these advantages aren't compelling enough, check the price. Suggested retail is only \$189.

So visit your favorite dealer today. Ask for a complete demonstration—and for a copy of our brochure, "What Every Apple Owner Should Know About Word Juggler." If you don't have a favorite dealer, but would like one, just call 1 (800) 543-7711. We'll fix you up.

CIRCLE 309 ON READER SERVICE CARD

**Quark**<sup>TM</sup>  
INCORPORATED

2525 West Evans, Suite 220  
Denver CO 80219

Quark and Word Juggler are trademarks of Quark Incorporated. Apple is a registered trademark of Apple Computer, Inc.

Ask about our specially-priced educational version.

Copyright 1985, Quark Incorporated

Photography by Barbara Kasten

# INCREASE YOUR DISK CAPACITY 100%

DOUBLES DISKETTES INSTANTLY!

Now, the back of 5 1/4" diskettes can be used, even in a single-head disk drive. Double all your present diskettes safely...without disturbing the existing data!

cuts square notch for Apple, Franklin, and Commodore

**only \$14.95\***

**ALSO**

## DISK OPTIMIZER SYSTEM<sup>©</sup>

SOFTWARE FOR APPLE II, II+, III, AND FRANKLIN

**CERTIFIES YOUR NEW DISK 100% ERROR-FREE!**

- Locks out bad sectors • Adds 36th track • Performs disk drive speed check • Adds DOS • And More!

### SPECIAL PACKAGE PRICE

Nibble Notch 1 & Disk Optimizer **\$29.95\***  
Combo (Optimizer alone reg. \$24.95)\*  
**FOR BOTH!**

**INQUIRE ABOUT OUR ALL-NEW MULTILINGUAL DISK OPTIMIZER!**

\* On all orders add \$2 for postage & handling (\$5 Foreign). Florida res. add 5% Sales Tax.

**SATISFACTION GUARANTEED OR YOUR MONEY BACK!**

**ORDER TODAY**



**TOLL FREE 1-800-642-2536**  
FLORIDA 305-493-8355

or send check  
or money order to:

**nibble notch<sup>®</sup>**  
computer products  
4211 NW 75th Terrace • Dept. 231  
Lauderhill, FL 33319

CIRCLE 263 ON READER SERVICE CARD

dex and paying little attention to layout. The speech output is a female voice, which is particularly clear within words but sometimes choppy in the transitions.

### Sweettalker II

The Sweettalker II we looked at wouldn't say a word. Apparently, it died on its way to us. Fortunately, its speech-output functions were included in the more complex Lis'ner 1000 speech-input board, from the same manufacturer (The Micromint), so we were able to try everything out anyway. The board was easy to install, but the manual was confusing—it tended to jump around, rather than proceed in logical fashion. You need one of those tiny screwdrivers to set the volume control. When the board is plugged in but not running, it makes a steady ringing sound. On the other hand, the Sweettalker demo program was by far the best of the lot. It runs through its repertoire of voices, reads aloud, and even sings a few songs. The speech quality is generally good, with an inflection that sounds almost like that of someone whose original language was Romanian.

### Type 'N Talk, Personal Speech System

The Votrax Type 'N Talk and Personal Speech System (which are external boxes) require special cables, unless you run them through a modem. Unfortunately, the cable-wiring diagrams have some errors! The manuals, although attractively typeset, seem to take a particular delight in jargon. Once you get the cable squared away, connecting either system is quite easy. The Type 'N Talk gives no indication of when it is on, but the Personal Speech System has a power light. Both systems produce reasonably good speech, they take up no space on the disk or in memory, and are as easy to use as a printer. The Personal Speech System is supposed to be able to sing and play music, but we weren't able to get much in the way of understandable lyrics out of it.

### The Medium is the Message

If you're just going to experiment, you're in for some fun. Although you may not find that your Apple has anything profound to say, in some respects the medium is the message. And perhaps if machines learn how to talk, maybe humans can someday learn better how to listen.

## ► PRODUCT INFORMATION

### Echo+

Street Electronics Corporation  
1140 Mark Avenue  
Carpinteria, CA 93013  
(805) 684-4593

**List Price:** \$129.95 and up

CIRCLE 480 ON READER SERVICE CARD

### Intex-Talker

Intex Microsystems Corporation  
725 South Adams Road, Suite L8  
Birmingham, MI 48011  
(313) 540-7601

**List Price:** \$295 plus \$4 shipping

CIRCLE 481 ON READER SERVICE CARD

### Micro-LADS

Laureate Learning Systems  
One Mill Street  
Burlington VT 05401  
(802) 862-7355

**List Price:** \$650 for complete package, including six disks and Echo+

**Requires:** Echo+

CIRCLE 482 ON READER SERVICE CARD

### Mockingboard

Sweet Micro Systems  
50 Freeway Drive  
Cranston, RI 02920  
(800) 341-8001 or (401) 461-0530

**List Price:** \$219

CIRCLE 483 ON READER SERVICE CARD

### S.A.M.

Don't Ask Computer Software  
TRONIX Publishing, Inc.  
8295 S. La Cienega Blvd.  
Inglewood, CA 90301  
(213) 215-0529

**List Price:** \$99.95

CIRCLE 484 ON READER SERVICE CARD

### SSB-Apple

Multitech Industrial Corporation  
195 West El Camino Real  
Sunnyvale, CA 94086  
(800) 538-1542 or (408) 773-8400

**List Price:** \$55

CIRCLE 485 ON READER SERVICE CARD

### Sweettalker II and Lis'ner 1000

The Micromint, Inc.  
25 Terrace Drive  
Vernon, CT 06066  
(800) 635-3355

**List Price:** Sweettalker II, \$104; Lis'ner 1000, \$189

CIRCLE 486 ON READER SERVICE CARD

### Type 'N Talk and Votrax Personal Speech Synthesizer

Votrax, Inc.  
1358 Rankin  
Troy, MI 48083  
(800) 521-1350 or (313) 583-1877

**List Price:** Type 'N Talk, \$249; Votrax Personal Speech Synthesizer, \$395

CIRCLE 487 ON READER SERVICE CARD

*Steve Rosenthal is a writer and lexicographer who tries to maintain a perspective on other joys and problems in the world besides those involving personal computers.*

# Picture it!

**Graphics processing that's easy, flexible and fun!**

You don't have to be an artist or programmer, just select from Baudville's complete line of compatible graphics software. The possibilities are infinite.

Whether you've just started, or you're a seasoned hi-res hacker, you'll appreciate the unmatched power and simplicity of Baudville's graphics software.

**TAKE 1**  
Stunning Animation that's fast, smooth, and flicker free!

Write, produce, and direct your own computer movies. No programming skills are needed to create superb full-color animation. With easy to use TAKE-1, you define animation shapes and movements, "shoot" scenes frame-by-frame, add text at any time, and then combine the scenes to make a complete movie. Perfect for presentations and demos.

#### Premiering:

- True sprite capability for multi-layered action without additional hardware.
- No size restriction on animated objects.
- Complete editing at all stages of production. Can use hi-res pictures, shapes, and fonts from PIXIT or other graphics utilities for background scenes and animation shapes.
- A convenient selection of animation libraries are available.
- Moving objects can have "windows" that allow background to show through.
- Optional programmer's "tool kit" lets you put the power of TAKE-1 animation in your own programs.

**\$59.95 Requires 64K**



Productive tools for home, education, business, and the arts.

©Copyright 1984 Baudville

Available at your local software store or direct from BAUDVILLE.

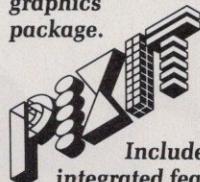
Visa and Master Charge accepted. Michigan residents add 4% sales tax.

BAUDVILLE, 1001 Medical Park Dr., S.E.

Grand Rapids, Michigan 49506 Phone (616) 957-3036

**BAUDVILLE**

The complete color graphics package.



Includes these integrated features:

**Create A Shape** using simple keystroke commands.

**Shape Table Editor** allows up to 128 shapes placed anywhere in table.

**Shape and Font Library** provides a convenient selection of pre-drawn shapes and text fonts.

**Picture Editor** creates hi-res pictures using mixed text and graphics, circles, lines, colorfill, and shape tables.

**Slide Show** displays hi-res pictures like a slide projector.

**Printer Dump** Supports a wide variety of dot matrix printers and interface cards. No additional software required.

Uses standard hi-res picture and Applesoft shape table files which are compatible with other graphics utilities.

**Optional Shape Libraries** greatly reduce the time required to generate computer art. Each library contains a wide variety of artist drawn shapes for specific areas of interest.

**\$49.95 Requires 48K**  
**Optional Libraries**  
**@\$20 each.**

For Apple II, Apple II+, Apple IIe or compatible computers.

Apple is a registered trademark of Apple Computer, Inc.

# Rhyme, Sight Words...READING READINESS!

THE STORY OF



# Miss Mouse AND Rhyme Land



2 TERRIFIC  
NEW PROGRAMS FROM  
GROLIER, ONE OF THE NATION'S  
LARGEST EDUCATIONAL PUBLISHERS.

KIDS FROM 4 TO 7 WILL LEARN FROM  
IMAGINATIVE ACTIVITIES THAT USE RHYME,  
PICTURES AND COLOR AS TOOLS  
THAT INTRODUCE THE JOY OF READING...



## Kids will love MISS MOUSE and her funny friends!

Playing with the Friendly Forest gang will help kids to:

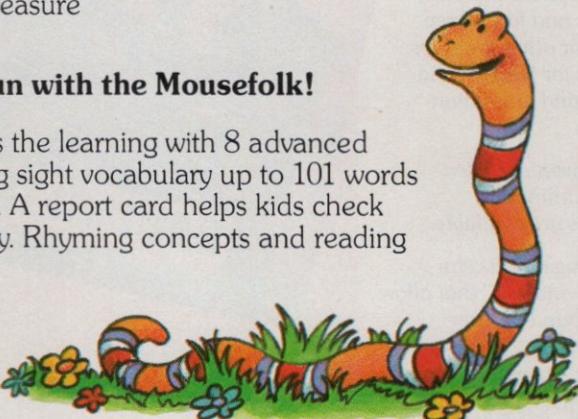
- Develop the concept of rhyme, a first step in learning to read
- Increase sight vocabulary to 60 words
- Improve sight and comprehension skills
- Practice following simple instructions
- Stimulate reading for pleasure



## Learning is easy and fun with the Mousefolk!

RHYME LAND continues the learning with 8 advanced rhyming activities, bringing sight vocabulary up to 101 words and reinforcing new skills. A report card helps kids check progress after each activity. Rhyming concepts and reading skills quickly grow...

## A mouseterpiece!



The 2 programs will be available September 1 for the Apple® II family and Commodore® 64. To have Miss Mouse and friends come to your store or dealership, or for more information, call Grolier Electronic Publishing, Inc. today, Toll Free at **(800) 858-8858**.



**Grolier Electronic Publishing, Inc.**

SHERMAN TURNPIKE, DANBURY, CONNECTICUT, 06816 • (800) 858-8858

Apple is a registered trademark of Apple Computer Inc. Commodore is a registered trademark of Commodore Business Machines, Inc. Miss Mouse and Rhyme Land are trademarks of Grolier Electronic Publishing, Inc.

► BY DELORES WOODS HUAJARDO

# APPLE III SOFTWARE

## Agriculture

CIRCLE  
READER SERVICE  
NUMBER

HCI (HUTCH COMPUTER, INC.)

|                              |     |
|------------------------------|-----|
| CASH CROP BREAK EVEN PROGRAM | 400 |
| CROP HISTORY                 | 401 |
| ELEVATOR MANAGER PROGRAM     | 402 |
| FERTILIZER FORMULATION       | 403 |
| INVOICE/INVENTORY PROGRAM    | 404 |
| SOIL TEST RECOMMENDATION     | 405 |
| BUSINESS MANAGEMENT          | 406 |
| COW/CALF MANAGEMENT          | 407 |
| CROP MANAGEMENT              | 408 |
| FARM MACHINERY MANAGEMENT    | 409 |
| FEEDLOT CATTLE MANAGEMENT    | 410 |
| SWINE FARROWING              | 411 |
| SWINE FINISHING MANAGEMENT   | 412 |
| WORKSHEET                    | 413 |
| AGRI-LEDGER                  | 414 |
| AG-BASIC PAYABLES            | 415 |
| AG-BASIC PAYROLL             | 416 |
| TAX GENERAL LEDGER           | 417 |
| TAX MANAGEMENT & CROP PERIOD | 418 |
| TAX MANAGEMENT & CROP PERIOD | 419 |
| ACCOUNTING                   |     |

HARRIS TECHNICAL SYSTEMS

HARVEST COMPUTER SYSTEMS

SMALL BUSINESS COMPUTER SYSTEMS  
XLNCAP

An estimated 80,000  
Apple III computers  
are being used  
by businesses  
every day, and the  
owners of these IIs  
are adamant  
in their praise

of the Apple III  
as one of the best  
business machines  
around.

In order to keep  
Apple III owners  
up to date,

we are publishing  
a three-part list  
of software

currently available  
for the Apple III.

This is part two.

## Banking/Finance

FINANCIAL SYSTEMS, INC.

|   |     |
|---|-----|
| ASSET & LIABILITY MANAGEMENT              | 421 |
| AGRICULTURAL CREDIT ANALYSIS & MATRIX     | 422 |
| RATING                                    |     |
| COMMERCIAL CREDIT ANALYSIS PACKAGE        | 423 |
| GENERAL FINANCIAL CALCULATOR 1            | 424 |
| GENERAL FINANCIAL CALCULATOR 2            | 425 |
| IRA PROPOSAL AND DISCLOSURE               | 426 |
| INTEREST ACCRUAL & COMMERCIAL LOAN PAYOFF | 427 |
| BANKPLAN                                  | 428 |
| BANKCALC 1                                | 429 |
| BANKCALC 2                                | 430 |
| BANKCALC 3                                | 431 |
| MICROSHARE THRIFT/401(K)                  | 432 |
| AUTOMATED "REPO" SYSTEM                   | 433 |
| BOND PAC                                  | 434 |
| MONEY DESK MANAGEMENT SYSTEM              | 435 |
| SECURITY SAFE-KEEPING                     | 436 |
| STOCK PAK                                 | 437 |

MAIN HURDMAN  
MICROBOOK, INC.

TRILOG, INC.  
WALL STREET CONSULTING GROUP

## Law

AARDVARK SOFTWARE

ARTHUR YOUNG  
COMPU-LAW  
OR-D SYSTEMS  
QUARK, INC.

|                                |     |
|--------------------------------|-----|
| ESTATE TAX PLAN                | 438 |
| PROFESSIONAL TAX PLAN          | 439 |
| LAW FIRM PROFIT PLANNING MODEL | 440 |
| CLIENT MANAGEMENT SYSTEM       | 441 |
| LEGAL SYSTEMS                  | 442 |
| LEGAL DICTIONARY               | 443 |

## Medical/Dental

COPRAM, INC.  
CHARLES MANN & ASSOCIATES

GLOBAL OPTICS  
INFELD  
MONUMENT COMPUTER SERVICE

OR-D SYSTEMS

ORTHO COMPUTER SYSTEMS  
PROFESSIONAL MEDICAL SOFTWARE

|                               |     |
|-------------------------------|-----|
| COPRAM-M                      | 444 |
| DENTAL OFFICE MANAGEMENT III  | 445 |
| MEDICAL OFFICE MANAGEMENT III | 446 |
| GOAL OPHTHALMIC SOFTWARE      | 447 |
| COMPUMEDIC                    | 448 |
| DENTAL CLINIC                 | 449 |
| MEDICAL CLINIC                | 450 |
| OR-D DENTAL SYSTEM            | 451 |
| OR-D MEDICAL SYSTEM           | 452 |
| ORTHODONTIC OFFICE PACKAGE    | 453 |
| MEDICAL BILLING SYSTEM        | 454 |

style

good  
better  
best



**G**n irony of this technological age is that although so-called computer literacy is on the increase, traditional literacy is declining. It seems only natural, then, that enterprising software companies would develop products that exploit personal-computer technology to help improve the knowledge and skills related to literacy.

At least two companies have developed such products for the Apple II series of computers. From DesignWare of San Francisco comes *The Grammar Examiner*, and from EduWare Services of Agoura Hills, California, comes *Writing Skills*.

#### The Grammar Examiner

*The Grammar Examiner* is a program couched in a game format that is advertised as being "for ages 10 and above." A note to parents in its 30-page manual states: "We are now seeing an increasing emphasis on writing skills in an attempt to reverse this national trend." (1983 SAT verbal scores were one point above the lowest level ever.)

"Polishing is an important part of the writer's craft. Grammar and punctuation are the aspects of polishing that can be improved with *The Grammar Examiner*."

This program does show some promise as a tool to help improve grammar and punctuation.

The goal of *Grammar Examiner* players is to advance from the position of cub reporter, for a newspaper called *The Grammar Examiner*, to become the paper's editor in chief. The winner of the game, however, is the player who has accumulated the highest salary when someone becomes editor in chief.

In other words, you could reach the position of editor in chief first and still lose the game. This feature of the game raises an obvious question: Does *The Grammar Examiner* primarily foster good grammar or acquisitiveness?

Although the game stresses increasing your salary, the primary methods of augmenting it are correcting the errors in grammar and punctuation in certain paragraphs and selecting the grammatically and punctuationally correct sentence from a choice of two sentences (see figure 1).

The element of chance also figures into the game: Landing on certain

## ► SOFTWARE BY JOHN A. BARRY TWO PROGRAMS THAT IMPROVE YOUR GRAMMAR

# righting your writing

squares on the game board (see figure 2) either increases or decreases your salary. You must move carefully to avoid landing on squares with arrows. These squares send you back to the beginning. A word of caution: The pieces that players move around the board tend to obscure adjoining squares, making a one-place move more difficult than it should be.

The game permits up to four players, or up to three people and the computer in the guise of "Melvin."

**Y**ou can set Mel's IQ between 10 and 200 (depending on how well you want him to do), and you can set the overall skill level to one of three levels.

A valuable feature of the game is the ability to formulate your own questions and design your own board, in order to avoid repetition after playing for a while. I hadn't played the game long before I encountered some of the same canned questions more than once.

Most of the game is self-explanatory. The manual is mercifully short and to the point, but you can skip reading it because its highlights are reproduced in

a brief on-screen tutorial.

In essence, the game is easy to learn, although the prose level of the manual may be over the heads of some ten-year-olds.

How effective is the game in fulfilling its goals? Initially, its goal seems more commendable than that of, say, blasting enemy aliens out of space.

**+**he use of computer games in the classroom seems to be a result of a perceived failure of traditional methods of public education.

Another line of reasoning is that kids raised on TV have short attention spans and can, consequently, benefit from the fast-paced nature of "computer tutors."

In fact, *The Grammar Examiner* suffers from excessive kineticism. The cursor zips over would-be grammarians' mistakes without allowing them sufficient time to dwell on the implications. Since the resolution of *The Grammar Examiner*'s letters on the Apple II is crude, this problem is all the more noticeable.

Also noticeable—in the way that

talking cars and elevators are noticeable—are *The Grammar Examiner*'s sound effects; fortunately, you can turn the IIc's volume down or off.

These elements of the program aside, *The Grammar Examiner* can serve as a useful supplemental tool for improving grammar and punctuation. It covers a range of the elements of these two disciplines, and, generally, it rewards the correct answers. On at least one occasion, however, it encourages the dubious mixing of past and present tense in a sentence.

In another instance, the program gives the verb "rollerskate"; yet both *Webster's Ninth New Collegiate Dictionary* and *The Oxford English Dictionary* give *roller-skate*.

The spelling of *roller-skate* is open to interpretation, though, and *The Grammar Examiner* manual takes due note of different interpretations.

When a legitimate debate exists (e.g., should *editor in chief* be hyphenated?), the manual states unequivocally that if a player doesn't use the convention on which *The Grammar Examiner* has settled, the answer will be judged wrong. In cases of debate, the manual

spells out its preference in a section called "General Grammar and Punctuation Rules"—a valuable feature of the package.

To resolve debates, DesignWare claims to have used *The Chicago Manual of Style* as its arbiter. Yet in one exercise, the program gives you a "wrong" grade if you change "L's" to "Ls" to indicate the plural of the letter *L*. *The Chicago Manual of Style* clearly states that The Grammar Examiner blew it: in Chicago, the plural is *Ls*.

If DesignWare can clean up the few inconsistencies and errors in this program and improve the graphics, it will offer a more valuable program to help its users polish their writing.

### Writing Skills

A more ambitious and comprehensive writing-improvement package is Writing Skills from EduWare, which comprises five disks devoted to the following areas of grammar: volume 1: possessives/contractions, noun plurals/possessives, subject/verb agreement; volume 2: pronoun/antecedent agreement, commas, sentence fragments; volume 3: quotation practice, pronoun cases, subject/verb agreement; volume 4: pronoun/antecedent agreement, troublesome modifiers, subject/verb agreement; and volume 5: pronoun/antecedent agreement, problems of case and consistency. Because it is more ambitious than The Grammar Examiner, however, doesn't necessarily mean it's better.

Writing Skills works best from the bottom up—the bottom being tutorials the program provides if you don't do well in tests, which constitute the top. (See figure 3 for an example of a tutorial.) The tutorials competently coach you in various skills. You can sometimes bypass the tutorials if you perform well in the tests.

If you don't do so well in some areas, the program flashes a menu (see figure 4) that shows which areas you should study. If you fare reasonably well in an area, you get an "OK." A grade of 100% in any area means you made no mistakes.

Although the tests do an adequate job of judging your abilities in discrete writing skills, they tend inadvertently to encourage a few bad habits along the way. The tests overlook the general writing-skills picture in order to concentrate on specific elements of it.

For example, the first disk in the series drills you in its designated areas (possessives/contractions, noun plurals/possessives, subject/verb agree-

ment). It also showers you with sentence fragments, misplaced modifiers, and improper punctuation.

Since this series of programs is aimed at "people with some knowledge of English grammar who want to im-

prove their ability to communicate through the written word," the assumption is that such people won't necessarily know a misplaced modifier when they see one.

Furthermore, since improperly located modifiers are rife in contemporary writing—and since the Peachtree program all but endorses them—this software is fostering the use of solecisms.

Another problem with the tests is that their prose is sometimes nebulous and disjointed. Liberal use of nonspecific demonstrative pronouns may lend a quasi-poetic effect to the prose, but it also makes it a little confusing.

### Documentation

Before you even encounter the tests, though, you will probably consider the manual, which is more essential to read than The Grammar Examiner manual. Luckily for you, one manual covers all five disks, which saves you from having to read about 200 pages of documentation.

At 42 pages, the Writing Skills manual is succinct, but any tool that purports to improve writing skills draws critical attention to itself when it errs in that area. Nitpicking this criticism may be, but the manual uses the word *remediate* as a transitive verb—in this case, it's allegedly synonymous with *remedy*. According to *Webster's Third New International Dictionary* and *The Oxford English Dictionary*, such a verb does not exist in the English language.

In another instance, the manual provides erroneous information about the program's operation. "If you successfully correct every error in the pretest, you bypass the Main Menu and go directly to the first topic test." True and not true! I purposely whizzed through a pretest without making any corrections. Nevertheless, the program took me immediately to the topic test.

An inconvenient snafu in the manual is inconsistency of terminology. The manual refers to the nonsystem disk as the "lesson disk," yet the disk itself is labeled "program disk."

### Molasses

Whereas The Grammar Examiner is hyperkinetic, Writing Skills is lethargic in comparison. Although the lethargy can be frustrating, particularly as you wait for one screen to change to another, it allows you to dwell on changes you've made. You also have the advantage of being able to meander back and forth through the tests more comfortably than you can in The Grammar Examiner. Additionally, this series is not

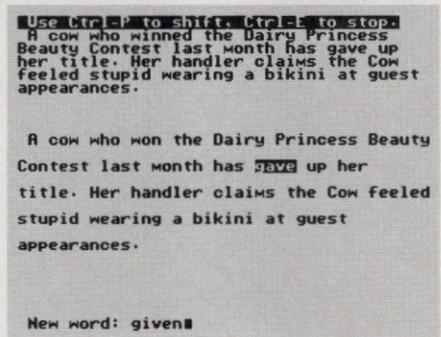


Figure 1: An example of a Grammar Examiner paragraph with errors to correct

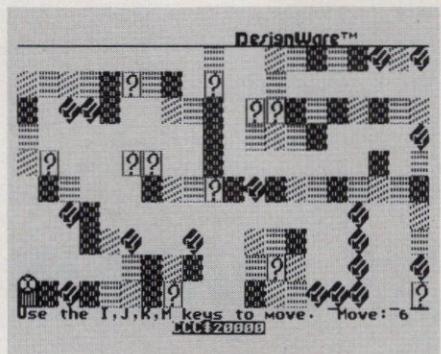


Figure 2: The Grammar Examiner game board

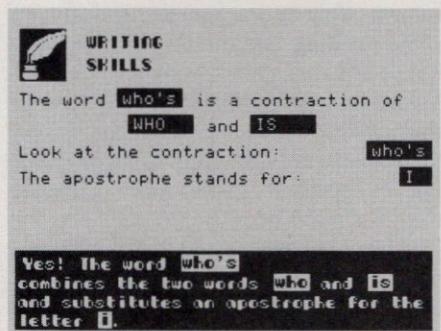


Figure 3: An example of a Writing Skills tutorial

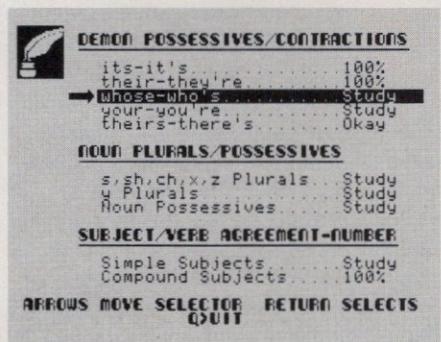


Figure 4: An example of a Writing Skills study menu



## A NUMERICAL CONCEPT NO OTHER MONITOR CAN COMPREHEND.

As sophisticated as they are, you'd think monitor companies could solve a simple problem: keeping customers happy.

Fortunately, Amdek can. With the longest warranty in the industry. Namely, two years on all parts and labor. And three years on the CRT.

Even simpler, our warranty applies to every monitor we make, from our new Color Series to our amazingly popular Video Series.

And Amdek's own trained technicians make repairs quick and professional.

So when you're shopping for a monitor, look at the quality Amdek guarantees you, years after you leave the store.

According to our figures, it really adds up.

# AMDEK<sup>®</sup> MONITORS

Amdek Corp., 2201 Lively Blvd., Elk Grove Village, IL 60007, 312/595-6890, Telex 280803.



# The Apple II... HOT-LINE

## A Plug-In 1200/300 Baud Intelligent Modem For Your Apple II... Just \$449 Including Software



ProModem 1200A is a 1200/300 baud Hayes compatible auto-dial modem card that plugs directly into any expansion slot in the Apple II, II+, or IIe. All you have to do is plug it in and connect the telephone cord.

Ours is the only 1200 baud modem to seriously consider for your Apple II. At just \$449, it's priced well below its nearest competitor, yet it does much more. No longer do you have to buy an external modem, a serial card, an RS232C cable and communications software which, combined, would cost you hundreds of dollars more. There's really no comparison.

ProModem 1200A is the best modem, too. The internal software in its on-board ROM consists of a powerful menu driven terminal program. There is no need for a separate software disk. After a few keystrokes you'll be on-line and communicating.

Features include: Auto-dial/Auto-answer, tone and pulse dial, help commands, built-in diagnostics, two phone jacks, line status detect with redial on busy, full and half duplex and speaker with volume control.

You just can't lose when our plug-in ProModem 1200A comes ready to use, with on-board software, easy to understand documentation and a telephone cord — all for just \$449.

### A Powerful Menu-Driven Terminal Program

- 1> COMMUNICATIONS
- 2> FILE TRANSFER
- 3> OPTIONS
- USE ESC TO EXIT  
ENTER SELECTION
  
- 1> BAUD RATE 1200 300
- 2> DATA BITS 8 7
- 3> PARITY NONE ODD EVEN MARK SPACE
- USE ESC TO EXIT  
ENTER SELECTION
  
- 1> TYPE XMODEM LINE
- 2> DIRECTION SEND RECEIVE
- 3> FILE NAME
- USE ESC TO EXIT  
ENTER SELECTION
  
- 1> PRINTER ON OFF
- 2> CLOCK ON OFF
- 3> STATUS LINE ON OFF
- 4> KEYBOARD ON OFF
- 5> CAP LOCK ON OFF
- 6> ECHO ON OFF
- 7> LF AFTER CR ON OFF
- USE ESC TO EXIT  
ENTER SELECTION



*The Hot Line*

**PROMETHEUS**  
PRODUCTS INCORPORATED

4545 Cushing Pkwy. • Fremont CA 94538

See us at Comdex  
booth 5046 West Hall

CIRCLE 122 ON READER SERVICE CARD

Call Now For  
Complete Info...  
**415/490-2370**

plagued with the annoying sound effects that issue from The Grammar Examiner.

Crisper screen resolution complements Peachtree's more methodical pace. The Grammar Examiner's graphics are crude in comparison.

An overall comparison of the two products seems to indicate that because The Grammar Examiner has kids in mind, it is bouncy, jaunty, and less refined than Writing Skills, with its staid, methodical characteristics.

For the most part, both packages effectively address the groups to which they're pitched—with some exceptions, such as those noted above.

Both packages can be frustrating to grammar mavens who don't have a serious need to "remediate" their grammar and writing skills. Such people may feel compelled to correct errors or improve sentence elements outside the purview of the limited area being tested—only to receive a message informing them that they're not allowed to make changes in those spots.

Yet, even pedants may find their memories refreshed by a reminder about some forgotten point of grammar or punctuation, especially in the comprehensive EduWare series.

Even though the Writing Skills series is more ambitious and serious-minded than The Grammar Examiner, it's not as well conceived. It exhibits a schizoid character—almost as if the tutorials and the tests had been conceived in relative isolation and then cobbled together.

The Grammar Examiner, though less lofty, is more cohesive. Its manual is demonstrably better than that of Writing Skills.

#### A Positive Step

Both packages have their flaws, but the goal—using computers as teaching tools—is laudable, though not yet fully understood. Debate is ongoing about the proper role of computers in education. Computer-aided instruction has supporters and detractors, and both sides can muster compelling arguments.

Most people agree, though, that computers are useful supplemental tools in the education process, and DesignWare and EduWare bill their products as such. In the midst of all the dubious uses to which computers are put (e.g., the proverbial balancing of checkbooks), The Grammar Examiner and Writing Skills are serviceable products.

They will be better if, in future versions, their designers clean up oversights and mistakes that now exist in both products. **+**

*John Barry, a free-lance writer and editor, is coauthor of The Unofficial I Hate Computers Book. Four years ago, he was ordained as a minister in the Universal Life Church by Reverend Apple.*

### ► PRODUCT INFORMATION

#### The Grammar Examiner

DesignWare, Inc.  
185 Berry Street  
San Francisco, CA 94107  
(415) 546-1866

**List Price:** \$44.95

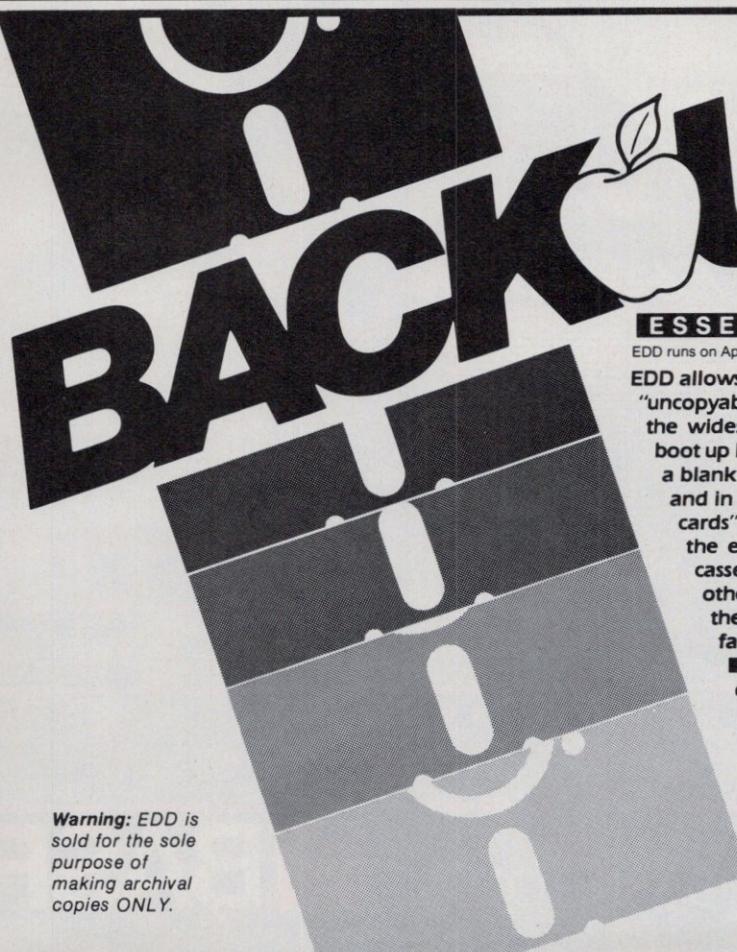
**Requires:** Apple II, II Plus, IIe, or IIC;  
48K RAM  
**CIRCLE 395 ON READER SERVICE CARD**

#### Writing Skills

EduWare Services, Inc.  
28035 Dorothy Drive  
Agoura Hills, CA 91301-0522  
(818) 706-0661

**List Price:** \$39.95 each volume

**Requires:** Apple II, II Plus, IIe, or IIC;  
64K RAM  
**CIRCLE 396 ON READER SERVICE CARD**



# BACKUP YOUR DISKS

**ESSENTIAL DATA DUPLICATOR III™**

NOW  
AVAILABLE  
AT YOUR LOCAL  
COMPUTER STORE

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

# BASF QUALIMETRIC™ FLEXYDISKS.<sup>®</sup> A GUARANTEED LIFETIME OF OUTSTANDING PERFORMANCE.

*BASF Qualimetric FlexyDisks feature a unique lifetime warranty,\* firm assurance that the vital information you enter on BASF FlexyDisks today will be secure and unchanged tomorrow. Key to this extraordinary warranted performance is the BASF Qualimetric standard... a totally new set of criteria against which all other magnetic media will be judged.*

*You can count on BASF FlexyDisks because the Qualimetric standard reflects a continuing BASF commitment to perfection in magnetic media. One example is the unique two-piece liner in our FlexyDisk jacket. This BASF feature traps damaging debris away from the disk's surface and creates extra space in the head access area for optimum media-head alignment. The result is a guaranteed lifetime of outstanding performance.*

*For information security that bridges the gap between today and tomorrow, look for the distinctive BASF package with the Qualimetric seal. Call 800-343-4600 for the name of your nearest supplier.*

Visit BASF at Comdex/Spring,  
Booth 650

CIRCLE 157 ON READER SERVICE CARD  
\*Contact BASF for warranty details.

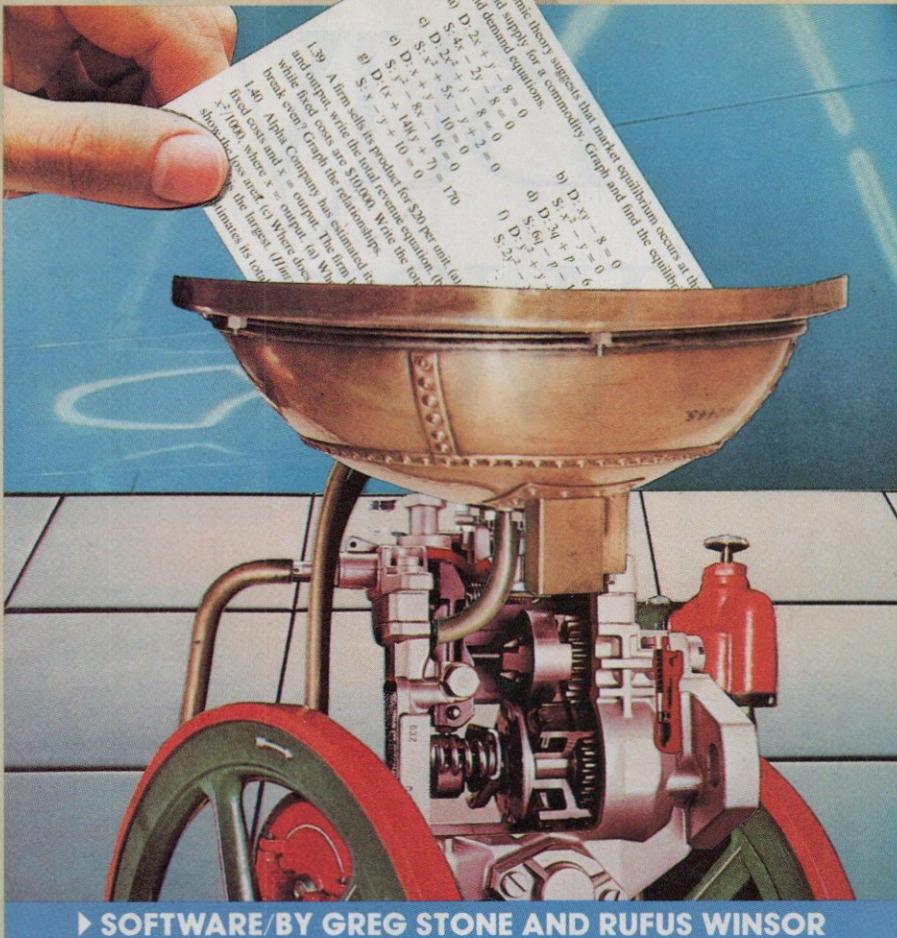


ENTER TOMORROW ON BASF TODAY.

© 1983 BASF Systems Corp., Bedford, MA



**BASF**



▶ SOFTWARE/BY GREG STONE AND RUFUS WINSOR

# TK + YOU = SOLUTIONS

If you have problems that can be reduced to equations—problems, for example, in business, engineering, science, or education—then it's decidedly worth your time to take a look at TK!Solver.

This program from Software Arts allows you to state an equation, and it will then solve for any of the variables in the equation. The program can handle single or multiple inquiries and will spew out a list of answers in either tabular or graphics form. Although we know it is not a package that everyone needs, we are impressed by its sophistication, versatility, and relative ease of operation. TK!Solver is available for several computers, including the Apple II series and the Macintosh. The version we are reviewing here works on the Apple IIe with Extended 80-Column Card (bringing the memory to 128K), DOS 3.3, and a single disk drive (two drives are recommended but not necessary).

## An Example

As an introduction to TK!Solver,

let's work through a simple example. Suppose you want to find the corrected time for a competitor in a sailboat race, and each boat has a different handicap. The formula is simple: *Corrected time* equals the *elapsed time* divided by the *handicap*. Select Rules Sheet and type your equation in abbreviated form, choosing variable names that mean something to you.

`Ctime = Etime/Handicap`

In a separate window on what is called the Variable Sheet, your words *Ctime*, *Etime*, and *Handicap* also appear, placed there automatically by the program. Next to these words you type appropriate inputs. In this example, if the sailboat carries a handicap of 108.5 and the elapsed time for this race is 35.23 minutes, you type that information in and strike the exclamation-point key (the Action key in TK!Solver). The corrected time will appear next to the variable *Ctime*.

Simple, you say, and you could have done it much faster with a calculator.

Buy 10 flo  
stop worrying



Free Flip 'n' File™/15 (\$10 Retail Value)

# ppies and about dust storms, lint attacks, or the bends.

The Flip 'n' File™/15 is an island of calm and order in the savage environment of the modern office.

It's also free, when you buy a specially marked package of 10 double or single sided, double density 3M diskettes. They're the certified 100% error-free diskettes; no floppies

are more reliable.

With this kind of protection, all you have to worry about now is when this limited special offer sells out.



Offer available from participating distributors, personal computer dealers and office supply dealers.

Which, if you don't hurry, could be before the next major coffee spill.

One less thing to worry about.™

**3M**  
diskettes

We agree. In actual practice, however, this problem involves a few more details. If, for example (to add a new twist), the race-timer's watch had shown 35 minutes 14 seconds, how would the program arrive at a time of 35.23 minutes? By converting seconds to fractions of minutes, but that's another step—a formula. With TK!Solver you add that formula to the sheet and let the program do the conversion. Still trivial? What if you have 23 boats racing and the handicap depends on the type of boat, as well as the wind speed for the race? Now you have more variables, more formulas, and a chance to deal with lists.

Suppose you came in fifth in the race, you know the corrected time of the winner, and you're curious to know what your elapsed time would have had to be for you to have won? Now you must work the basic formula a different way, solving for a different variable. Here again TK!Solver does most of the work for you. You enter the formula once, and the program solves for any of the variables. In actual practice, we find that each season there's a boat in the race for which no handicap is available. This system derives handicaps empirically, based on a boat's perfor-

mance in many races measured against the performance of a boat with a well-established handicap. Your question is: What handicap would this boat need to match the performance of a known

► **Users can adapt TK!Solver to meet their specific problem-solving needs.**

boat? You solve the formula now for a third variable, and since you want to do this over many races to establish an average, the program conveniently allows you to enter and receive a list.

**What Else?**

Although many computer users couldn't care less about deriving corrected times for a sailboat race, they might be interested in some of TK!Solver's multitude of other uses. Examples of such uses include:

- Finding solutions to compound-interest problems—including present and future values of lump sums and annuity streams—for any frequency of compounding, including continuous compounding
- Analysis of heat transfers from a fluid

through a two-layered wall to a second fluid by way of convection, conduction, and radiation

- Solving problems involving Joule's law, Ohm's law, resistivity, and circuits with resistors in parallel or with resistors in series

These examples, incidentally, are taken from TK!SolverPacks, which are supplementary software packages for Financial Management, Mechanical Engineering, and Introductory Science, respectively. Although you can solve equations in these fields with the basic program only, these additional packages make life easier for TK!Solver users by providing predesigned models for specific purposes. Each package contains about a dozen models.

As with other basic computing tools, such as spreadsheets, word-processing systems, and database software, users can adapt TK!Solver to meet their specific problem-solving needs. Because the program's uses include solving business, engineering, and science problems, TK!Solver is also useful in teaching students to solve such problems. In fact, it offers several advantages in an educational environment. Teachers and students can flip quickly between tabular and graphic solutions

## It takes only One Spelling Mistake to blow your image

No matter how much work you've put into that report, no matter how accurate your references and sound your conclusions, a single spelling mistake can destroy its credibility.

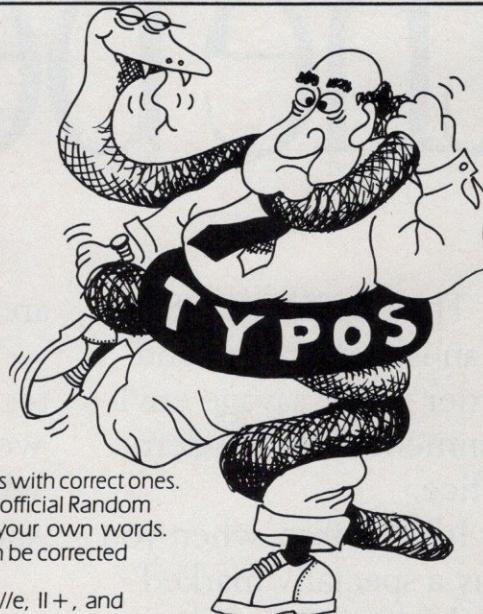
**HOW CAN YOU GUARD AGAINST THIS?** Simply check your paper with Sensible Speller™, the software program that is a virtual electronic dictionary. With tireless, efficient detachment, it will catch mistakes you would not notice. It will in fact display misspelled words in context, suggest the correct spelling, and allow immediate replacement of misspelled words with correct ones.

**WHAT IS THE SIZE OF SENSIBLE SPELLER'S VOCABULARY?** All 80,000 words of the official Random House Dictionary. And there's enough room left on disk to add thousands of your own words.

**HOW LONG DOES IT TAKE TO USE SENSIBLE SPELLER?** A ten-page document can be corrected in one or two minutes.

**ON WHAT COMPUTERS CAN YOU RUN SENSIBLE SPELLER?** On all Apple //c, //e, II+, and Apple-compatible computers.

**WHERE MAY SENSIBLE SPELLER BE PURCHASED?** It is available at your dealer for \$125 in either the "IV" or ProDOS version.\* It may also be ordered direct, enclosing \$1.25 for shipping. Visa/MasterCard/Check/COD welcome.



**Sensible Speller™ is a product of**



**Sensible Software, Inc.®**

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: AppleWorks & Apple-Writer, all versions (Apple Computer, Inc.); Bank Street Writer (Brodeband); Format II (Kensington Microware); HomeWord & Screen Writer (Sierra On-Line Inc.); Word Handler (Silicon Valley Systems); CP/M-Wordstar (Digital Research Corp.-Micropro International); PFS: WRITE (Software Publishing, Inc.); and others. All features are not available with CP/M, PFS: WRITE & Word Handler.

CIRCLE 227 ON READER SERVICE CARD

# 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 3.3 master disk.

**I** - Integer in ROM or Integer firmware card or Language card and DOS 3.3 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
- I 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

### Apple Tutor 002

- A 021 Apple II Demo
- A 004 Basic Exercise
- I 043 Basic-Applesoft
- I 093 Disk Aide.13
- I 038 Disk Aide DOC
- B 003 Disk Aide.X
- A 028 DOS System Instruction
- A 013 Pilot Version I
- I 054 Program Development Pkg
- A 014 Supplement Mini Assembler
- B 006 Supplement.X
- I 003 Text File Read
- I 003 Text File Write
- I 009 Text Hello
- T 009 Text How To
- T 010 Text Intro
- T 006 Text Peek Poke Call
- T 010 Text Programming
- T 007 Text Redbook
- T 011 Text Software
- A 002 Buzz

## 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 Doug's 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 Kaled
- 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

### 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

### 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

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 Arcos  
 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 004 Normal Distribution  
 A 002 Music Alley Cat  
 B 004 Music Alley Cat.X  
 I 056 Music Apple Organ  
 I 025 Music Appleodion  
 I 013 Music Bacch  
 B 020 Music Bach  
 I 014 Music Bach Squares 1  
 A 007 Mult. Linear Regression  
 A 004 Normal Distribution

**Music & Sound****Music & Sound 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

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  
 I 019 Music Computer  
 I 036 Music Functions  
 I 011 Music Gee  
 I 023 Music In Ib  
 I 014 Music Maker  
 I 017 Music Mozart Theme  
 I 007 Music Rigby  
 I 026 Music Stairway To Heaven  
 A 004 Music Start  
 I 030 Music Two Voices  
 I 022 Music Writer 3  
 I 008 Musical Keyboard  
 B 002 Musical Keyboard.X  
 A 017 Musical Memory  
 I 010 Name That Tune  
 I 007 Sound Effects Demos  
 A 005 Sound Effects How To  
 I 007 Sound Effects Random  
 A 003 Sound Routine  
 I 011 Sound&Music Starwars  
 I 006 Swanee River  
 T 038 Tunes

**Passion****Passion 067 (X-rated)**

A 002 Form 0 Startup  
 B 034 Form 1  
 B 034 Form 2  
 B 034 Form 3  
 B 034 Form 4  
 B 034 Form 5  
 B 034 Form 6  
 B 034 Form 7  
 B 034 Form 8  
 B 034 Form 9  
 A 005 Hot Apples I  
 A 006 Hot Apples II  
 A 013 Touch I  
 A 013 Touch II  
 I 013 Zoom 1  
 I 013 Zoom 2

**Passion 068 (X-rated)**

A 006 Passion Startup  
 I 034 Apple Pet  
 I 002 Cubik 1  
 I 003 Cubik 2  
 I 028 Cubik-1  
 B 017 Cubik-1 (A\$800/L\$FB3)  
 I 002 Exercise 1  
 I 002 Exercise 2  
 I 002 Exercise 3  
 I 002 Exercise 4  
 I 002 Exercise 5  
 I 002 Exercise 6  
 I 002 Exercise 7  
 I 002 FR  
 B 034 French  
 I 002 GE  
 B 034 German

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

**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

A 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****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 Cmdnd. 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 Lomen Himen 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 Applebitez

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 Binadr

A 003 Binadr 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

B 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 @

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

B 005 Text To Applewriter

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

**Utility 086**

B 002 EP1.3

B 002 EP2.3

B 002 EP3.3

B 003 EP4.3

A 002 Epson Catalog Dbl Strike

A 008 Epson Driver Instr

B 002 Epson Driver.

A 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-AL  
 Tacoma, WA 98411

01 App Tutor     22 Bus/Fin     63 Math/Stat     74 Utility  
 02 App Tutor     23 Bus/Fin     64 Music     76 Utility  
 11 Art/Graphic     36 Game     65 Music     80 Utility  
 18 Bus/Fin     41 Game     67 Passion     86 Utility  
 19 Bus/Fin     50 Game     68 Passion  
 20 Bus/Fin     59 Math/Stat     69 Pastime  
 21 Bus/Fin     61 Math/Stat     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.

AL

# Tally outwrites Imagewriter. With better performance at a better price.

Our new MT 85 and MT 86 write 50% faster than Apple's Imagewriter. We give you the same typestyles you get with

MacWrite™. The same graphic flexibility you have on a Macintosh™. But there's one standard feature on the Tally MT 85 and MT 86 that doesn't even come on an Imagewriter.

Ultra-fine correspondence quality.

Which lets you produce letter perfect work at 45 characters per second on your Apple IIe or IIc.

And it all fits in a space not much bigger than your in-basket.

## Draw your own conclusions.

| MANNESMANN<br>TALLY<br>MT 85/86 | APPLE<br>IMAGEWRITER |
|---------------------------------|----------------------|
| SPEED                           |                      |
| 180 cps                         | 120 cps              |
| CORRESPONDENCE QUALITY          |                      |
| Standard                        | Not Available        |
| MULTI-TYPESTYLE CARTRIDGES      |                      |
| Yes                             | No                   |
| MODULAR INTERFACE               |                      |
| Yes                             | No                   |

See your Mannesmann Tally dealer for a demonstration of the most exciting new printers you can have for the money.

Or for literature and where-to-buy information, call us toll free at 1-800-447-4700.

What better way to improve your image?

**MANNESMANN  
TALLY**

**COMDEX** See us at booth 340.

Apple is a registered trademark of Apple Computer, Inc.  
MacWrite and MacPaint are trademarks of Apple Computer, Inc.  
MacWrite and Macintosh are trademarks licensed to Apple Computer, Inc.

to the same equation, a process that can enhance the learning process.

#### A Flexible Tool

In order to adapt TK!Solver to a specific need, you must understand your problem and invest some time in learning the program. We found that it took from one to three hours to become reasonably comfortable with the major features of the program, although users should be able to enter simple problems

### TK!Solver uses two methods to solve problems, direct and iterative.

after the first 30 minutes. As with a good spreadsheet, however, it takes much longer to become a sophisticated user who can take full advantage of this powerful tool.

We discovered some major points that you should keep in mind as you work with the program.

You can enter equations as you formulate them. You don't have to enter them in a special way or order.

The program can solve explicit as well as implicit equations, such as  $\text{SIN}(X^* Y) = 1/2$ .

You can change the units associated with any of the variables without having to alter the equation.

There are a number of built-in functions, such as  $\text{atan}(x)$ ,  $\log(x)$ , and  $\text{sum}(\text{series})$ . In addition, you can define your own functions. Models you have built and saved to disk can later be merged into more complex models.

The Apple IIe version can't easily do matrix operations or numerical techniques for integration, and it is unable to do symbolic calculus. What it can do is find real-number solutions for most sets of algebraic equations.

The program supports the DIF (Data Interchange Format), a standard storage format developed by Software Arts that lets different programs exchange data.

#### How It Works

TK!Solver uses two methods to solve problems, direct and iterative. It always attempts to use the direct solver first. Basically, it uses the direct solver when you can supply enough values to solve the equation algebraically. It uses the iterative solver when not enough values are known and it is necessary to make successive guesses.

For a single equation, the direct solv-

er works if all variables, except the one being solved for, have input values; the variable being solved for appears just once in the equation; the variable being solved for is not the argument of a function without a unique inverse.

The same rules apply to models with several equations, as long as these conditions are met sometime during the solution process. A nice feature is that the program passes along output values from one equation to be used as input values for other unsatisfied ones in the same model.

Iteration, which uses successive approximation to find an answer, can often solve an equation when the direct method cannot. Normally you would make a first guess at an answer, but the iterative solver can be set to automatic operation, making a guess unnecessary. If you choose this option, the program automatically tries to solve an equation that it was unable to solve using the direct solver method.

Using the iterative solver—in the mode that requires a first guess and allows users to set the number of iterations—could be a very handy tool for improving students' performance in estimation.

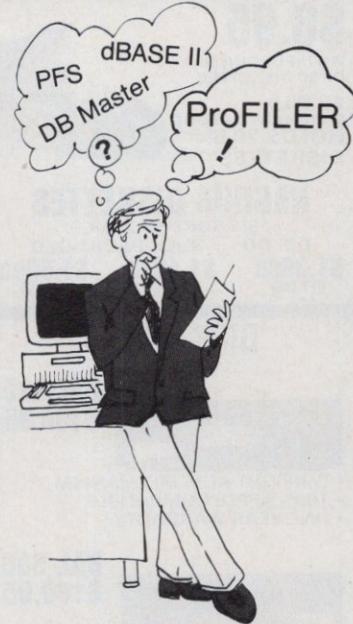
#### Using the Program

When you use TK!Solver, you build a model for solving a particular problem or related set of problems. This model building is both the most exciting and difficult part of the process. After all, TK!Solver may be able to solve your model very quickly, but it has no way of knowing if it is the correct model for your application.

Using a model is ridiculously simple. It requires entering known data, pressing the "action" key, and noting the results on the screen or printer. The exclamation point is the action key. If you were building a model by hand, you would probably organize your information into categories, such as rules, variables, and units, providing a different sheet of paper for each category. TK!Solver uses the same technique.

The program has eight major "sheets" and several more "sub-sheets." Each sheet can either be placed on the screen by itself or share the screen with one other sheet in separate windows. In actual practice, much can be done with just three of these sheets—the Rule, Variables, and Units sheets—and we found it handy most of the time to have two sheets on the screen at once. The computer takes care of the busywork of updating related sheets, so when you make a change in one, related changes

## Confused About Data Base Programs?



When you compare feature and price there is no confusion.

### ProFILER 2.0 is HERE!

The Data Manager for the Apple Computer with all the NEW features you've been waiting for.

8 times faster than DOS 3.3 – Twice as fast as ProFILER 1.0

| FEATURE                                     | ProFILER†      | PFS File*        |
|---|----------------|------------------|
| Multiple Forms per Disk                     | YES            | NO               |
| Maximum Records per File                    | 1500+          | 1000             |
| (65,000 w/ ProFILE Hard Disk)               | YES            | NO               |
| Report Generator Included                   | YES            | NO               |
|   | FREE           | (\$100)          |
| Pro DOS Operating System                    | YES            | NO               |
|   | FREE           |                  |
| Full Screen Editor                          | YES            | NO               |
| Works on Apple II+, IIe, IIc, III, Franklin | YES            | YES              |
| Arrow Keys function OK                      | YES            | NO               |
| Multiple Index Files                        | YES            | NO               |
| Auto Catalog of Data Files - NEW            | YES            | NO               |
| Variable Printer Initialization - NEW       | YES            | NO               |
| Reports to Screen or Printer - NEW          | YES            | NO               |
| Easy Word Processor Interface - NEW         | YES            | NO               |
| Apple writer II® Mailmerge                  | YES            | NO               |
| Interfaces - NEW                            | YES            | NO               |
| Cost DataBase                               | \$89.95        | \$90.00+         |
| Report Generator                            | FREE           | \$90.00+         |
| <b>TOTAL COST</b>                           | <b>\$89.95</b> | <b>\$180.00+</b> |

ALL THESE FEATURES  
FOR ONLY \$89.95

**PFS Conversion Utility Program**  
Converts PFS files easily to ProFILER format  
**\$39.95**

ProFILER available from selected dealers or directly from:

**Pan-software**

19731 Providence Ln. • Box 1788 Huntington Bch, CA 92647  
**(714) 963-2221 • (714) 548-5429**

Terms: Send \$89.95 (plus \$3.00 for shipping)

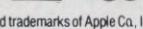
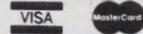
CA residents add 6%

Mastercard, VISA Check or money order

\*Apple, Applewriter II and ProFILE are registered trademarks of Apple Co., Inc.

†PFS is a registered trademark of Software Publishing Corp.

†ProFILER by Custom Computer Products



CIRCLE 150 ON READER SERVICE CARD

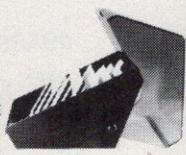
# JDR DELIVERS QUALITY FOR LESS!

## DISKETTE FILE

**\$8.95**

WITH PURCHASE  
OF 50 DISKETTES

**\$9.95 IF  
PURCHASED ALONE  
HOLDS 70 5 1/4"  
DISKETTES**



## NASHUA DISKETTES

5 1/4" SOFT SECTOR,

DS/DD BULK PACKAGED

**\$1.39ea  
QTY 250**

**\$1.49ea  
QTY 100**

**\$1.59ea  
QTY 50**

## DISK DRIVES

**BAL-525  
\$139.95**



- \* 1/2 HEIGHT ALPS MECHANISM
- \* 100% APPLE COMPATIBLE
- \* ONE YEAR WARRANTY

**BAL-500  
\$169.95**



- \* TEAC — 1/2 HEIGHT DIRECT DRIVE
- \* 100% APPLE COMPATIBLE
- \* 40 TRACK WHEN USED WITH OPTIONAL CONTROLLER
- \* ONE YEAR WARRANTY

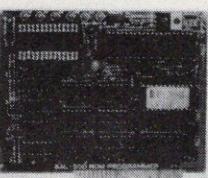
MITAC FULL HT. FDD ... \$179.95  
CONTROLLER CARD .... \$49.95  
IIC ADAPTOR CABLE .... \$19.95

**ORDER TOLL FREE  
800-538-5000  
800-662-6279 (CA)**

## EPROM PROGRAMMER

FOR APPLE COMPUTERS

**RP525  
\$79.95**



- \* LOW COST!
- \* DUPLICATE OR BURN ANY STANDARD 27xx SERIES EPROM
- \* EASY TO USE, MENU-DRIVEN SOFTWARE INCLUDED
- \* MENU SELECTION FOR 2716, 2732, 2732A, 2764 & 27128
- \* HIGH-SPEED WRITE ALGORITHM
- \* LED INDICATORS FOR ACTIVITY
- \* NO EXTERNAL POWER SUPPLY REQUIRED

## OTHER ACCESSORIES

16K RAM CARD ... \$39.95

FOR APPLE II+, 2 YR WARRANTY

VIEWMAX 80 ... \$159.95

80 COLUMN FOR APPLE II+

VIEWMAX 80e ... \$129.95

80 COLUMN FOR APPLE IIe

THUNDERCLOCK ... \$129.95

OFFICIAL PRODOS CLOCK/CALENDAR

KRAFT JOYSTICK ... \$39.95

80W POWER SUPPLY ... \$49.95

INCLUDES INSTRUCTIONS

CALL FOR A FREE CATALOG

**JDR Microdevices**

1224 S. Bascom Avenue, San Jose, CA 95128  
800-538-5000 • 800-662-6279 (CA) • (408) 995-5430  
FAX (408) 275-8415 • Telex 171-110

© Copyright 1985 JDR Microdevices

CIRCLE 167 ON READER SERVICE CARD

## FOR THE MAC, LESS MEANS MORE

When you open the Macintosh version of TK!Solver, you notice immediately that some things are missing—such as the wall poster that outlines the program, the little foldout card of commands, and about half the manual. They are missing, but not missed, for the essential difference between the Apple IIe version and the Macintosh version is ease of use.

### User Interface

You'll notice other differences—such as speed and graphics—but it is the user interface the Mac environment provides that makes the Mac version of TK!Solver a real pleasure to use.

Don't read that wrong. The IIe version of TK!Solver is impressive for what it can do. The Mac version doesn't do any more or less. TK!Solver is a new concept for the personal-computer user, though, and understanding the substance of the program is difficult enough. Therefore, any improvement in the user interface is most welcome.

In the Mac version of TK!Solver, you don't have to worry about such things as using the semicolon to switch back and forth between windows or the slash sign and equal sign to go between screens, or a host of other keyboard commands—some mnemonic and some not. In the IIe version, you get much more explanation and you get extra memory aids to get you through these commands as painlessly as possible. None of these aids are as painless as using the Mac mouse, though, with the pull-down menus, dialog boxes, familiar editor, and scroll bars.

If you know how to use MacWrite or MacPaint, you are going to find you know how to use TK!Solver. That is, you will know how to get about in the program and do all the standard things such as issue commands, edit entries you've made to the screen, save your current model, and load another one. In short, you can put the user interface to rest and concentrate on the meat of the program.

### Other Important Differences

The high-resolution Mac screen is much easier on the eyes than looking at 80 columns on the IIe screen. Charts are still utilitarian on the Mac version, but they are a bit sharper. The program operates on one disk drive with the IIe, but it's much more convenient to have two drives. On-line help files, for example, reside on a second disk, and with only one drive, the process becomes so slow and cumbersome

that to access it almost defeats the purpose of on-line help. With the greater capacity of the Mac drives, everything is on a single disk. Finally, all operations are simply faster with the Mac's more powerful processor.

The on-line help on the Mac has a nice touch. As with the IIe, if you make an error, the program flags the row in which the error appears. But with the Mac, if you then ask for help, the program automatically goes to the section of the on-line help manual that relates to the error. The help information appears in a notepad-size window, complete with the Mac scroll bars.

The sheets (read screens) on the Mac version are nearly identical to the IIe screens. On the Mac two are always present, and they contain the familiar Mac scroll bars. With the IIe you can get more information on the screen at one time by choosing the option to open just a single window. This option doesn't exist with the Mac version. The Mac screens contain an exclamation-point icon that is the "action" icon. That is, when you want the program to carry out some action, you point to this icon and click.

All the familiar sheets and subsheets are here for listing rules, variables, units, and so on, with one exception. The Mac version does not contain a "global" sheet (a sheet in the IIe version that is just a housekeeping tool for setting such things as printer parameters). Everything that can be done on this sheet in the IIe version can be done through other means, such as pull-down menus, in the Mac version.

Finally, you have the Mac's wonderful flexibility. You can produce a graph with TK!Solver, type  $\#$  Shift-3 to take a screen snapshot, and then take the MacPaint document thus created into MacPaint and enhance your graphics with labels and related drawings. The program also supports the Mac clipboard, letting you transfer results from TK!Solver to other programs, such as a report in MacWrite. Finally, as with the Apple II version, you can save files in the DIF format and transfer information to other programs using that format.

What this all boils down to is not so much a difference in programs, but a difference in machines. The Macintosh has a simple user interface, a more powerful processor, and better graphics. TK!Solver for the Mac takes advantage of this improved environment.



# If you are using your hands to write, you're wasting your mind.

Writing has very little to do with the actual mechanics of putting pen to paper. Very little indeed to do with typing or word processing. Writing is in fact, a creative discipline. It is at once both learned and intuitive.

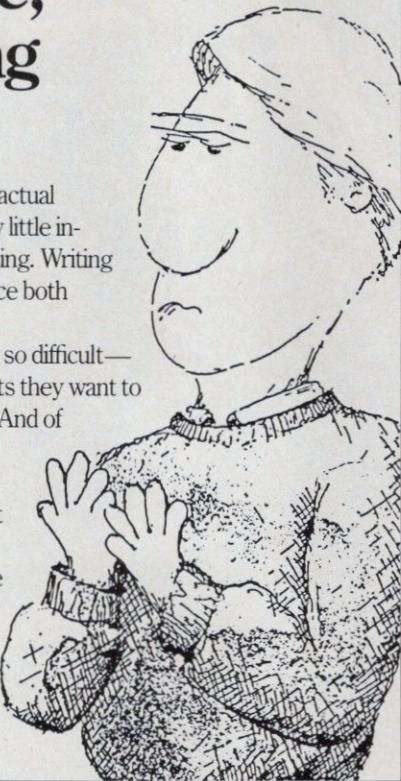
That is what makes teaching writing so difficult—to see students struggling with concepts they want to express, but falling short of their goals. And of course, of your goals too.

But now there's help. We call it Writing Is Thinking.<sup>TM</sup> To find out more about this new software program, write to: Kapstrom, Inc., 5952 Royal Lane, Suite



124, Dallas, Texas 75230.  
Or call us at  
(214) 369-1718.

5952 Royal Lane, Suite 124, Dallas, Texas 75023



CIRCLE 132 ON READER SERVICE CARD

## BACKUP PROTECTED SOFTWARE WITH COPY II PLUS<sup>TM</sup> 5.0

From the team who first brought you **COPY II PLUS** in 1981 comes a completely updated disk backup utility for your Apple // computer. New features include:

- Fully automatic bit copy\*. All parameters are stored on disk and are revised quarterly. Simply type in the name of the program you wish to backup, and **COPY II PLUS** does the rest!
- New utilities including Alphabetize Catalog, Fast 2-pass Disk Copy on a //c or //e, and an all-new Sector Editor.
- Supplied on a standard DOS diskette. Runs on the Apple //, Apple //+, Apple //e, Apple //c. Requires 64K and one or two disk drives.

Increase the power of your Apple //...  
Use **COPY II PLUS<sup>TM</sup> 5.0**

Call M-F 8-5:30 (W. Coast time) with your : **503/244-5782**.  
Or send a check (add \$3 s/h, \$8 overseas) to



**\$39.95**

**CENTRAL POINT Software, Inc.**  
9700 SW Capitol Hwy. #100  
Portland, OR 97219

\* We update Copy II Plus regularly to handle new protections; you as a registered owner may update at any time for 1/2 price! (To update, just send original disk and \$20.)

*This product is provided for the purpose of enabling you to make archival copies only.*

a handy foldout reference card and a really useful wall chart that shows the relationship between sheets and all the basic commands you'll need to get around in the program.

What's more, you can begin using the program at several levels—you don't have to master the entire program in order to use it successfully. If you want an easy—but more expensive—shortcut, buy one of the additional TK!SolverPacks if you can find one that meets your needs. (You can modify these models to your own requirements.)

### Conclusions

True to its claims, TK!Solver is an "entirely new concept in personal computer software." It is really a low-level symbolic operator (which means that it can manipulate symbols) with some modeling capabilities. We see it as having two principal uses. First, it will be useful in education in the fields of mechanical engineering, business, science, mathematics, and general problem solving. It will probably initially find more use at the college level, but both high-school and college faculty should be able to apply it in their classrooms; and we could see some of them developing some fascinating computer-assisted-instruction routines out of this software.

It should also be of general use to anyone now using a calculator for equation solving in analysis, design, and planning. Although somewhat limited in speed and capability by the Apple IIe (it has to access the disk quite frequently), a lot of program is built into 128K, and what it does, it does well. +

*Greg Stone is a free-lance writer and director of community relations at Southeastern Massachusetts University. He has contributed to numerous science and computer magazines. Rufus Winsor is a mathematics professor at Southeastern Massachusetts University and has been using computers in education for the past decade.*

### ► PRODUCT INFORMATION

#### TK!Solver

Software Arts  
27 Mica Lane  
Wellesley, MA 02181  
(617) 237-4000

**List Price:** \$299

**Requires:** Apple IIe, 128K RAM,  
one disk drive, DOS 3.3,  
Extended 80-Column Card

CIRCLE 599 ON READER SERVICE CARD

CIRCLE 185 ON READER SERVICE CARD

# 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

|                                |       |
|--------------------------------|-------|
| Spy Hunter or Buck Rogers      | 27.00 |
| Tapper or Star Trek            | 27.00 |
| Congo Bongo or Up 'n' Down     | 27.00 |
| Sorcerer                       | 27.00 |
| Cutthroats or Zork I           | 24.00 |
| Zork II, III                   | 27.00 |
| Suspect                        | 27.00 |
| Deadline                       | 29.00 |
| Planetfall                     | 24.00 |
| Enchanter                      | 24.00 |
| Infidel                        | 27.00 |
| Hitchhiker's Guide             | 23.00 |
| Ultima III                     | 35.00 |
| Lode Runner or Karateka        | 22.00 |
| Choplifter                     | 22.00 |
| Reforger 88                    | 36.00 |
| 50 Mission Crush               | 24.00 |
| Objective Kurk                 | 24.00 |
| President Elect                | 24.00 |
| Questron                       | 30.00 |
| Rails West                     | 24.00 |
| Battle for Normandy            | 24.00 |
| Imperium Galactum              | 24.00 |
| Pro Tour Golf                  | 25.00 |
| Ring Side Seat                 | 25.00 |
| Cosmic Balance II              | 25.00 |
| Computer Baseball              | 25.00 |
| Geopolitique 1990              | 24.00 |
| Baltic 85                      | 21.00 |
| North Atlantic 86              | 36.00 |
| Germany 1985 or Carrier Force  | 36.00 |
| War in Russia                  | 48.00 |
| Flight Simulator II            | 32.00 |
| Night Mission Pinball          | 22.00 |
| Wizardry I                     | 30.00 |
| Wizardry II                    | 21.00 |
| Wizardry III                   | 29.00 |
| Wizardry IV                    | 24.00 |
| Wizprint                       | 16.00 |
| Rendezvous with Rama           | 25.00 |
| F15 Strike Eagle               | 22.00 |
| Dragon World or Shadow Keep    | 25.00 |
| Zaxxon                         | 20.00 |
| Fahrenheit 451 or Amazon       | 25.00 |
| Expedition Amazon              | 22.00 |
| The Quest                      | 22.00 |
| Coveted Mirror                 | 21.00 |
| Xyphus                         | 21.50 |
| Transylvania                   | 21.50 |
| Frogger                        | 22.00 |
| Championship Boxing            | 19.00 |
| BCs Quest for Tires            | 21.00 |
| Kings Quest                    | 30.00 |
| Wizard of Id Touch Type        | 19.00 |
| Fax                            | 19.00 |
| Summer Games                   | 27.00 |
| Stellar 7                      | 23.00 |
| Ken Uston's Blackjack          | 45.00 |
| Caverns of Frettag             | 19.00 |
| Castle Wolfenstein             | 20.00 |
| Beyond Castle Wolfenstein      | 20.00 |
| Millionaire                    | 30.00 |
| Baron                          | 30.00 |
| Tycoon                         | 37.00 |
| Spitfire Simulator             | 25.00 |
| Air Sim III                    | 26.00 |
| Bruce Lee                      | 24.00 |
| Sargon III                     | 31.00 |
| Miner 2049er                   | 24.00 |
| Death in the Caribbean         | 21.00 |
| The Heist                      | 24.00 |
| Critical Mass                  | 26.00 |
| How about a nice game of Chess | 21.00 |
| Mask of the Sun                | 27.00 |
| Hard Hat Mack                  | 24.00 |
| The Last Gladiator             | 14.00 |
| Pinball Const. Set             | 27.00 |
| Music Con. Set                 | 27.00 |
| The Standing Stone             | 27.00 |
| One-on-one                     | 27.00 |
| Archon                         | 27.00 |
| Skyfox                         | 27.00 |
| Seven Cities of Gold           | 27.00 |
| Murder on the Zinderneuf       | 27.00 |
| Sundog                         | 31.00 |

## Blank Media

|                      |       |
|----------------------|-------|
| Elephant SS/DD       | 12.50 |
| Elephant DS/DD       | 21.00 |
| Verbatim SS/DD       | 18.00 |
| Verbatim DS/DD       | 26.00 |
| Memorex SS/DD        | 18.00 |
| Memorex (Mac 3 1/2") | 34.00 |
| BASF SS/DD           | 17.00 |
| Maxell SS/DD         | 17.00 |

## Educational

|                               |           |
|-------------------------------|-----------|
| APPLE Logo II                 | 84.00     |
| BARRONS Computer SAT          | 53.00     |
| CBS                           | 24.00     |
| Mastering the SAT             | 92.00     |
| Cutthroats or Zork I          | 21.90     |
| Davidson and ASSOCIATES       | 21.90     |
| Suspect                       | 41.00     |
| Speed Reader II               | 30.00     |
| Word Attack                   | 30.00     |
| Math Blaster                  | 30.00     |
| DESIGNWARE                    | 24.00     |
| Spellicopter                  | 24.00     |
| Crypto Cube                   | 18.00     |
| Skellizakam                   | 20.50     |
| DLM                           | 20.50     |
| Alien Addition                | 20.50     |
| Medior Multiplication         | 20.50     |
| Demolition Division           | 20.50     |
| Alligator Mix                 | 20.50     |
| Dragon Mix                    | 20.50     |
| EDU-WARE (PEACHTREE)          | 17.00     |
| Compu-Read                    | 28.00     |
| Compu-Math                    | 28.00     |
| SAT Word Attack Skills        | 28.00     |
| PSAT Word Attack Skills       | 28.00     |
| Spelling B w/ Reading Primer. | 23.00     |
| Algebra 1 2 3 or 4            | 22.50     |
| Algebra 5 & 6                 | 31.90     |
| Hands on Basic                | 31.90     |
| Fractions                     | 47.00     |
| Decimals                      | 31.90     |
| HARCOURT BRACE JOANOVICH      | 47.00     |
| SAT                           | 59.90     |
| GRE Test                      | 59.90     |
| HAYDEN SOFTWARE               | 22.00     |
| Micro Math (Add-Sub)          | 20.90     |
| Micro Math (Multi-Div)        | 20.90     |
| LEARNING COMPANY              | 20.00     |
| Rocky's Boots                 | 30.00     |
| Number Stumper                | 25.00     |
| Robot Odyssey                 | 30.00     |
| Reader Rabbit                 | 24.00     |
| Magi Spell                    | 18.00     |
| Joggle's Rainbow              | 24.00     |
| Bumble Games                  | 24.00     |
| Bumble Plot                   | 27.00     |
| Gertrude's Puzzles            | 27.00     |
| Gertrude's Secrets            | 27.00     |
| MECA                          | 49.00     |
| Basic Building Blocks         | 49.00     |
| The Running Program           | 49.00     |
| MICROLAB English SAT          | 20.00     |
| Math SAT                      | 20.00     |
| PROGRAM DESIGN                | 73.00     |
| The New Step by Step          | 73.00     |
| Step By Step II               | 73.00     |
| Step By Step III              | 73.00     |
| SCARBOROUGH SYSTEMS           | 24.00     |
| Songwriter & Picturewriter    | 24.00     |
| Phi Beta Philer               | 24.00     |
| Master Type                   | 24.00     |
| SCHOLASTIC WIZWARE            | 24.00     |
| Fact & Fiction Tool Kit IIC   | 24.00     |
| Microzine (1-6)               | ea. 24.00 |
| Story Tree                    | 24.00     |
| Turtle Tracks                 | 19.00     |
| Fraction Fever                | 19.00     |
| Trains                        | 19.00     |
| Facemaker                     | 19.00     |
| Snooper Troops 1 & 2          | 27.25     |
| Story Machine                 | 21.90     |
| Kindercomp                    | 19.00     |
| Delta Drawing                 | 31.00     |
| Millionaire                   | 36.00     |
| Transylvania                  | 20.00     |
| Covert Mirror                 | 20.00     |
| The Quest                     | 20.00     |
| Main Street Filer             | 118.75    |
| Viscidate Package             | 114.00    |
| SOFTWARE PUBLISHING           | 74.00     |
| PFS: Access                   | 72.00     |
| PFS: Write                    | 72.00     |
| PFS: File                     | 72.00     |
| PFS: Graph                    | 72.00     |
| PFS: Report                   | 72.00     |
| STONEWARE                     | 24.00     |
| DB Master 4 Plus              | 208.00    |
| VISICORP                      | 60.00     |
| Visirend/Visiplot             | 60.00     |

## Business

|                                |                     |
|--------------------------------|---------------------|
| APPLE                          | 84.00               |
| Appleworks                     | 53.00               |
| Apple Writer IIe               | 124.90              |
| ARTSCI                         | 21.90               |
| Magic Office Systems           | 187.90              |
| CONTINENTAL                    | 187.90              |
| Macro Calc                     | 94.00               |
| Magic Window II                | 94.00               |
| ASHTON-TATE DB II              | 278.00              |
| BPI                            | 30.00               |
| General Accounting             | 235.00              |
| GL, AR, AP, PR or INV          | 235.00              |
| DOJO JONES SOFTWARE            | 208.00              |
| The Market Analyzer            | 148.00              |
| Market Manager                 | 148.00              |
| HARPER AND ROW                 | 41.00               |
| The Write Stuff                | 41.00               |
| HOWARD SOFTWARE SERVICES       | 145.00              |
| Real Estate Analyzer II        | 145.00              |
| KENSINGTON                     | 92.00               |
| Format II Enhanced             | 92.00               |
| LIVING VIDEO Think Tank II/Ile | 86.00               |
| STAR MICRONICS                 | 118.00              |
| STAR MICRONICS                 | 235.00              |
| MegaFinder                     | 98.00               |
| MegaSpell                      | 38.00               |
| MegaWorks                      | 64.00               |
| Microline 82A                  | 305.00              |
| Microline 83A                  | 435.00              |
| Microline 92P                  | 355.00              |
| Microline 93P                  | 595.00              |
| PANASONIC                      | 215.00              |
| KXP 1091                       | 295.00              |
| KXP 1092                       | 435.00              |
| KXP 1093                       | 615.00              |
| PROWRIGHTER                    | 8510AP              |
| 8510AP                         | 295.00              |
| 8510AP                         | 445.00              |
| 8510SP                         | 395.00              |
| 855P50                         | 395.00              |
| 8770P                          | 745.00              |
| STAR MICRONICS                 | 235.00              |
| SG 10                          | 235.00              |
| SG 15                          | 395.00              |
| SG 10                          | 495.00              |
| SG 15                          | 595.00              |
| SD 10                          | 345.00              |
| SD 15                          | 475.00              |
| TOSHIBA Printers               | 299.00              |
| Duo II Drive                   | 299.00              |
| Duo Disk w/acc. kit            | 299.00              |
| Pro File Disk Drive            | 299.00              |
| Ile Add-On                     | 299.00              |
| Mac Add-On                     | 299.00              |
| INFAX                          | 101 10 Meg          |
| 102 20 Meg                     | 2,145.00            |
| INDUS GT Slimline              | 3,350.00            |
| MICRO SCI                      | 250.00              |
| A2 143K                        | 190.00              |
| Simline Ile                    | 193.00              |
| Simline Ile                    | 207.00              |
| Micro SCI Controller           | 57.00               |
| QUENTIN                        | 100 100 Full Height |
| AP 100A Full Height            | 198.00              |
| AP 105 Slimline                | 210.00              |
| AP 110A Twin Pack              | 415.00              |
| RANA                           | 195.00              |
| Elite I                        | 355.00              |
| Elite II                       | 428.00              |
| Macintosh                      | 74.00               |
| PFS: File                      | 74.00               |
| PFS: Report                    | 74.00               |
| PFS: File/Report               | 117.00              |
| Typing Tutor III               | 31.00               |
| Millionaire                    | 36.00               |
| Video 300G Green               | 128.00              |
| Video 300A Amber               | 138.00              |
| DM II or III                   | 130.00              |
| BMC                            | 239.00              |
| Color Plus Monitor             | 239.00              |
| TR 120 AOW Green               | 95.00               |
| TR 120 Green                   | 145.00              |
| TR 120 Amber                   | 150.00              |
| DTD 1300 RGB                   | 400.00              |
| PRINCETON                      | 469.00              |
| HX-12                          | 155.00              |
| RGB Interface                  | 155.00              |
| SAKATA                         | 245.00              |
| SG-100 Color                   | 455.00              |
| SG-200 RGB Color               | 95.00               |
| SG-1000 Green                  | 120.00              |
| TAXAN                          | 264.00              |
| Green (Hi-Res)                 | 130.00              |
| Amber (Hi-Res)                 | 264.00              |
| 210 13" Color (Lo-Res)         | 399.00              |
| RGB Vision III                 | 148.00              |
| TR 120 Green                   | 185.00              |

We fully support the Macintosh — call toll free  
Apple Computers — call toll free

## Printers

|                        |          |                              |
|------------------------|----------|------------------------------|
| APPLE                  | Call     | 45.00                        |
| Imagewriter (10 & 15") | Call     | 66.00                        |
| BROTHER                | 655.00   | 48.00                        |
| HR-25                  | 830.00   | 52.00                        |
| HR-35                  | 1,255.00 | 21.00                        |
| DAISY WRITER 2000      | Call     | 99.00                        |
| DIABLO                 | 850.00   | 87.00                        |
| 620 (RS-232C)          | 1,785.00 | Call                         |
| 630 (PC)               | 1,150.00 | 24.00                        |
| Ink Jet Printer        | 375.00   | Call                         |
| DYNAX DX-15            | 375.00   | Call                         |
| EPSON                  | Call     | 30.50                        |
| FX-80                  | Call     | 36.50                        |
| FX-100                 | Call     | 18.00                        |
| RX-80/F/T              | Call     | Beagle Basic                 |
| RX-100                 | Call     | 35.00                        |
| LO-1500                | Call     | Disk Quick                   |
| NEC INFO SYSTEMS       | 680.00   | Doss Boss                    |
| N2030                  | 1,255.00 | Double Take                  |
| N3530                  | 2,155.00 | Fat Cat                      |
| P2T                    | 665.00   | Flex Type                    |
| JUKI 6100              | 395.00   | Frame Up                     |
| MANNESMANN TALLY       | 395.00   | GLE                          |
| MT-160L                | 605.00   | Pronto Doss                  |
| MT-180L                | 795.00   | Silicon Salad                |
| MT-Spirit              | 295.00   | Triple Dump                  |
| OKIBIDA                | 305.00   | Type Faces                   |
| Microline 82A          | 305.00   | Utility City                 |
| Microline 83A          | 435.00   | Zoom Graphics                |
| Microline 92P          | 355.00   | Visible 6502                 |
| Microline 93P          | 595.00   | Crossword Magic              |
| PANASONIC              | 215.00   | Einstein Compiler            |
| KXP 1091               | 295.00   | Einstein Memory Trainer      |
| KXP 1092               | 435.00   | Turbo Pascal                 |
| KXP 1093               | 615.00   | Net Worth                    |
| PROWRIGHTER            | 295.00   | Bank Street Writer           |
| 8510AP                 | 295.00   | Bank Street Speller          |
| 8510SP                 | 445.00   | Bank Street Filer            |
| 855P50                 | 395.00   | Print Shop                   |
| 8770P                  | 745.00   | Graphics Library             |
| STAR MICRONICS         | 245.00   | Digital Paint Brush          |
| SG 10                  | 235.00   | Forecast                     |
| SG 15                  | 395.00   | Time Trax                    |
| SD 10                  | 345.00   | DATA TRANSFORMS Fontrix      |
| SD 15                  | 475.00   | Font Paks 1-9                |
| TOSHIBA Printers       | 299.00   | The Accountant               |
| Duo II Drive           | 299.00   | Cut & Paste                  |
| Duo Disk w/acc. kit    | 299.00   | Financial Cookbook           |
| Pro File Disk Drive    | 299.00   | FUNK Sideways                |
| Ile Add-On             | 299.00   | Orca/M                       |
| Mac Add-On             | 299.00   | Compiler Plus (Hayden)       |
| INFAX                  | 2,145.00 | LAZERWARE Lisa V 2.6         |
| 101 10 Meg             | 3,350.00 | MECA Managing Your Money     |
| 102 20 Meg             | 250.00   | Applesoft Compiler           |
| INDUS GT Slimline      | 198.00   | Typing Tutor II              |
| MICRO SCI              | 190.00   | Typing Tutor III             |
| A2 143K                | 193.00   | Dollars & Sense              |
| Simline Ile            | 193.00   | Dollars & Sense II           |
| Simline Ile            | 207.00   | The Graphics Magician        |
| Micro SCI Controller   | 57.00    | New Complete Graphics System |
| QUENTIN                | 198.00   | Paper Graphics               |
| AP 100A Full Height    | 210.00   | Cat Graphics                 |
| AP 105 Slimline        | 210.00   | QUALITY Bag of Tricks        |
| AP 110 Twin Pack       | 415.00   | Merlin                       |
| RANA                   | 195.00   | Merlin Pro                   |
| Elite I                | 355.00   | Merlin Combo                 |
| Elite II               | 428.00   | SOFTRONICS Softerm II        |
| Elite III              | 428.00   | TURNING POINT Time is Money  |
| Macintosh              | 74.00    | ASCI Pro                     |
| PFS: Access            | 239.00   | Micro Cookbook II/Ile        |
| PFS: Write             | 239.00   | CPM Gold Card (Digital)      |
| PFS: File              | 239.00   | Hayes Mach II                |
| PFS: Report            | 239.00   | Hayes Mach III               |
| Typing Tutor III       | 210.00   | Kraft Joystick               |
| Millionaire            | 198.00   | TG Select-A-Port             |
| Transylvania           | 193.00   | 200 Baud Modem               |
| Simline Ile            | 193.00   | KENSINGTON System Saver      |
| Simline Ile            | 207.00   | KEYTRONICS Keyboards         |
| Micro SCI Controller   | 57.00    | Koala Pad                    |
| QUENTIN                | 198.00   | Muppet Learning Keys         |
| AP 100A Full Height    | 210.00   | The Gibson Light Pen         |
| AP 105 Slimline        | 210.00   | MCT Speed Demon              |
| AP 110 Twin Pack       | 415.00   | Ram Card                     |
| RANA                   | 195.00   | Soft Card                    |
| Elite I                | 355.00   | Premium Softcard IIe         |
| Elite II               | 428.00   | Apple Cat II                 |
| Elite III              | 428.00   | 212 Apple Cat II             |
| Macintosh              | 74.00    | ORANGE MICRO Grappler plus   |
| PFS: File              | 239.00   | Buffered Grappler            |
| PFS: Report            | 239.00   | PICASSO w/Interface          |
| PFS: File/Report       | 117.00   | PROMETHUS Pro Modem 1200     |
| Typing Tutor III       | 31.00    | PROMETHUS Internal II+II+    |
| Millionaire            | 36.00    | SATURN 128K Ram Card         |
| Transylvania           | 128.00   | Accelerator IIe              |
| Simline Ile            | 138.00   | Popcorn Modem (1200)         |
| Simline Ile            | 138.00   | Nice Print                   |
| Micro SCI Controller   | 57.00    | The Cricket                  |
| QUENTIN                | 198.00   | Echo II-                     |
| AP 100A Full Height    | 210.00   | Mockingboard "A"             |
| AP 105 Slimline        | 210.00   | Mockingboard "B"             |
| AP 110 Twin Pack       | 415.00   | Mockingboard "C"             |
| RANA                   | 195.00   | Mockingboard "D"             |
| Elite I                | 355.00   | TEXTPRINT Print It           |
| Elite II               | 428.00   | THIRDWARE Fingerprint        |
| Elite III              | 428.00   | Flip n File 50               |
| Macintosh              | 74.00    | 20.00                        |
| PFS: Access            | 239.00   | Elephant Trunk               |
| PFS: Write             | 239.00   | Compu Serve Starter Kit      |
| PFS: File              | 239.00   | Head Cleaning Kit            |

# More bytes per buck for your Apple II Plus and IIe The Sider

Most of us balk at paying twice as much for a peripheral as we did for the computer itself, and, not so long ago, that is precisely what Apple II owners had to do if they wanted to add a hard disk to their system. No one was surprised to find a \$1200 five-megabyte hard-disk kit drawing a small crowd at the 1982 West Coast Computer Faire. Since then, hard disks have become even more affordable, but the price breaks have decidedly favored the owners of IBM and IBM-compatible machines—until the recent introduction of The Sider, a \$695 ten-megabyte subsystem for Apple II Plus and IIe computers.

With the Sider mass-storage device, First Class Peripherals has taken the Apple II Plus and IIe another giant step toward becoming economical business tools for serious applications. Granted, Apple IIs have long been used for business applications, but—to programmers as well as users—the low (143K) capacity of Apple drives has always represented a serious drawback.

OK, so the price is right. The question is, does the Sider live up to reasonable expectations? Indeed it does. Not only does the Sider support four major operating systems, but it also provides various utilities, a toll-free technical-support telephone number, a one-year warranty, and a flat fee of \$150 for out-of-warranty repairs. There is still room for improvement, though.

One area for improvement is immediately apparent: the only documentation supplied is a 54-page installation manual. Step by step, it takes you through the process of installing both hardware and software, but unless you are alert and somewhat experienced, a few unfortunate typographical errors may prove frustrating. For example,

the manual requires that you copy a file named PDRIVERS from the CP/M installation diskette that comes with the unit, but the file's actual name is DRIVERS. Not everyone will be able to figure it out quickly. I have never understood why so much documentation is not beta-tested, the way hardware is. First Class tells me that a corrected installation manual is in the works, along with a more informative users' guide. Given its spectacularly low price, the Sider will probably serve a great number of Apple owners as a reliable hard disk, so it behooves the manufacturer to make its operation as uncomplicated as possible.

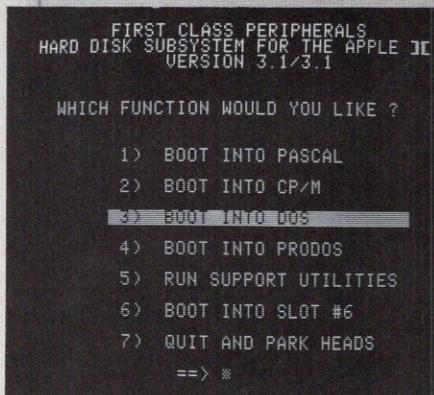
Setting up the hardware is simple and straightforward: You insert the controller card into slot 7 (you can change the slot assignment later with the help of the supplied software) and connect a couple of cables. First Class supplies clamps and L-brackets that fit the rear panel of an Apple II or IIe; all you need to furnish is a screwdriver. I had the hardware connected in less than 15 minutes. The software installation takes a little longer, but, typographical errors aside, it is also fairly simple.

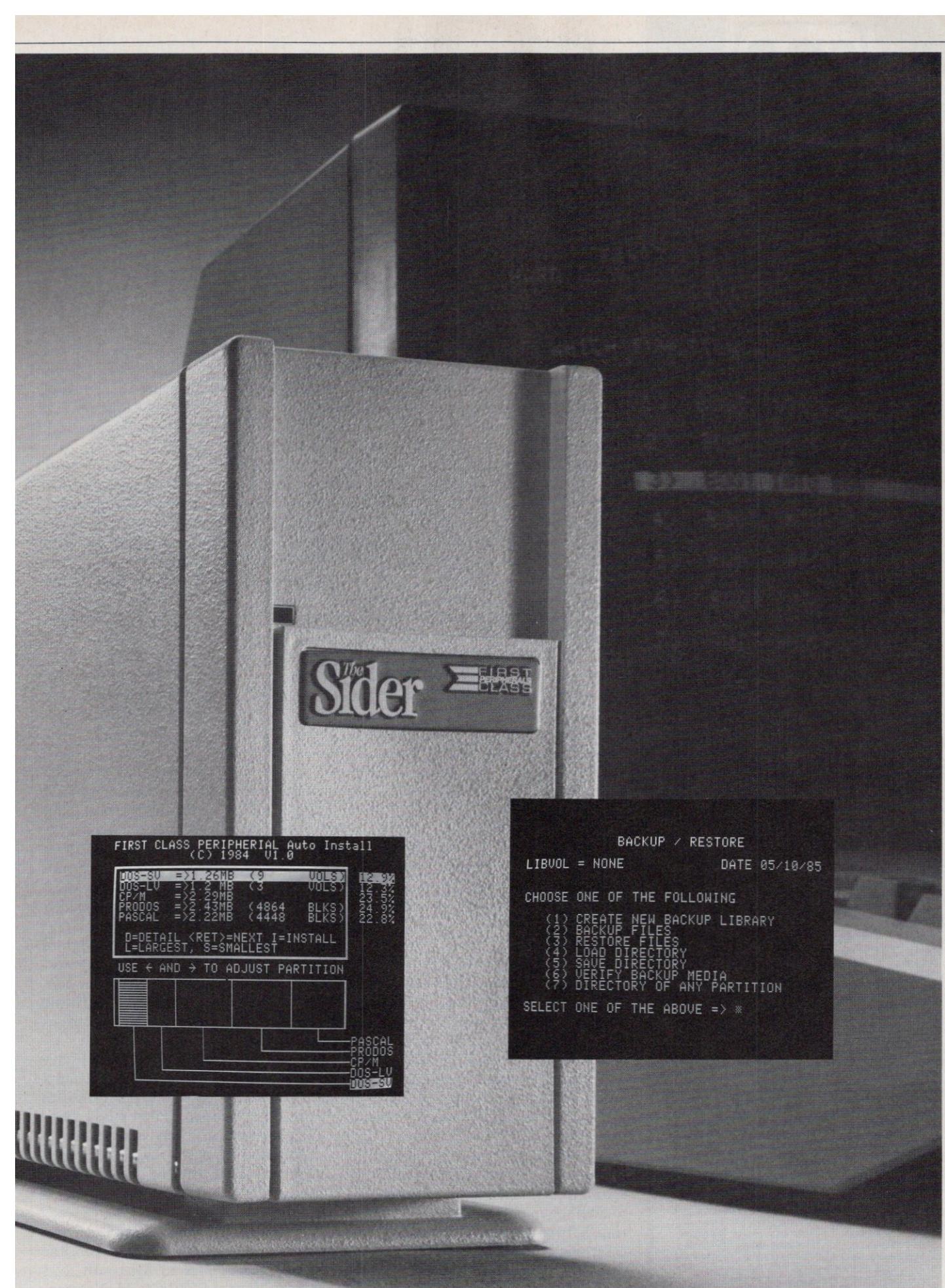
Since the Sider, like all other hard disks, must be formatted and partitioned before use, the first step after the hardware installation is to determine how you want to distribute the space. The Sider can run DOS, ProDOS, CP/M, and Pascal, and although you don't have to install all four systems, you must reserve partitions for each. Thus, for example, you set aside a part of the hard disk for Pascal, even if you will never have any need for it. Of course, you'll allocate as little space as possible in such cases (see figure 4, page 70).

Figure 1 (below, left): After installation, the Sider boots to produce a straightforward menu.

Figure 2 (center): A well-designed menu makes partitioning as simple as possible. In this sample screen, the DOS (Small Volume) partition is being altered.

Figure 3 (right): The Sider's Backup/Restore utility





FIRST CLASS PERIPHERAL Auto Install  
(C) 1984 V1.0

|        |                       |       |
|--------|-----------------------|-------|
| DOS-SU | => 1.26MB (9 VOL(S))  | 12.9% |
| DOS-LU | => 1.2 MB (3 VOL(S))  | 13.0% |
| CP/M   | => 2.29MB             | 13.1% |
| PRODOS | => 4.43MB (4864 BLKS) | 13.2% |
| PASCAL | => 2.22MB (4448 BLKS) | 13.3% |

D=DETAIL <RET>=NEXT I=INSTALL  
L=LARGEST, S=SMALLEST

USE < AND > TO ADJUST PARTITION

PASCAL  
PRODOS  
CP/M  
DOS-LU  
DOS-SU

BACKUP / RESTORE  
LIBVOL = NONE DATE 05/10/85

CHOOSE ONE OF THE FOLLOWING

- (1) CREATE NEW BACKUP LIBRARY
- (2) BACKUP FILES
- (3) RESTORE FILES
- (4) LOAD DIRECTORY
- (5) SAVE DIRECTORY
- (6) VERIFY BACKUP MEDIA
- (7) DIRECTORY OF ANY PARTITION

SELECT ONE OF THE ABOVE => \*

MAJOR  
CREDIT  
CARDS  
ACCEPTED



OUR  
AD  
NO.  
1019-5

NO SALES TAX COLLECTED (N.J. Add 6%)

## DELUXE APPLE IIe 128K PACKAGE —COMPLETE WITH PRINTER—

- Apple IIe
- Extended 80 Column Card
- Comrex Slimline Duo Drives (2 Drives)
- Apple Controller w/ PRO DOS
- Printer Card & Cable
- Epson RX-80 Printer
- Zenith Grn. Phosphor Monitor
- Deluxe Steel Printer Stand
- Box of 10 Diskettes
- Extra Printer Ribbon
- Case of Paper (1800 sheets)
- Head Cleaning Kit
- Dust Cover for RX-80
- Dust Cover for Apple IIe
- "Know Your Apple" (Software Tutorial)



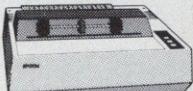
**• FINANCING AVAILABLE  
ONLY \$57.97**  
Based on \$179 down  
36 mos. at 20% APR.  
**OUR MOST COMPLETE  
PACKAGE EVER OFFERED!**  
**List \$2,489**  
**CDA \$1,749**

## EPSON FX-80 + PRINTER PACKAGE FOR THE IIe or II+



**List Price-\$877**  
**CDA Price-\$599**

## EPSON JX-80 COLOR PRINTER PACKAGE



**List Price \$979**  
**CDA Price \$719**

- All New FX-80 +
- Buffered Grappler + (16K)
- Deluxe Printer Stand
- Extra Printer Ribbon
- Case of Computer Paper
- "Epson-Apple Connection" a detailed book on how to use the Epson with the Apple.

### APPLE ACCESSORIES

|                                   |       |              |
|-----------------------------------|-------|--------------|
| ALS Smarterm II                   | \$179 | <b>\$129</b> |
| ALS Z-Engine                      | 199   | <b>149</b>   |
| Apple IIC Mouse                   | 99    | <b>83</b>    |
| Apple IIe Mouse                   | 149   | <b>132</b>   |
| Micro Sci Ext. 80 Column Card 64K | 199   | <b>99</b>    |
| Microsoft Premium Softcard II     | 395   | <b>289</b>   |

### APPLE DRIVES

|                       |     |            |
|-----------------------|-----|------------|
| Apple IIc Add-On      | 329 | <b>279</b> |
| Macintosh Add-On      | 495 | <b>399</b> |
| Apple Disk II         | 329 | <b>269</b> |
| Micro Sci A2 Drv.     | 299 | <b>199</b> |
| Micro Sci 1/2 Hgt IIC | 299 | <b>219</b> |
| Rand Elite I          | 299 | <b>199</b> |

### MODEMS

|                       |       |              |
|-----------------------|-------|--------------|
| Apple 300/IIC         | \$225 | <b>\$194</b> |
| Apple 300/Ile         | 299   | <b>229</b>   |
| Apple 1200/IIC        | 495   | <b>409</b>   |
| Apple 1200/Ile        | 570   | <b>489</b>   |
| Hayes Micromodem Ile  | 339   | <b>229</b>   |
| Hayes Micromodem IIC  | 359   | <b>249</b>   |
| Novation AppleCat 212 | 595   | <b>399</b>   |
| Novation AppleCat II  | 319   | <b>229</b>   |

### DISKETTES (per box of 10)

|                  |       |              |
|------------------|-------|--------------|
| SKC 5 1/4" SS SD | \$ 27 | <b>\$ 14</b> |
| SKC 5 1/4" SS DD | 29    | <b>16</b>    |
| SKC 5 1/4" DS DD | 34    | <b>19</b>    |

## BUY DIRECT BY MAIL OR PHONE

ORDERS ONLY 800-526-5313

Inquiries and in N.J. 201-728-8080

Information on your order 201-728-8082

ORDERING INFORMATION AND TERMS: Mail to

Computer Discount of America/31 Marshall Hill Rd/W. Milford, NJ 07480

Include address and phone number. Shipping, handling and insurance are additional add 2% UPS Ground (\$3.50 minimum), UPS Blue 6% (\$5.00 minimum). **NO C.O.D.** Cashiers checks, moneyorders, and credit cards ship immediately. Personal and company checks allow 15 days.

ALL SALES ARE FINAL this guarantees you will get new unused products. **ORDER 9am - 7pm EST Monday - Friday, Saturday 10-4.**

OUR REFERENCES: We have been selling computers since 1977 and in computer Mail Order since 1980. Our bank is: First Fidelity, West Milford, N.J. D&B listed.

CIRCLE 292 ON READER SERVICE CARD

| System  | Max Space | Breakdown      | % of Disk Reserved |
|---------|-----------|----------------|--------------------|
| DOS 3.3 | 8.94MB    | (63 Volumes)   | 91.6%              |
| ProDOS  | 9.07MB    | (18152 Blocks) | 93.0%              |
| PASCAL  | 9.07MB    | (18152 Blocks) | 93.0%              |
| CP/M    | 9.07MB    |                | 93.0%              |

Figure 4: The figures to the left represent the maximum allocatable space when you configure the disk for a single system. The column on the right shows the minimum amount of space that must be reserved for the other three systems combined.

Filling a ten-megabyte disk is surprisingly easy to do, but the good news in this case is that you can daisy-chain a second Sider to your first to get a total of 20 megabytes. Oddly enough, First Class Peripherals does not mention this important feature in its advertisement, but—assuming that the additional unit will cost less, since a second controller card is unnecessary—you can now get 20 megabytes of disk storage for less than the price you had to pay for a five-megabyte kit in 1982.

Getting back to the software installation, the actual formatting and verification process takes about 20 minutes, which seems like a long time until you consider how long it would take to format and verify the equivalent 70 or so Apple floppy disks. To install the software, you use the Sider's two "flippy" disks (i.e., four sides) of easy-to-use, menu-driven software. You use one side for the initial formatting, partitioning, and—for CP/M and Pascal—subdividing into volumes; it also moves the DOS 3.3 system and utilities to the hard disk and contains some handy utilities of its own. The other three sides contain support utilities for transferring the Pascal, ProDOS, and CP/M systems, respectively. Note that these utilities merely aid in the installation; users must supply the applicable system disks.

### Slicing the Pie

Booting the installation disk first produces a series of screens containing explanations of the Sider's various features, and then it moves you right into Auto Install, which gives you the option of installing disk 1 or 2. Since I had only one unit, I selected disk 1, and the Sider immediately yielded the Auto Install screen in figure 2. You should plan the partitioning well, because, once they're installed, you can't change the allocations without starting all over again, which means copying everything to another medium and then transferring it back to the hard disk. In any case, don't forget to maintain backup copies of everything you have on the hard disk, for, great as they are, hard

disks are quite sensitive. Crashes, though less common nowadays than they used to be, are almost always fatal.

Installing ProDOS is a simple matter of copying all of the files from the floppy systems disk to the Sider (designated /HARD1/), using the = wild-card symbol. The Sider supports two ProDOS volumes of equal size as well as tree-structured directories.

Moving Pascal to the Sider is more involved, especially when you're installing version 1.2. First you have to make a copy of the Apple1 master disk, rename some files, delete others, and do a lot of disk swapping; 35 steps later, you have the following odd configuration:

| Pascal Unit | Designated Volume |
|-------------|-------------------|
| #4          | HARD 1            |
| #5          | HARD 2            |
| #9          | Floppy disk 1     |
| #10         | Floppy disk 2     |
| #11         | HARD3             |
| #12         | HARD4             |

Don't worry, a program for rearranging the above setup comes with the support utilities. Apropos support utilities, you get a handful of equally practical files: a diagnostic program that "will verify the well-being of your subsystem" by testing the ROM, host adapter, and controller in one second; a Mount/Dismount program for changing CP/M unit assignments; a program designed to change the DOS boot track, in case you wish to have the Sider controller in a slot other than 7; a versatile Backup/Restore program; and various more-common utilities.

Most of these utilities are pretty straightforward. Although an appendix in the manual lists the support utilities and their function, First Class Peripherals might have included more details regarding each. Should you need technical assistance, First Class Peripherals maintains a toll-free customer-support telephone number.

You have to choose between two methods of installing CP/M on the Sider: One applies to Microsoft 2.23 and the other to PCPI CP/M. You can

not install both systems on the same disk. In both cases, the system diskettes must be modified, so you should use copies, but the installation itself is uncomplicated and relatively brief. With a hard disk, you must apportion CP/M into six volumes. If you're installing the Microsoft system, you can designate the floppy-disk drives, assuming that there are two of them, as volumes A and B or E and F, with the remaining four volumes residing on the Sider. The PCPI CP/M installation is less flexible, for it automatically assigns E and F to the floppy drives. To subdivide the four CP/M volumes contained on the hard disk, you select D (for detail) from the Auto Install menu and use the left- and right-arrow keys to increase or decrease the amount of space allocated to each volume. That amount ranges from 24 kilobytes to 8.19 megabytes.

#### CP/M Restrictions

One salient quality that I have not mentioned is the Sider's speed. I did not measure it, but the installation booklet claims an average access time of 155 milliseconds (including settling), and I have no reason to doubt that assertion. That the Sider supports only CP/M 2.23 (the 60K version) and four versions of PCPI CP/M will prove discouraging to owners who have already

*Chris Albertson is a New York music critic who has been using Apples since 1979.*

#### ► PRODUCT INFORMATION

##### The Sider

First Class Peripherals  
2158 Avenue C  
P.O. Box 6187  
Bethlehem, PA 18001  
(800) 538-1307

**List Price:** \$695 (includes ten-megabyte [formatted] hard-disk unit, controller card, cables, and software)

**Requires:** Apple II Plus or IIe; 64K RAM; one or two floppy-disk drives

**Physical Dimensions:** height, 7.5 inches; width, 3.5 inches; depth, 16 inches

**Power Consumption:** 40W

**Supports:** DOS 3.3; ProDOS 1.0.1; Apple Pascal 1.1 and 1.2; CP/M 2.23 (60K version); PCPI CP/M 1.0, 1.5, 1.6, and 2.0

**Software:** Installation disk and support utilities for CP/M, DOS 3.3, and Apple Pascal

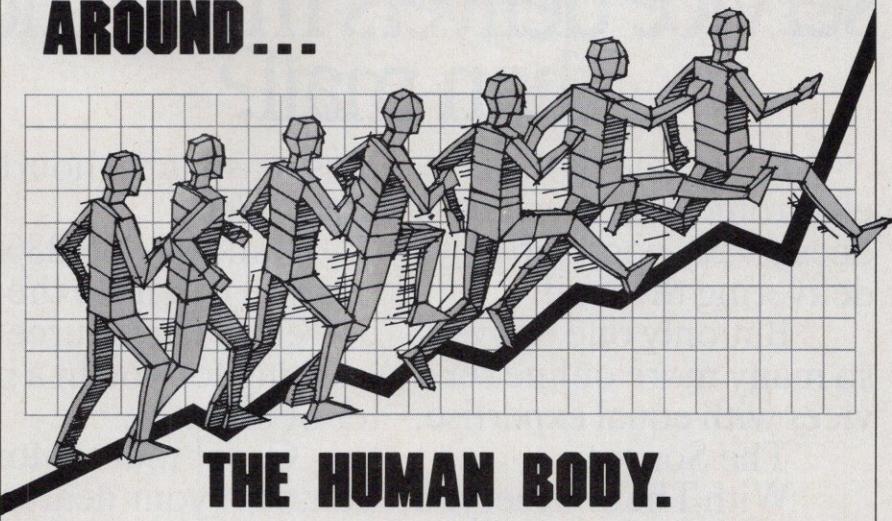
CIRCLE 597 ON READER SERVICE CARD

equipped their Apples with other CP/M formats (such as the common 2.2 version). It also means that Apple work-alikes that come factory-equipped with a Z80 processor cannot function with CP/M on the Sider, and even DOS can prove to be a problem when you hook the Sider up to an "unauthorized" Apple. Experimenting with the unit connected to my Basis 108, I was able to get DOS running—but only after minor modification of the Applesoft ROM—and all attempts to run CP/M failed. I had no such prob-

lems running Applicard's PCPI CP/M version 2.0 on my Apple IIe. In fact, that experience and the ease with which the Sider handled DOS 3.3, ProDOS, and Pascal, convinced me to order a Sider unit for my computorum.

The Sider has a few limitations, but they are easily outweighed by its advantages. Considering its low price and the existence of Apple-oriented hard disks that cost \$2000 and cannot run any kind of CP/M, this product is a great boon for any Apple II Plus or IIe owner in need of mass storage. +

## PUT TECHNOLOGY TO WORK ON THE MOST IMPORTANT SYSTEM AROUND ...



## THE HUMAN BODY.

With

## healthaide

The Exercise & Nutrition Analysis Software

### PROFESSIONAL QUALITY

- For Individuals or for Groups
- Expandable Special Purpose Data Base
- Sophisticated Graphic Analysis

### USER PERSONALIZED TO MEET YOUR SPECIAL NEEDS

- Perfect for

|                       |           |                           |
|-----------------------|-----------|---------------------------|
| CONCERNED INDIVIDUALS | ATHLETES  | HEALTH CARE PROFESSIONALS |
| DIETICIANS            | EDUCATORS | DIABETICS                 |
| CARDIAC PATIENTS      |           |                           |

### EASY TO USE

- You don't have to be a computer expert to put it to work for you!
- An on-screen dictionary of food codes simplifies entries
- Friendly user support

All this for only **\$79.95!**

Available through your local software or computer dealer

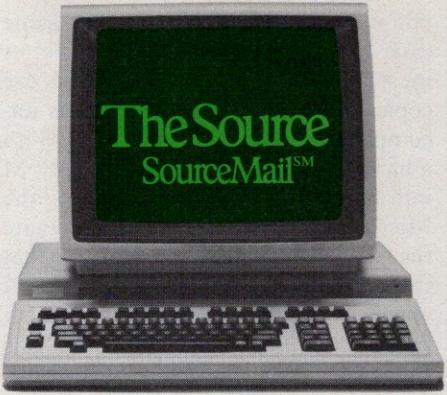
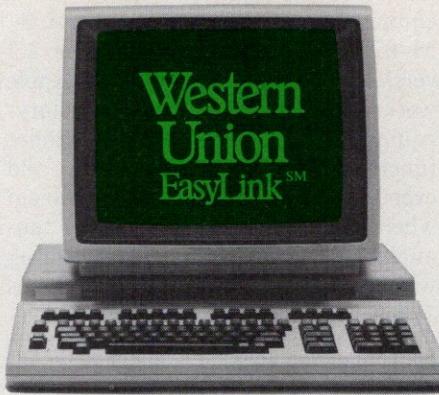


PROGRAMMING TECHNOLOGY CORP

7 San Marcos Place, San Rafael CA 94901

(415) 485-5601

CIRCLE 282 ON READER SERVICE CARD



# Which electronic mail service delivers much more than mail?

Every one of these electronic mail services does a very good job of delivering the mail.

But only one delivers so many more online services with equal expertise.

The Source.

With The Source, you can have the daily news delivered along with your daily mail. Make airline reservations. Trade stocks. Hold a computer conference. Communicate with thousands of people who share your interests.

Even get the latest word on new hardware and software products, in seconds.

All this, and more, along with the electronic mail service called "the most powerful available anywhere."

And all for just \$49.95,

plus reasonable hourly usage fees.

Call 800-336-3366\* and you can have the power of The Source working for you in a matter of minutes.

Or for more information, visit your nearest computer dealer or mail the coupon below.

Please send me more details about The Source.

Name

Telephone #

Address

City

State Zip

I own a personal computer

yes      no

Mail to: Source Telecomputing Corp.  
1616 Anderson Road  
McLean, VA 22102

7824G11

**The Source**<sup>SM</sup>

The most powerful resource  
any personal computer can have.

The Source is a service mark of Source Telecomputing Corporation, a subsidiary of The Reader's Digest Association, Inc. The Source services are offered in participation with Control Data Corporation. © Source Telecomputing Corporation, 1985. MCI Mail is a service mark of MCI Communications Corp. EasyLink is a service mark of Western Union.

\*In Virginia or outside the continental U.S. call (703) 821-6666.

## COMMUNICATIONS

SourceMail<sup>SM</sup>

Mailgram® Message Service

PARTICIPATE™

Computer Conferencing  
CHAT Interactive  
Communications

## NEWS & INFORMATION

News Bulletins

UPI News Service

Associated Press

Scripps-Howard News Service

Accu-Weather™

The Washington Post  
Electronic Edition

Sports

BYLINES Feature News

## INVESTOR SERVICES

Portfolio Management  
Delayed Stock Quotes  
Real-Time Stock Quotes  
Spear Securities Online  
Trading

Media General  
STOCKVUE

Donoghue Investment Newsletter

INVESTTEXT Research Reports

Management Contents  
Publication Abstracts

Employment Services  
UNISTOX Market Reports  
Commodity World News

BIZDATE Business Magazine

## PERSONAL COMPUTING

MICROSEARCH™

Hardware, Software  
Reviews

Member Directory

POST Bulletin Boards

Member Publications

## TRAVEL SERVICES

Official Airline Guide  
A-Z Worldwide Hotel Guide  
Travel, Hotel Tickets  
& Reservations

Restaurant Guides

Travel Tips, Tours

## SHOPPING & LEISURE

Movie Reviews

Comp-u-store Electronic Shopping

Games, Educational Quizzes

Here's good news for Apple IIc owners: Apple has finally and firmly plugged the IIc telecommunications gap. Under a program that Apple is now offering, if your IIc doesn't work well with your modem, you can get your computer fixed, free of charge.

If you're an Apple IIc owner, taking advantage of this offer may be an important step. You can't do that unless you know what the offer is, why Apple is making it, and whether you're among those who qualify. So, if you've been waiting for it, here it is: the inside story of the telecommunications problems

AN UPGRADE  
FROM APPLE  
MAKES

THE IIc

COMMUNICATIONS

GAP  
A THING  
OF THE PAST

that have plagued the Apple IIc.

Last year, Apple IIc owners began noticing problems with telecommunications on the IIc.

About the same time, in Norcross, Georgia, a team of engineers at Hayes Microcomputer Products, Inc., discovered that the Apple IIc didn't work very well with Hayes Smartmodems. The engineers who detected the problem were running final tests on two modem-and-software kits—a 300-bps (bits per second) kit and a 1200-bps kit—which Hayes was planning to manufacture and market for the Apple IIc.

During the tests, communications sometimes turned out garbled when they were sent or received by a IIc hooked up to a 300-bps Smartmodem, and text turned to garbage when it was transmitted or received by a IIc connected to a 1200-bps Smartmodem operating at its top speed.

The scientists conducting the test quickly uncovered the cause of the problem: an out-of-sync crystal that sets the transmission rate at which the RS-232 serial port works. Tests showed that it oscillated 3% slower than the speed the IIc's specifications called for. According to Hayes, this speed variation "significantly exceeded" operating standards set by the Electronic Industries Association, a trade organization that determines operating standards for electronic equipment.

Nick Wreden, a spokesman for Hayes, says the sluggish IIc crystal operates better with some modems than

with others. Some modems run a little slower than EIA standards specify, explains Wreden, and thus come close to matching the speed of the slow crystal in the original Apple IIc. Hayes Smartmodems run at exactly the speeds recommended by the EIA, however, and are thus out of synchronization with the IIc's faulty crystal, Wreden says.

When you use an early IIc with a 300-bps modem, Wreden continues, the effects of the slow crystal are usually not too noticeable. "In most cases, users will be able to communicate satisfactorily" at a speed of 300 bps, says Wreden. "Because of the magnitude of the Apple IIc serial-port variance from standard, however, problems will occur if you attempt to operate systems that work at rates slightly higher than 300 bits per second."

#### Apple Confirms the Problem

When Hayes informed Apple of its problems with the IIc, Apple conducted an exhaustive series of tests. After checking the Apple IIc with 17 non-

Apple modems and six telecommunications programs, Apple concluded that the IIc's RS-232 crystal did indeed operate 3% slower than specified. The company then announced that the slow crystal would be replaced by an accurate crystal in all future IIc motherboards. Apple IIc computers with new-style motherboards started rolling off the assembly lines in December 1984, and Apple said that it would not use old, out-of-sync crystals in any IIc it made after January 1, 1985.

To help customers who had a IIc with an old-style motherboard, Apple

sent its dealers a memo authorizing them to offer free motherboard replacements to IIc owners with non-Apple modems. Apple said it would provide the new motherboards to participating dealers free of charge and would pay each participating dealer a labor fee of \$35 for every motherboard replaced under the program.

After Apple announced that it was modifying the IIc to solve the computer's communications problems, Hayes decided to go ahead with its plans to market a 300-bps-modem-and-software kit for the Apple IIc. Because text was so garbled when the IIc was operated at 1200 bps with a high-speed Smartmodem, however, Hayes suspended plans to manufacture and market a 1200-bps Apple IIc modem-and-software package.

As this article went to press, Nick Wreden said Hayes has not yet announced whether it plans to go ahead and release a 1200-bps kit for the latest IIc. He did say that his company was conducting tests on upgraded IIc computers, though. If the improved IIc works as well at 1200 bps as Apple has promised, Hayes will probably market a 1200-bps kit for the IIc, Wreden predicted.

#### How the Program Works

Nancy Sperry, Apple's product manager for the IIc, says that the board-replacement offer is a "customer-satisfaction" program that dealers are supposed to provide at no cost to IIc owners. To take advantage of the pro-

## 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

*Lifetime Warranty*



### Certifix™

NOW for ProDOS & DOS 3.3!

BE SAFE! The flipside of a single sided disk may have flaws. Your 'FREE' disk is **CERTIFIED 100% ERROR FREE** with CERTIFIX by QUORUM! CERTIFIX 'LOCKS OUT' BOTH DOS 3.3 & ProDOS DISK FLAWS. Great for testing economy disks, too!

- LOCKS OUT ProDOS & DOS 3.3 FLAWS
- SAVES STATUS REPORT onto DISK
- AUTOMATIC ProDOS/ 3.3 FORMATTING
- CREATE 40 trk DISKS & SYSTEM MASTER
- RECORDS TEST DATE onto disk
- NOT COPYPROTECTED

#### FREE CERTIFIX BONUS PROGRAMS

- Undelete DOS 3.3 files
- Test and Adjust Disk Drive Speed

#### Prevent Data Loss!

CERTIFY & FIX every disk with CERTIFIX!

"I'll be using (Certifix) many times. Everyone should have one..."  
Carl Costa - Hayward, CA

"The Disk Notcher works great."  
Michael Bland - San Jose, CA

"I am really pleased with the Disk Notcher..."  
Ollie Greenlee - Moraga, CA

"Certifix is really a slick product..."  
Curiss Brennan - Santa Fe, NM

**FREE!**  
64' Write Protected Tabs  
32 Diskette Labels,  
If you get the  
DISKETTE FLIP-KIT  
which contains the  
Disk Notcher and Certifix

#### Get THE BEST! Ask our customers;

U.S. National Bureau of Standards  
TRW • IBM • Digital Research • AT&T  
Ciba-Geigy Pharmaceuticals • International Paper  
U.S. Postal Service • Rockwell International  
General Electric Corporate Research & Development  
Alcoa • U.S. Naval Weapons Research Center

#### 100% Money Back Satisfaction Guarantee!

DISKETTE FLIP-KIT only \$34.95

DISK NOTCHER is \$14.95

CERTIFIX is just \$29.95

Add \$2 s/h • CA add 6.5% tax

Update for early Certifix customers:  
Send original disk + \$4.95 s/h (CA add tax)

**SEE YOUR APPLE DEALER!**  
OR ORDER DIRECT FROM QUORUM

**1-800-227-3800** 

24 Hours a Day  
Orders only

Ext. 30   
Dealers Invited

QUORUM INTERNATIONAL. Unltd.  
INDUSTRIAL STATION P O BOX 2134 AP  
OAKLAND. CA 94614

CIRCLE 223 ON READER SERVICE CARD

gram, all you have to do is take your computer, built prior to January 1, 1985, to an authorized Apple dealer, along with any non-Apple modem or proof of purchase of a non-Apple modem. The dealer will replace the computer's main circuit board with a new one.

Since Apple does not charge the dealer for the new board and even pays him \$25 for his labor, the dealer should not charge you for the board swap. The job takes only a few minutes—provided the dealer has a new board in stock—so it should not tie up your computer for more than a few days. Once the swap is completed, the upgraded computer should work with any modem that you can plug into an Apple IIc.

Since Apple started its board-replacement program, some published reports have said that the offer applies only to owners of 1200-bps non-Apple modems, but Apple's Sperry says that IIc owners who have purchased any non-Apple modem—either a 300-bps model or a 1200-bps model—can take advantage of the offer.

Apple has not extended the board-swap offer to owners of modems that bear the Apple label, however. Sperry says that the Apple 300 and 300/1200 modems were designed to work correctly with the original Apple IIc. Tests have shown that the computer works fine with both of those modems, no matter which crystal it contains, she assures.

Apple was the only company I talked to that said its modems worked well with the original Apple IIc. Novation, Transend, and U.S. Robotics all said they had encountered problems when they tried to operate one of their modems with an unaltered IIc. All three companies also said that they had experienced difficulties at speeds of both 300 and 1200 bps.

There was some irony in U.S. Robotics' report that it had experienced modem problems with the IIc, since U.S. Robotics manufactures the modems that Apple sells under its own name. Although Apple declares that the Apple 300 and 300/1200 modems are compatible with the original Apple IIc, no other modems that U.S. Robotics makes can work properly with an unimproved IIc. "As of a couple of months ago, the Apple modems that we made were the only ones that would run with it," says Mark Smith, communications director for U.S. Robotics.

#### A Chorus of Complaints

When word of the IIc communica-

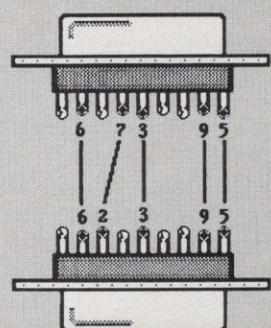
## THE UPGRADED COMPUTER SHOULD WORK WITH ANY MODEM

tions gap began to spread through the computer industry, publishers of telecommunications software joined the chorus of companies reporting IIc-related problems. I talked to several software manufacturers who reported difficulties with unimproved IIc computers. They included United Software Industries, the publisher of the ASCII Express telecommunications program; Transend, the company that manufactures the EasyCom/EasyGo program; and Quark, the manufacturer of Terminus, a telecommunications program for the Apple IIe and IIc.

It came as no surprise that Transend, Quark, and United Software Industries all reported problems in making their telecommunications software work properly with non-Apple modems connected to unimproved IIc computers. In addition, however, Transend complained of another, completely different IIc-related problem. This difficulty, as reported by Transend and confirmed by Apple, is that pin 2 of the connecting cable that comes with the Apple IIc is not connected to pin 7 on the output port of the Apple 300/1200 modem. If this pin were connected, it would supply a carrier-detect signal to the Apple IIc. The simple connector device illustrated below will remedy this problem.

Quark, the publisher of the Terminus telecommunications program, reported still another problem with the Apple IIc—and later discovered that

DB - 9P Male connector



DB - 9S Female connector

Figure 1: The DB-9P male connector plugs into the Apple modem and the DB-9S female connector attaches to the IIc modem cable.

the cause of the problem was not the IIc, but its own Terminus program.

In the midst of the flurry of complaints about the IIc's telecommunications problems, Quark released a statement saying that the sluggish crystal in the original Apple IIc sometimes prevented the Terminus program from working properly, no matter what kind of modem was in use. When Terminus was used with an unimproved IIc, Quark said, the program sometimes failed to perform automatic log-ons properly. Instead, Quark complained, the program sometimes simply hung up and stopped, bringing communications to a sudden halt.

Several weeks after it had issued its complaint about the Apple IIc, Quark said that it had made an error and that the Terminus program's log-on problems were caused by the program itself, not by the sluggish crystal in the original Apple IIc. Bill Wasmond of Quark says the company has recently discovered that Terminus sometimes runs too fast, so fast that host computers have trouble keeping up with the signals it sends out during automatic-log-on operations.

The host computers that Terminus leaves in the dust are most often those operated by the popular CompuServe database service. When subscribers log on to CompuServe, CompuServe usual-

ly requires them to send a Control-C character from their computer keyboard. Most telecommunications programs have no difficulty sending Control-C characters automatically, but Quark's Terminus program does—at least as far as CompuServe is concerned. Terminus sends out Control-C codes so rapidly that CompuServe's computers sometimes miss them.

Some techniques exist for slowing the Terminus program down during log-on operations so that it can log on to CompuServe and other databases with-

out hanging up. Quark has a help line that its customers can call to find out what those techniques are. +

*Mark Andrews is a writer specializing in computers and electronics, whose articles and syndicated columns have appeared in hundreds of newspapers and dozens of magazines. He is the author of 13 books, 7 of them about computers. His latest book is Apple Roots: A Guide to Apple Assembly Language, being published by Osborne/McGraw-Hill.*

## Data worth keeping deserves a Data Defender.



**Data Defenders by Ring King.** They're the finest quality protection you can buy for the information you have stored on 5 1/4" mini-diskettes and printout.

The Ring King 070 Tray holds 70 mini-diskettes in a tough copolymer shell with security lock. The Ring King Flip File II binder holds 20 mini-diskettes and converts to a desktop index. Ring King Looseleaf Files are punched to fit standard 3-

ring binders. Ring King Data Binders hold up to 8" of 9 1/2" x 11" or 14 7/8" x 11" unburst printout.

Ask for Ring King Data Defenders at your computer supply dealer. Or send for our free, full-color catalog of computer support products. Write Ring King Vibles, Inc., 2210 Second Avenue, P.O. Box 599, Muscatine, Iowa 52761. For customer service, phone (800) 553-9647, in Iowa (319) 263-8144.

# DATA DEFENDER™



CIRCLE 215 ON READER SERVICE CARD

### ► FURTHER INFORMATION

Apple Computer, Inc.  
20525 Mariani Avenue  
Cupertino, CA 95014-2094  
(408) 996-1010

CIRCLE 355 ON READER SERVICE CARD

Hayes Microcomputer Products, Inc.  
5923 Peachtree Industrial Blvd.  
Norcross, GA 30092  
(404) 449-8791

CIRCLE 356 ON READER SERVICE CARD

Quark  
2525 West Evans, Suite 220  
Denver, CO 80219  
(303) 934-2211

CIRCLE 357 ON READER SERVICE CARD

Transcend Corporation  
2190 Paragon Drive  
San Jose, CA 95131  
(408) 946-7400

CIRCLE 358 ON READER SERVICE CARD

U.S. Robotics, Inc.  
1123 West Washington Street  
Chicago, IL 60607  
(312) 733-0497

CIRCLE 359 ON READER SERVICE CARD

PART TWO:  
AN  
INTRODUCTION  
TO APPLE  
ANIMATION

# MAKING IT MOVE

Were your clients bored and stiffly polite when you showed them a bar chart illustrating increased sales? Did your students lean back in their chairs and yawn when you handed out a diagram of a combustion engine? Does the title screen of that program you just wrote lack pizzazz? Are your graphics dull? Liven them up. Make them move! Use your Apple computer to create dynamic animated presentations.

#### Apple Animation

On Apple-II-series computers, you can use Applesoft shapes for simple animations (see "Making It Move, Part I," *A+*, April 1985), but for more sophisticated animation, you need block shapes and byte-move animation (see "Animation" on page 78). This presents a problem if you aren't an accomplished programmer, because Applesoft doesn't support block shapes, and to attain the necessary speed, routines must be written in machine language. Fortunately, some excellent commercial programs exist to help us.

#### THE GRAPHICS MAGICIAN

The Graphics Magician is the package to use if you want to create arcade-type game animations or animated high-resolution pictures. The software consists of a set of graphics editors and machine-language routines that help you create animations within your own BASIC programs. The disk contains two utilities: The Animation System and The Picture System. You can use both utilities for animated effects. *A+* reviewed The Graphics Magician in the May 1984 issue (pages 58-60), so we'll just give you a brief description of the program.

#### Shifted Shape Animation

The Animation System lets you create the shapes you need (seven shifts

that are automatically compiled) in the Shape Editor (see figure 1), draw paths for the shapes to move in with the Path Editor, and assign shapes to paths—as well as the starting locations—in the Animation Editor. The Animation Editor then allows you to save a complete animation file, consisting of the machine-language animation routines, shapes, paths, and associated tables, onto your own disk. From your own program, you can load the animation file and call it each time you want to advance one step in the animation. A simple and effective animation can use just a three- or four-line BASIC program; for truly dynamic animations, however, you'll have to deal with x,y coordinates, Draw, Xdraw, calls, shape indexes, flags, and so on. The documentation provides you with all the information you need.

#### Full-Screen Animation

The Picture System is a utility that stores in a Text file the moves that you make as you create hi-res images (for example, plot brush at 10,20). When you save your picture, it's the moves that are saved, not the finished image. The Text file takes up considerably less room on a disk than the 33 or 34 sectors required for a standard hi-res image. You can fit close to a hundred pictures on a single disk. When you display your picture, you see it redrawn exactly as you drew it—like a television instant replay.

The Picture System, although not originally conceived as an animation program, has become one—thanks to the ingenuity of a few Apple graphics artists in New York. Working on a graphics presentation, they discovered a new use for this utility, which was offered as a disk-space saver.

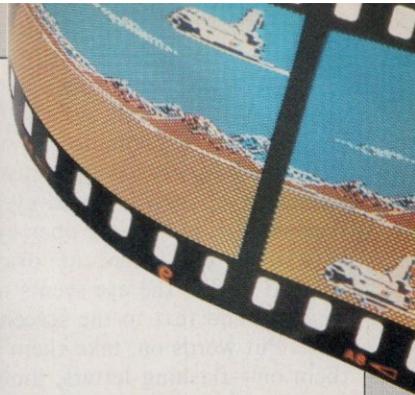
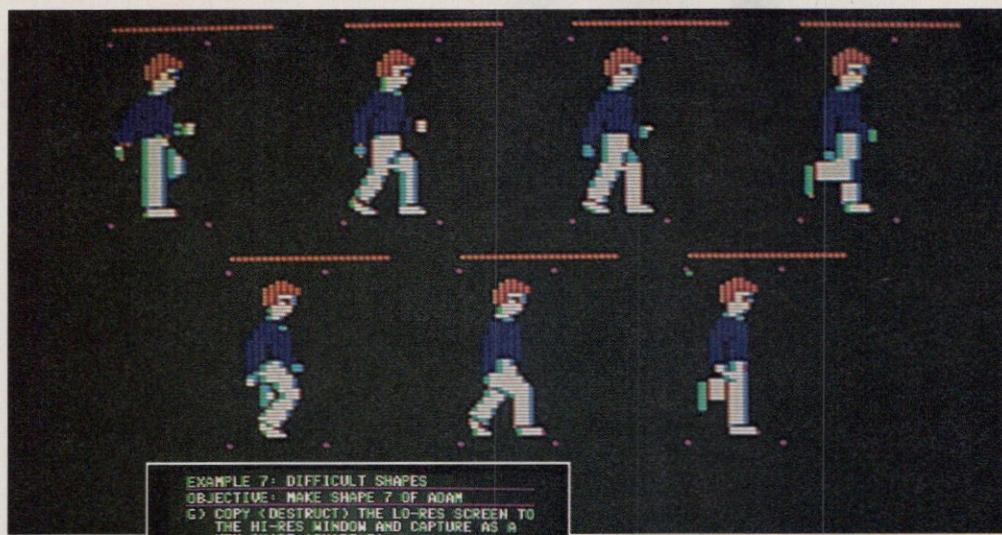


Figure 1 (top): The seven shifts of a shape being created in the Shape Editor from The Graphics Magician's animation system.

Figure 2 (above): Part of The Graphic Solution's disk tutorial, which explains how Adam, one of the demo "actors," was created

Figure 3 (right): A sample animation from Movie Maker

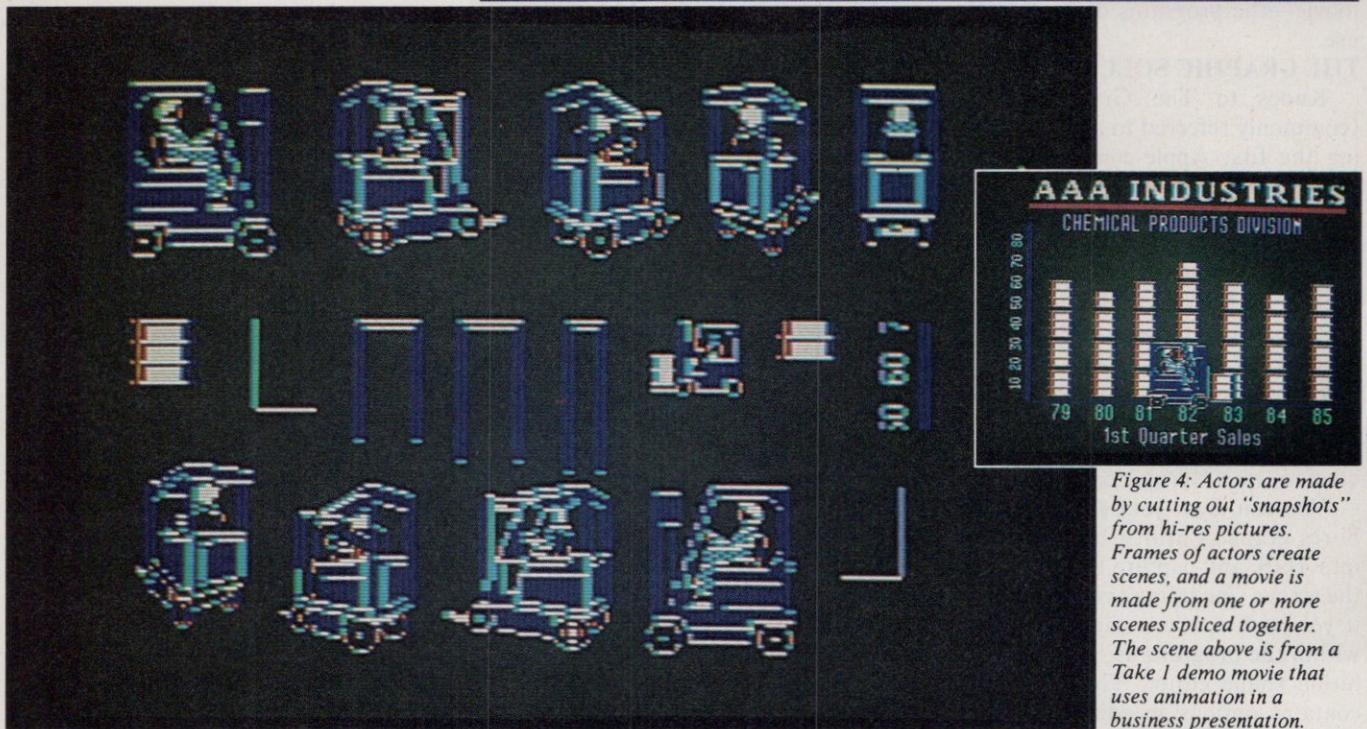
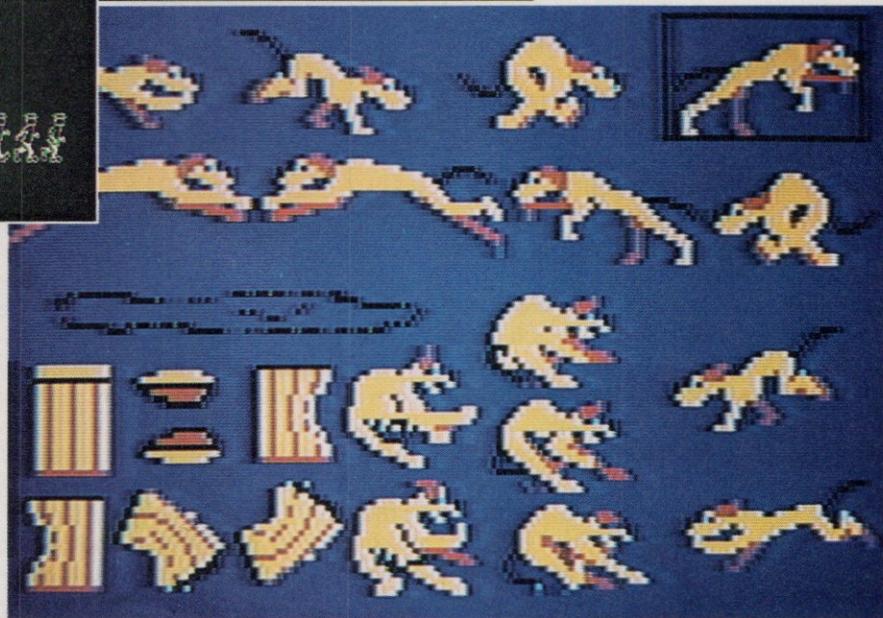


Figure 4: Actors are made by cutting out "snapshots" from hi-res pictures. Frames of actors create scenes, and a movie is made from one or more scenes spliced together. The scene above is from a Take 1 demo movie that uses animation in a business presentation.

Since every move (line, color, plot, and so on) is recorded, you can animate your images by planning the sequence of your moves. For example, if you draw an open eye, draw a closed eyelid over the open eye, redraw the open eye, close it, and so on, when the drawing is "played back," the eye seems to blink. You can add text to the screen at any time. Put words on, take them off, put them on—flashing letters, moving letters. The Picture System's unique, albeit time-consuming, picture-painting process allows you to do full-screen animation, and its potential is limited only by your imagination.

#### Double-Hi-Res, Too

A double-hi-res version of The Picture System is available in a separate package called Picture Painter. Sequential pictures made with the standard hi-res package easily convert to double-hi-res pictures.

#### Using The Graphics Magician

The Graphics Magician isn't copy-protected, and purchase of the software gives you unrestricted use of the copyrighted routines, as long as you obtain a license for commercial use. The license is free, but it requires that Penguin receive credit.

#### Frame Animation

Three animation packages, The Graphic Solution, Movie Maker, and Take 1, simulate traditional film-animation techniques. Although the concepts are the same in all three—draw images, capture them as shapes, create frames, and sequence the frames into a movie—the programs differ in ease of use.

#### THE GRAPHIC SOLUTION

Kudos to The Graphic Solution (commonly referred to as TGS) for being the first Apple-computer package that allowed us to develop "actors" and sequences of frames to create "movies."

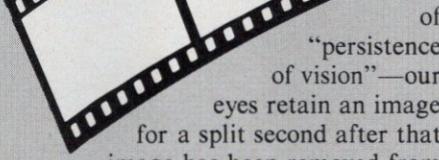
#### First and Still Going Strong

TGS is a powerful animation utility. (See *A+*, February 1984, for a comprehensive description of the program.) You create bit-map shapes, using keyboard commands, and capture the shapes into frames. You save a series of frames as a sequence and show these sequences via a "projector."

You can draw your shapes with any hi-res graphics utility, bring the screen into TGS, and capture the shapes from the screen (including text in the frames, if you wish), or you can create shapes within the program using the low-resolution shape editor. The shape editor contains options to edit a shape in a number of ways: expand it, contract it,

#### ► ANIMATION

Animation is an illusion of movement that can be created because of the phenomenon



of "persistence of vision"—our eyes retain an image for a split second after that image has been removed from sight. In an animated film, an image is drawn or photographed frame by frame. The position of the image is slightly altered in each frame so that when these frames are rapidly projected, the image appears to be moving.

scroll it, create a mirror image of it, and so on—all with a few key presses.

#### Thoughtful Extras

This package has many unique features, including an option to print the screens as you're working on them, simply by pressing a few keys. This utility is a welcome one for keeping records on the creation of your animation. Another option lets you save a series of steps as a "macro." An example might be move left, shoot a frame, move up, shoot a frame . . . . When you press the designated key, the program automatically carries out all the steps. This option saves a lot of time and tedium.

Supplementary software, called expansion modules, is available for TGS. These programs let you use TGS with Koala Technologies' Gibson Light Pen or the KoalaPad.

#### Superb Documentation

Working with the TGS manual and the on-screen tutorial is comparable to having a tutor at your side (see figure 2). We were able to animate a simple shape in less than an hour, although it takes considerably longer to learn to animate some of the more elaborate figures. Advanced sections in the manual teach you how to use TGS for multiple-shape animation, animation with big objects, 2-D/3-D graphs and charts, animation on colored backgrounds, and so on.

#### Using TGS

The Graphic Solution is a complete package. You can save the sequences and the projector onto your own disk and show your files with a simple BASIC program. If you want to prepare an

elaborate presentation, the manual gives you detailed instructions for controlling, from your own programs, the projector and your files. Purchase of the software, however, does not give you license to use its routines commercially. To do so, you'll have to contact Accent Software.

#### MOVIE MAKER

Movie Maker, in concept, is similar to TGS, but simplified. It has fewer commands to learn and a less complicated structure. Still, we had difficulty learning to use Movie Maker, which we attribute to the confusing documentation. The foregoing may sound like a contradiction, but we spent close to three unnecessarily frustrating hours trying to create and animate a shape before we discovered how easy it was to use the program.

The disk we received worked on our Apple IIc computer, but it failed to boot on the Apple II Plus. When we called Interactive Picture Systems, we learned that this problem exists with many of the disks. To obtain a free replacement, send the original disk to Prentice-Hall, which published the program under the Reston label.

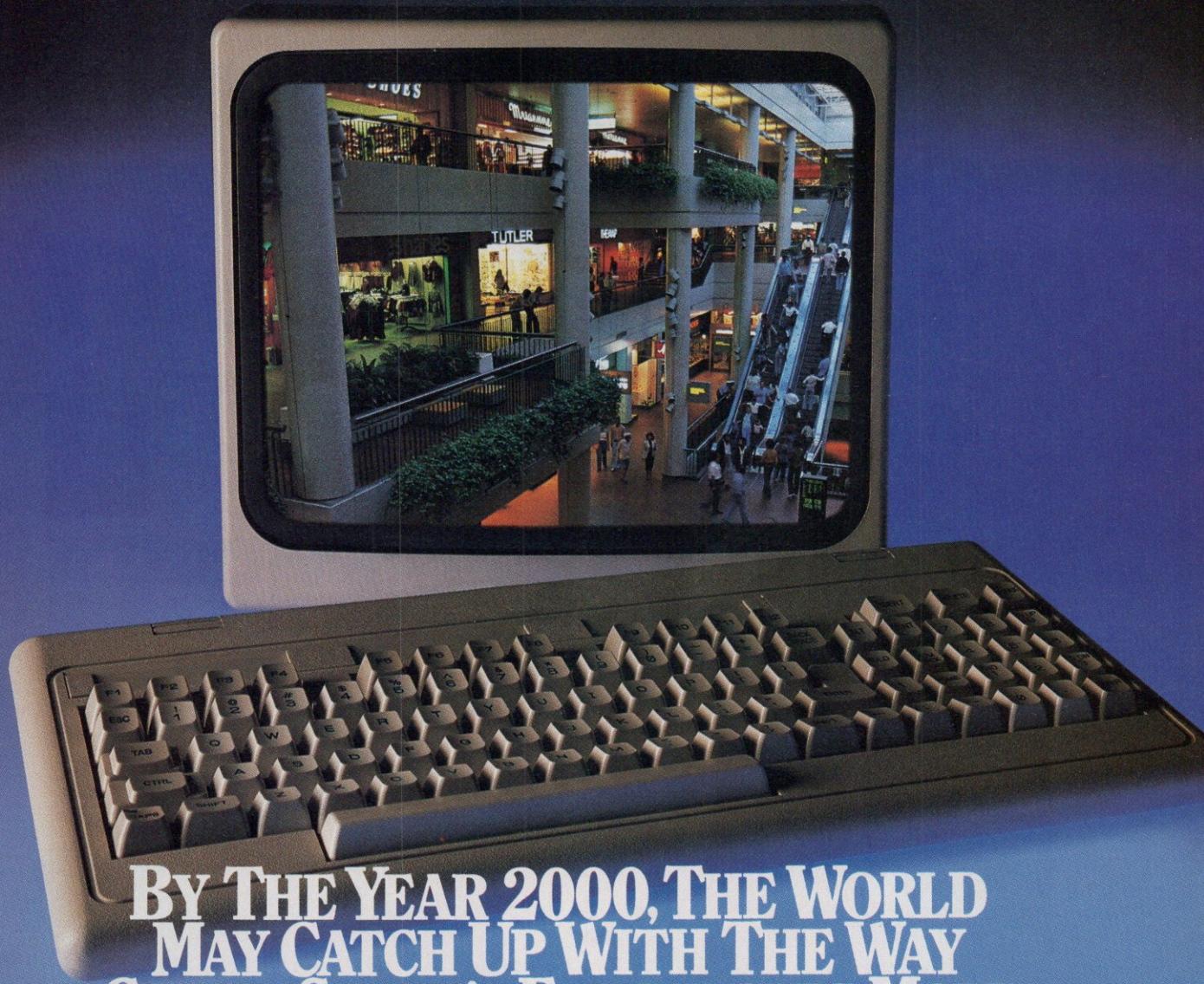
#### A Direct Descendant

Movie Maker, originally created for Atari computers, doesn't take advantage of Apple features. Filenames must be eight letters or less, and they can't have spaces or punctuation marks. Input can come only from a self-centering joystick in combination with the keyboard. We had difficulty controlling shapes with an Apple joystick. Almost all functions require going back and forth between moving the joystick, pressing joystick buttons, and using the keyboard. When you get the shapes where you want them, you have to go to the keyboard to issue commands. For example, to duplicate a shape, press W to create a window, use the joystick to position the window over the shape that you want to duplicate, type D to make a duplicate image, use the joystick to move the duplicate, press the joystick button to deposit the new image, and then type O to define it as a shape.

#### Hang In There

Once you get going, you should have no problem creating fascinating animations with Movie Maker. The sample animations on the back of the disk demonstrate the potential of this program (see figure 3). You can have up to six moving actors on the screen at one time, which should be adequate for beginning animators.

In the Compose mode, you use a



# BY THE YEAR 2000, THE WORLD MAY CATCH UP WITH THE WAY COMPUERVE'S ELECTRONIC MALL™ LETS YOU SHOP TODAY.

**Presenting the computer shopping service that delivers discount prices, name-brand merchandise, and in-depth product information.**

To make your computer even more useful, join CompuServe and shop in our Electronic Mall. Easy enough for beginners, it's open 24 hours a day, 7 days a week. And it offers a wide range of goods and services from nationally known stores and businesses including Bloomingdale's, Waldenbooks, American Express and Commodore.

**CompuServe's Electronic Mall™ lets you shop at your convenience in all these departments:**

The Auto Shop, Book Bazaar, Financial Mart, Leisure Center, Merchandise

Mart, Newsstand, On-line Connection, Personal Computer Store, Record Emporium, Specialty Boutique and Travel Agency.

#### Take the CompuServe Electronic Mall 15-Minute Comparison Test.

*What you can do in 15 minutes shopping the Electronic Mall way.*

- Access descriptions of the latest in computer printers, for instance.
- Pick one and enter the order command.
- Check complete descriptions of places to stay on your next vacation.
- Pick several and request travel brochures.
- Access a department store catalog and pick out a wine rack, tools, toys...anything!
- Place your order.
- What you can do in 15 minutes shopping the old way.*
- Round up the family and get in the car.

**The Electronic Mall—A Valuable Addition to the Vast World of CompuServe.**

CompuServe Information Services bring you information, entertainment, personal communications and more.

You can access CompuServe with almost any computer and modem, terminal or communicating word processor.

To buy a CompuServe Subscription Kit, see your nearest computer dealer. To receive our informative brochure, or to order direct, call or write:

## CompuServe

Information Services, P.O. Box 20212,  
5000 Arlington Centre Blvd., Columbus, OH 43220

**800-848-8199**

In Ohio call 614-457-0802

# WE UNLEASH THE WORLD'S MOST POWERFUL GRAPHICS TECHNOLOGY.

To look at Infocom stories, you'd say they're all prose. No graphics. Ah, but there's more than meets your eyes.

We draw our graphics from the limitless imagery of your imagination—a technology so powerful, it makes computer screen pictures look like



graffiti by comparison. And no one knows how to unleash your imagination like Infocom. With thrilling plots. Unpredictable situations. And original puzzles calculated to drive you out of your skull.

Step up to Infocom. All words. No graffiti. The secret reaches of your imagination are beckoning.

It's time to open your mind's eye.



**INFOCOM™**  
INTERACTIVE FICTION SOFTWARE

Infocom's interactive fiction is available for a wide variety of personal computers.  
CIRCLE 224 ON READER SERVICE CARD



joystick to draw shapes or capture them, draw backgrounds, and insert color. You can duplicate your shapes, flip them, magnify them for editing, and so on. In the Record mode, you combine shapes into sequences, add titles and other special effects, and record your animation file. The Smooth mode is where Movie Maker eliminates flicker and turns your animation into a Movie Maker file. The Play mode shows your movie.

Interactive Picture Systems plans to make free animation libraries available via CompuServe. Starting in March, you'll be able to download these libraries of shapes, sequences, and finished animations for use with Movie Maker.

#### Using Movie Maker

You can't use animations created with Movie Maker from within your own programs. You can, however, copy the auto-play programs from the back of the Movie Maker disk, thereby creating your own auto-play disk that will boot by itself and play your movie files. For program development, you must license the Movie Maker Professional System directly from IPS.

#### TAKE 1

Take 1 is the newest and easiest animation package. From the menu, you select Actors and Actions and cut out objects from hi-res pictures to make actors. Select Scene Editor to cast your actors into a series of frames and then choose Movie Editor and put one or more scenes together with backgrounds to make the movies. Use Movie Projector to show your movie.

#### Full-Featured and Effortless

Take 1 is menu-driven and uses the keyboard for input. Once you've read the short manual and spent an hour or two experimenting, you'll be ready to go. Create your background scenes and characters by drawing them on the hi-res screen with any hi-res utility. Then load the screen of characters into Actors and Actions. Here you can edit the characters and take "snapshots" of them, so they become actors. Actors can have predefined movements, called "actions," which you can add at any time. The background scene gets loaded in, and up to eleven actors can be "cast" in the Scene Editor. You make the actual movie in the Movie Editor, where one or more scenes are spliced together (see figure 4).

#### Pause for Sound

You can add three different pause elements to your movie. The first type of pause stops the actions at a given frame and waits for the viewer to press

### ► BLOCK SHAPES AND PRESHIFTED SHAPE ANIMATION

Unlike vector shapes, which require the computer to read and translate the plotting directions for each vector of a shape when it's drawn to the screen (see "Shaping Up," *A+*, August 1984), a block or byte-move shape is predefined and then stored somewhere in the computer's memory. Plotting a byte-move shape is a matter of moving the pre-drawn figure into the desired memory area of the screen. Therefore, a byte-move shape saves time—instead of being regenerated each time it's used, it has only to be moved from another location.

The hi-res graphics screen is a display of approximately 8000 bytes of computer memory. Each byte is eight bits, turned on or off; and only seven of these bits, or pixels, are displayed. Horizontally, there are 40 bytes across the screen—this gives us 280 (7×40) dots across the screen. Vertically, there

are 192 bytes. These bytes are stacked on top of one another, so the screen is 192 dots tall.

To create a block shape, store a bit pattern in a set of bytes; when these bytes are stored in screen memory, a character or shape appears. (That's how text appears on the screen.) A normal-size character is seven dots wide (one byte) and eight dots tall.

#### Sprites

This option allows you to capture the actors (i.e., shapes) with transparent areas in them so that, for example, if a car is moving, the background would be seen through the windows.

#### Text

After loading a character set, you can add text to the scene. Once you add a line of text to the scene, you can use it in much the way as you use an actor.

#### Film Libraries

Disks of Take 1 animations can be purchased separately. These disks contain actors, actions, and sequences that you can use with your own animations. The animations are the creations of the animator who did the Movie Maker demos, and they're just as inspiring.

#### Using Take 1

To see a movie created with Take 1,

use the Projector on the master disk; you cannot transfer the Projector to your own disks. Supplementary software, in the form of the Animation Toolkit, should be available by the time you read this article. The toolkit program is an enhanced graphics language that's keyed into Take 1; it allows you to use the movie files directly from BASIC via the ampersand hook. For those who prefer it, a machine-language version will be available also. You'll have to contact Baudville for commercial licensing requirements.

**This One or That One?**

No matter which software you choose, please remember this: No animation program does all the work for you. Animated presentations must be planned, "storyboarded," and drawn. From concept to completion, these programs give you the tools, but they can't give you the commitment or the skills.

What type of animations are you interested in, and what do you want to use them for? If you need the programs for commercial projects, check the licensing requirements from each manufac-

turer to see if you can comply with the requirements.

If arcade-type games are your goal, you want The Graphics Magician's Animation System. This is the only program, of the four we have reviewed here, that contains the routines and instructions for animating games.

For simple, but effective, full-page animation—in which you don't have to be concerned with shapes or programming—it's Graphics Magician again, this time the Picture System utility. This utility is for hi-res picture anima-

tion, illustration of adventure games, stories, and so on. If ease of use is your prime consideration, consider Movie Maker or Take 1; if you intend to use the program with children, make it Take 1.

Providing you're willing to spend time learning and you're not intimidated by lots of keyboard commands, we recommend The Graphic Solution for professional business presentations. It's less structured than the other programs, and it gives you greater control of the options.

All in all—for pleasure, demos, and tutorials—you'll get good results with The Graphic Solution, Movie Maker, or Take 1. Get one of these packages, create some graphics, and enjoy making them move. **+**

*Roberta Schwartz and Michael Calley teach computer graphics at the New School in New York City. They have collaborated on several educational software projects and are writing a book on Apple graphics for Prentice-Hall.*

## SOFTWARE FOR ALL OF US from Core Concepts™ **FREE SHIPPING!**

**NEW!**

Financial-Productivity Series

### PROFIT PURSUIT™ 4 programs on 1 disk. ONLY \$34.95

1. **LEASE MASTER™:** Find lease payment amounts, pre-tax monthly and yearly yield, total yield. Compute with multiple advance payments and residual value. Print or display amortizations starting or stopping at any period.
2. **PRICING MASTER™:** Find the cost, selling price, mark-up, and margin. Recalculate by changing any entry. Print item name and data. A must for retailers & wholesalers!
3. **DEPRECIATION +:** Print or display Straight-Line, Declining Balance, Sum-of-the-Years-Digits depreciations. Plus, 3, 5, and 10 year accelerated depreciations.
4. **APR!:** Find the Actual Percentage Rate of loans with prepaid points.

### WORK FORCE II™ 6 programs on 1 disk. ONLY \$34.95.

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. 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.

Greg Glau of InCider says: "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..." June 1984

#### Compatible with the Apple IIc, IIe, II+, & II

#### Call Toll Free

ORDERS ONLY / 24 HOURS

1-800-221-9280  
Ext. 979

**ALL ORDERS  
SHIPPED  
IMMEDIATELY!**

Apple is the trademark of  
Apple Computers Inc.

Please send me PROFIT PURSUIT at \$34.95  
 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 \_\_\_\_\_



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



CIRCLE 236 ON READER SERVICE CARD

#### TGS: The Graphic Solution

(64K version)  
Accent Software  
4546 El Camino Real  
Suite S  
Los Altos, CA 94022  
(415) 949-2711

**List Price:** \$149.95 (includes certificate for one expansion module); TGS expansion module, \$35

**Note:** The original 48K version of TGS is available directly from Accent  
**CIRCLE 477 ON READER SERVICE CARD**

#### Movie Maker

Interactive Picture Systems, Inc.  
270 Park Avenue South  
New York, NY 10010  
(212) 475-7053

**List Price:** \$49.95  
**CIRCLE 478 ON READER SERVICE CARD**

#### Take 1

Baudville  
1001 Medical Park Drive S.E.  
Grand Rapids, MI 49506  
(616) 957-3036

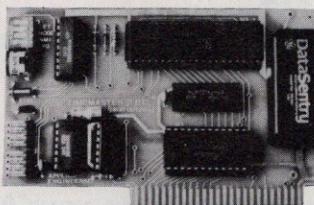
**List Price:** \$59.95; Animation Libraries, \$30  
**CIRCLE 479 ON READER SERVICE CARD**

# APPLIED ENGINEERING

## To a World of Compromise, We Make No Contribution

### 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 compatibility).
- 24 hour military format or 12 hour with AM/PM format.
- Date with year, month, day of week and leap year.
- Eight software controlled interrupts so you can run two programs at the same time (many examples are included).
- The only card recognized by both the



|         | PRO-DOS COMPATIBLE | INCLUDES DOS DATER | MILLISECOND | YEAR DATA | LARGEST SAMPLE SOFTWARE | REMOTE SET PORT | BSR PORT | EMULATES ALL OTHER CLOCKS |
|---------|--------------------|--------------------|-------------|-----------|-------------------------|-----------------|----------|---------------------------|
| BRAND A | YES                | YES                | YES         | YES       | YES                     | YES             | YES      | YES                       |
| BRAND C | NO                 | NO                 | NO          | NO        | NO                      | NO              | NO       | NO                        |
| BRAND M | NO                 | NO                 | NO          | NO        | NO                      | NO              | NO       | NO                        |
| BRAND P | NO                 | NO                 | NO          | NO        | NO                      | NO              | NO       | NO                        |
| BRAND S | YES                | YES                | NO          | YES       | NO                      | NO              | NO       | NO                        |
| BRAND T | NO                 | NO                 | NO          | YES       | NO                      | NO              | NO       | NO                        |
|         | YES                | NO                 | NO          | NO        | NO                      | NO              | YES      | NO                        |

Full emulation of all other clocks. Yes, we emulate Brand A, Brand T, Brand P, Brand C, Brand S and Brand M too. 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. 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. This is great for writing programs for those poor unfortunates who bought some other clock card.

#### REMOTE CONTROL

Our BSR X-10 interface option for the H.O. allows you to remotely control up to 16 lights and electrical appliances through your BSR X-10 home control system in your home or office. You're already wired because a BSR system sends its signals over regular 120 volt wiring. That means you can control any electrical device in your home or office without additional wiring.

PRICE \$129.00 BSR Option (may be added later) \$49.00

### VIEWMASTER 80

There used to be about a dozen 80 column cards for the Apple. Now there is 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 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 80 COLUMN DESIGN | 80 COLUMN HOME | 7x9 DOT MATRIX | LIGHT PEN INPUTS | 40 COLUMN OVERRIDE | INVERSE CHARACTERS |
|------------|-------|---------------------|-------------------|----------------------------|----------------|----------------|------------------|--------------------|--------------------|
| VIEWMASTER | 139   | YES                 | YES               | YES                        | YES            | YES            | YES              | YES                | YES                |
| SUPERTERM  | MORE  | NO                  | YES               | NO                         | NO             | NO             | NO               | YES                | YES                |
| WIZARD     | MORE  | NO                  | NO                | NO                         | NO             | NO             | YES              | YES                | NO                 |
| VISION 80  | MORE  | YES                 | YES               | NO                         | NO             | NO             | NO               | NO                 | NO                 |
| OMNIVISION | MORE  | NO                  | YES               | NO                         | NO             | NO             | NO               | YES                | YES                |
| VIEWMAX 80 | MORE  | YES                 | YES               | NO                         | NO             | NO             | YES              | NO                 | YES                |
| SMARTTERM  | MORE  | YES                 | YES               | NO                         | NO             | NO             | NO               | YES                | NO                 |
| VIDEX      | MORE  | NO                  | YES               | YES                        | NO             | YES            | 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 \$139.00

### SUPER MUSIC SYNTHESIZER — END MOCKINGBOREDOM

- Complete 16 voice stereo music synthesizer on one card. Just plug it into your Apple, connect the audio cable (supplied) to your stereo, boot the disk supplied and you are ready to input and play songs.
- It's easy to program music with our compose software. You will start right away by inputting your favorite songs. The Hi-Res screen shows what you have entered in standard sheet music format.
- Now with new improved software for the easiest and the fastest music input system available anywhere.
- We give you lots of software. In addition to Compose and Play

### Z-80 PLUS

#### Now Includes New 4.0™ Software

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/M 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 1.6 (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 a fast 4MHz.)
- Does EVERYTHING the other Z-80 boards do, plus Z-80 interrupts.

PRICE \$139.00

programs, 2 disks are filled with over 30 songs ready to play.

- Easy to program in Basic to generate complex sound effects. Now your games can have explosions, phaser zaps, train whistles, death cries. You name it, this card can do it.
- Four white noise generators which are great for sound effects.
- Full control of attack, volume, decay, sustain and release.
- Our card will play notes from 30Hz to beyond human hearing.
- Automatic shutoff on power-up or if reset is pushed.
- Many many more features.
- Works in any slot of a IIe or II+ including slot 3 of a IIe.

PRICE \$159.00

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. 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.



Call (214) 492-2027, 9 a.m. to 11 p.m. 7 days a week or send check or money order to P.O. Box 798, Carrollton, Texas 75006. MasterCard, Visa and C.O.D. welcome. No extra charge for credit cards. Texas residents add 5% sales tax. Add \$10.00 if outside U.S.A.

**APPLE\* MODEMS**  
by Prometheus

New 300/1200 Baud 212A Telephone Modem for your Apple II, II+ and IIe. Just plug in — Hayes compatible!

PM1200A . . . \$369.95

**MAC PAC**  
for your Macintosh

Includes: ProModem 1200 external modem, cable and software.

MAC PAC . . . \$399.95

**OPTION SPECIAL!**  
Lowest Price!

Includes options processor, display and 64K buffer.

PM-Special . . . \$189.95

**Additional Apple Products**

**Apple Cooling Fan**  
for Apple II, II+ and IIe  
APF-1 . . . . . \$39.95

**Switching Power Supply**  
for Apple II, II+ and IIe  
KHP4007 . . . . . \$59.95

**12" Green Monitor**  
for Apple II, II+, IIe & IIc  
MON-12G . . . . . \$99.95

**Surge Protectors**  
Model 75 . . . . . \$49.95  
Model 100 . . . . . \$69.95

**Back-Up Power Source**  
PC200 (200W) \$299.95  
XT300 (300W) \$399.95

**80-Column plus 64K RAM**  
for your APPLE IIe\*



Now you can double the memory capacity and get an 80-column display format for your APPLE IIe\* computer at an affordable price. Just plug the JE864 card into your APPLE\* and expand your display to 80 characters per line. Perfect for word processing. The JE864 also features 64K bytes of additional memory to allow programming not possible with standard APPLE IIe\* computers. Complete documentation included.

**Board:** High density board design squeezes 64K bytes of RAM onto a 2 1/2" x 4 1/2" board • Fully tested to assure proper operation.

**Uses:** Word processing — displays 1000 more characters per screen • Extra memory allows running of extremely large programs • Ultra High Resolution Graphics capability.

JE864 . . . . . \$99.95

Mail Order Electronics • Worldwide  
**Jameco**  
ELECTRONICS  
Serving the  
Computer Enthusiast  
Since 1974

**QUALITY COMPUTER PRODUCTS FOR APPLE II, II+, IIe, IIc and Macintosh\***

**VOICE SYNTHESIZER FOR APPLE II, II+ AND IIe**

Add speech capability to your Apple II, II+ and IIe computer with JAMECO's JE520 Voice Synthesizer. Speech—the most effective means of communication available to man—is now immediately available for your computer.

**Applications**

- Education • Entertainment • Instrumentation
- Games • Telecommunications • Handicap Aids

**JE520 Features**

- More than 250 basic words, prefixes and suffixes, which allow the formation of well over 500 total words.
- Allows music graphics and speech simultaneously.
- Programs in BASIC and/or assembler.
- Very understandable & realistic male voice.
- Built-in amplifier, speaker, volume control and audio jack.
- Plug-in user-ready with complete documentation & sample software.

The JE520 will plug right into your computer and be talking in minutes. It produces a very clear, natural male voice. The outstanding speech quality is produced using National Semiconductor's DigitalTalker™ speech processor IC with 4 custom memory chips.

**JE520AP . . . . . \$149.95**



Case Size:  
7 1/4" L x 3 1/4" W x 1 3/8" H

**APPLE™ Compatible 5 1/4" Disk Drive and Controller Card**



• Uses Shugart SA390 mechanics • 143K formatted storage • Color matches Apple Computer • Works with Apple Controller or other Apple-compatible controllers (ACC-1) • Complete with connector — just plug into your disk controller card • 35 tracks • Size: 6" W x 3 1/2" H x 8-9/16" D • Wt.: 4 1/4 lbs.

**ADD-514 (Disk Drive) \$169.95**

**ACC-1 (Controller Card) \$49.95**

**APPLE™ Compatible 5 1/4" Half-Ht. Disk Drive**



• Uses Chinon Pinch-type mechanics • 163K unformatted • 35 tracks • Super quiet • Works with Apple Controllers or other compatibles (ACC-1) above • Complete with connector — just plug into your controller • Size: 5 1/4" W x 1 1/8" H x 8" D • Wt.: 4 lbs.

**ADD-12 . . . . . \$179.95**

**APPLE™ IIc Compatible 5 1/4" Half-Ht. Disk Drive**

• Same specs as ADD-12 (above) except no controller necessary.

**ADD-IIc . . . . . \$189.95**

**NEW!**

**Special Functions!**

**APPLE Keyboard and Case for Apple II and II+\***



**Part No. Description Price**

KB-EA1 Apple Keyboard and Case . . . . . \$134.95

KB-A68 68-Key Apple Keyboard only . . . . . \$ 79.95

EAEC-1 Expanded Apple Enclosure Case only . . . . . \$ 59.95

\$10.00 Min. Order - U.S. Funds Only  
Calif. Residents Add 6 1/2% Sales Tax  
Shipping - Add 5% plus \$1.50 Ins.  
Send S.A.S.E. for Monthly Sales Flyer!

**KEYBOARD (KB-A68):**

• 68 Keys • 15-Key Keypad • Direct connection with 16-pin ribbon connector • Special functions on number keys including cursor controls, color demo, and one-touch disk catalog • Metal baseplate for durability (with 6 mounting holes) • Color (keys): white/grey

**CASE (EAEC-1):**

• Accommodates KB-A68 • Pop-up lid for easy access • Fits power supply and motherboard too • Size: 15 1/2" W x 18" D x 4 1/4" H

**Numeric/Auxiliary Keypad for your APPLE IIe\***

**Visi Calc Users!**



The JE614 is a newly introduced numeric/auxiliary keypad for the APPLE IIe.\* It offers the flexibility of a 10-key pad and the convenience of 23 directly accessible functions. Screen manipulating functions make word processing a snap and cursor controls make the keypad ideal for VisiCalc™ users. The JE614 Keypad is housed in a durable metal enclosure and is color-coordinated with your APPLE IIe computer. Operation of the keypad can begin within minutes from unpacking. Special functions include: Home, Clear, Clear to End of Screen, Scroll-Up, Scroll-Down, Tab, Delete, Left, Right, Up and Down. Each key has auto-repeat. Size: 5 1/4" L x 4-3/16" W x 1 1/4" to 2 1/2" Slope.

**JE614 . . . . . \$59.95**

Mail Order Electronics • Worldwide  
**Jameco**  
ELECTRONICS

1355 SHOREWAY ROAD  
BELMONT, CALIFORNIA 94002  
Phone Orders Welcome (415) 592-8097  
Telex No. 176043

5/85

\*APPLE, APPLE II, II+, IIe, IIc and Macintosh are registered trademarks of APPLE Computers.

VisiCalc is a registered trademark of Visi Corp. Inc.

CIRCLE 279 ON READER SERVICE CARD

## MONEY MATTERS BY KEN LANDIS

The Financial Cookbook serves up a way to calculate the best car-financing alternative.

# TO BUY OR TO LEASE

According to singer/composer Ronnie Milsap, "She loves my car more than she loves me . . ." Adolescent you say? Maybe, maybe not. Ever since a generation read *On the Road* by Jack Kerouac, we have wanted to get in the car and go.

With any obsession comes a price. Your car, be it a luxury or a necessity, costs you. The average American spends \$3474 dollars per year on gasoline, insurance, car payments, and maintenance, according to the American Automobile Association.

When the time comes to trade in the old klunker on a brand-new, front-wheel-drive, fully loaded money eater, you want to get the most you can. The price you pay is between you and the salesman, but the way you finance the car is up to you.

### Lease or Buy?

To buy or to lease? Probably the most misunderstood, most often misjudged financial decision. Your friend the Amway distributor leases his car because he can deduct the majority of the cost as a business expense. Your colleague at work bought, because she wanted to build equity. Which option makes financial sense for you?

To find that answer, we are going to use your high-horsepower, low-mileage Apple and the Financial Cookbook from Electronic Arts.

### The Answer in a Cookbook

If you remember the "Money Matters" column on Clifford Trusts (*A+*, November 1984, pages 161-167), then you will remember the Financial Cookbook. The Financial Cookbook is a family of programs that deal with commonly asked financial questions, but the programs themselves are far from common. It is a well-executed software package, and, for only \$50, it is an uncommon investment—and that's why



Mr. and Mrs. M.G. Backfire bought it.

Mr. Backfire repairs flashlights for a living, and his wife raises the little Backfires (two in all). To help him do his work, Mr. Backfire's employer provides him with a truck. He has never owned a car before, but now he wants to

**The price you pay is between you and the salesman, but the way you finance the car is up to you.**

buy one to visit the place of his boyhood dreams, the Flashlight Hall of Fame in Eveready, Pennsylvania. Mr. and Mrs. Backfire want to know whether they should lease or buy the car. Let's look at their analysis.

### Great Decisions Every Time

Mr. Backfire is using recipes (pro-

grams) 31 and 32 of the Financial Cookbook, which deal with buying vs. leasing your car. First, he considers buying.

To do the analysis, he has to assemble some information, including the purchase price of the car, the amount he will finance, the length of the loan in years, the loan interest rate, the car's estimated value when he decides to sell it, the number of years he plans to own the car, the investment-tax credit he can take based on business usage, any business deductions, the interest rate his money can earn in the bank, its compounding period, and his marginal tax bracket.

### A Little Help Doesn't Hurt

He knows some of these pieces of information, but he doesn't have the foggiest idea about some of the others. He can calculate his marginal tax with the first Financial Cookbook recipe, but he defers to his Uncle Wilfred the accountant on the questions relating to business expenses and the investment tax

wabash **DATA TECH**  
DISKETTES

WARRANTED INTEGRITY  
INCREDIBLE VALUE

•LIFETIME WARRANTY • 100% CERTIFIED ERROR FREE  
•SATISFACTION GUARANTEED

VALUE PRICED

5 1/4" Diskettes with Hub Rings.

★ Per Diskette — Quantities of 50 or More Boxed.



Single Side, Single Density . . . . . \$ .99  
Single Side, Double Density . . . . . \$1.20  
Double Side, Double Density . . . . . \$1.45  
Reversible, Double Density . . . . . \$1.99  
Double Side, Double Density, 96TPI . . . \$2.45

Bulk Diskettes with Envelopes — Deduct 5¢ per Diskette.  
10% Surcharge for Quantities Less Than 50 Diskettes.

**NEW**

IBM PC/AT Compat. .... \$3.75  
3.5 Inch Single Side, Double Density \$2.99  
Diskettes Double Side, Double Density \$4.99

ORDER NOW



C.O.D.

(Michigan Residents Add 4% Sales Tax)

Shipping and Handling \$4.00 per 100 or Fraction Thereof  
Continental U.S.A.



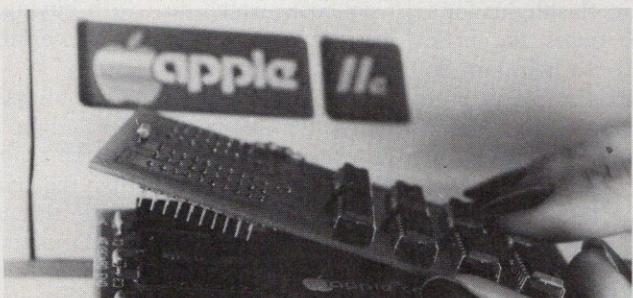
Precision Data Products

P.O. Box 8367, Grand Rapids, MI 49508-0332  
(616) 452-3457 • Michigan 1-800-632-2468  
Outside Michigan 1-800-258-0028

CIRCLE 229 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

CALL TOLL (FL residents add 5% sales tax)

FREE:

CARIBBEAN COMPUTER SALES, INC.

1-800-821-0208

(OUTSIDE FLORIDA)

221 EAST OSCEOLA - SUITE 210

STUART, FL 33494

(305) 287-3336

CIRCLE 149 ON READER SERVICE CARD

credit he can deduct.

You've just learned that Mr. B. is buying the car to take a vacation in, so where do business expenses come in? Mr. B. believes that he will use the car occasionally for work, especially when he makes house calls, but he isn't sure if the usage will qualify for a deduction. Based on what he tells his uncle, the answer is that he can deduct 10%.

If you don't have an Uncle Wilfred, then consult an accountant or tax adviser on this and other questions. Be advised that as of January 1, 1985, you must keep a written, "contemporaneous" log of all business-related usage and expenses for your car. Without it, nothing is deductible.

### The First Course

Mr. B. enters the correct information into the Financial Calculator, and almost instantly he has the answers for his buy analysis. He has a problem, though—he doesn't know how to interpret them.

The first answer is the tax credit he can expect if he buys the car. The software computes the tax credit by multiplying the purchase price of the car by the tax-credit percentage and then by the business-deduction percentage. This amount represents a dollar-for-dollar reduction in federal income tax.

The Financial Calculator then gives Mr. B. some bad news. It computes his estimated monthly car payment, based on the amount he intends to finance. It's not the program's fault that no matter what he does, the payment always seems too high.

The program then figures out what his depreciation-tax savings will be (it assumes he bought the car in January). Because, as far as deductions are concerned, Mr. B. is using the car for personal use 90% of the time, his depreciation-tax savings (and investment-tax credit) will be \$7 per month.

Because Mr. B. itemizes his deductions on his personal-income-tax return, the next calculation, interest tax savings, is important because he knows that it will be deductible for him and anyone else who itemizes. The Financial Cookbook multiplies the interest portion of his yearly loan payment by his marginal tax rate. The result is what he will save on his income taxes because of the interest he paid.

When you consider any purchase, investment, or expenditure, you have to consider taxes. Often a decision depends on a comparison of the cash-flow cost of an item and its net-of-tax cost. A car is no exception. The monthly pay-

ment on the car is a cash-flow cost; the net monthly expense (an item the Financial Cookbook figures out) is the monthly cash payment, less the tax savings. The net monthly expense is the "true" cost of the car. To afford a car, you have to be able to handle the monthly cash-flow payment first and the "true" cost second.

To help you figure out if you can afford a car, the Financial Cookbook computes the total cash payments on the car, the total tax savings, the amount you will owe on the car when you sell it, and the net total expenses.

The final computation is the most important, as it is the present value of all purchase costs. Simply stated, a dollar today is worth more than a dollar tomorrow, because to borrow money you have to pay interest for it, and when you lend money, you collect interest income. The present value of all costs tells Mr. B. the total cost of buying the car in today's dollars. This number is the one he will use later to compare buying to leasing costs.

One thing the Financial Cookbook does not account for is sales tax, which, like interest, is deductible. To take it into consideration, Mr. B. simply adds the sales tax to the purchase price of the

car and then multiplies the sales tax on the car by his marginal tax rate. He then deducts the result from the present value of his net expenses.

#### The Second Course

Recipe 32 will give Mr. B. the present value of all his potential lease costs, which he can then compare to the pres-

### ► The net monthly expense is the monthly cash payment, less the tax savings.

ent value for buying before making his decision.

The ingredients for this recipe are the initial lease payment (typically larger than the monthly payment), the monthly payment, the number of payments, the final payment (which is also usually larger), the percentage of the tax credit Mr. B. expects to take for business use of the car, the percentage of the expenses of the car he estimates will be for business, the interest rate he can get on his money (bank account, money-market funds, CDs, and so on), the number of compounding periods, and his marginal tax rate.

As you can see, much of the information is the same. If so, how can there be a difference between leasing and buying?

#### Percentages

The majority of the answer lies in the percentage of car use that will go for deductible business purposes. In a leasing situation, if Mr. B. uses his car for business 50% of the time, then 50% of the payments and 50% of the expenses of operating the car are deductible. If Mr. B. is in a 30% marginal tax bracket, .3 (30%) times 50% of all his payments and expenses will represent dollar-for-dollar reductions in his federal-income-tax liability.

If he bought the car and still used it 50% of the time for business, then the interest on the car loan, no matter what percentage of the time he used the car for business, and 50% of his expenses (operational and depreciation) would be deductible.

In this example, if Mr. B. bought the car and the combination of his interest, depreciation, and operational expenses were greater than 50% of his total monthly loan payment, assuming that his monthly loan payment would be larger than his lease payment, then buying would probably be better. If not,

## Now you can monitor and control the world (or at least your part of it) with a little help from APPLIED ENGINEERING

### 12 BIT, 16 CHANNEL PROGRAMMABLE GAIN A/D

- All new 1984 design incorporates the latest in state-of-the-art I.C. technologies.
- Complete 12 bit A/D converter, with an accuracy of 0.02%!
- 16 single ended channels (single ended means that your signals are measured against the Apple's GND.) or 8 differential channels. Most all the signals you will measure are single ended.
- 9 software programmable full scale ranges, any of the 16 channels can have any range at any time. Under program control, you can select any of the following ranges:  $\pm 10$  volts,  $\pm 5V$ ,  $\pm 2.5V$ ,  $\pm 1.0V$ ,  $\pm 500mV$ ,  $\pm 250mV$ ,  $\pm 100mV$ ,  $\pm 50mV$ , or  $\pm 25mV$ .
- Very fast conversion (25 micro seconds).
- Analog input resistance greater than 1,000,000 ohms.
- Laser-trimmed scaling resistors.
- Low power consumption through the use of CMOS devices.
- The user connector has +12 and -12 volts on it so you can power your sensors.
- Only elementary programming is required to use the A/D.
- The entire system is on one standard size plug in card that fits neatly inside the Apple.
- System includes sample programs on disk.

**PRICE \$319**

A few applications may include the monitoring of **flow** **temperature** **humidity** **wind speed** **wind direction** **light intensity** **pressure** **RPM** **soil moisture** and many more.



#### A/D & D/A Features:

- Single PC card
- 8 channels A/D
- 8 channels D/A
- Superfast conversion time
- Very easy programming
- Many analog ranges
- Manual contains sample applications

#### A/D SPECIFICATIONS

- 0.3% accuracy
- On-board memory
- Fast conversion (.078 MS per channel)
- A/D process totally transparent to Apple (looks like memory)
- User programmable input ranges are 0 to 10 volts, 0 to 5, -5 to +5, -2.5 to +2.5, -5 to 0, -10 to 0.

The A/D process takes place on a continuous, channel sequencing basis. Data is automatically transferred to its proper location in the on-board RAM. No A/D converter could be easier to use.

#### D/A SPECIFICATIONS

- 0.3% accuracy
- On-board memory
- On-board output buffer amps can drive 5 MA
- D/A process is totally transparent to the Apple (just poke the data)
- Fast conversion (.003 MS per channel)
- User programmable output ranges are 0 to 5 volts and 0 to 10 volts

The D/A section contains 8 digital to analog converters, with output buffer amplifiers and all interface logic on a single card. On-card latches are provided for each of the eight D/A converters. No D/A converter could be easier to use. The on-board amplifiers are laser-trimmed during manufacture, thereby eliminating any requirement for off-set nulling.

**PRICE \$199**

### SIGNAL CONDITIONER

Our 8 channel signal conditioner is designed for use with both our A/D converters. This board incorporates 8 F.E.T. op-amps, which allow almost any gain or offset. For example, an input signal that varies from 2.00 to 2.15 volts or a signal that varies from 0 to 50 mV can easily be converted to 0-10V output for the A/D.

The signal conditioner's outputs are on a high quality 16 pin gold I.C. socket that matches the one on the A/D's so a simple ribbon cable connects the two. The signal conditioner can be powered by your Apple or from an external supply.

#### FEATURES

- 4.5" square for standard card cage and 4 mounting holes for standard mounting. The signal conditioner does not plug into the Apple, it can be located up to  $\frac{1}{2}$  mile away from the A/D.
- 22 pin .156 spacing edge card input connector (extra connectors are easily available i.e. Radio Shack).
- Large bread board area.
- Full detailed schematic included.

**PRICE \$79**



**I/O 32**

Your inputs can be anything from high speed logic to simple switches

Programming is made very easy by powerful on-board firmware

The I/O 32 is your best choice for any control application

The I/O manual includes many programs for inputs and outputs.

**PRICE \$89**

Please see our other full page ad in this magazine for information on Applied Engineering's Timemaster Clock Card and other products for the Apple.

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 compatible with Apple II and IIe.

Applied Engineering's 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% Sales Tax  
Add \$10.00 If Outside U.S.A.

Send Check or Money Order to:

**APPLIED ENGINEERING**  
P.O. Box 798  
Carrollton, TX 75006

Call (214) 492-2027

7 a.m. to 11 p.m. 7 days a week  
MasterCard, Visa & C.O.D. Welcome  
No extra charge for credit cards

# Imagewriter™ Owners

Congratulations, you own the professional-quality printer good enough for Apple™ to call their own. It is a printer whose software support is unrivaled. Vilberg Brothers Computing, Inc. has produced software to **improve** your Imagewriter's image. It includes 24 character fonts and the software to download them to your Imagewriter or Apple DMP™. These characters, since they are downloaded, can be used by **ANY** Apple II program --- from AppleWorks™ to Visicalc™. And they don't slow down printing speed!!!

**Match your characters to your task.** Use Cyber for program listings, Typewriter for formal papers, and Script for personal notes. Use Bold to get attention, Super/Sub-script and Greek for scientific manuscripts, and Fat Face for notes to your friends. If our 24 character sets do not contain the image you need then convert character sets from Applesoft Tool Kit™, Beagle Brothers, Higher Text II™ or Penguin's Fonts using the Utilities. Still need more character sets? Then use the Utilities' font editor to create those characters you need.

## Want to know more?

Read the review in **Softalk** (Feb 84). They called it "excellent" and described one of our Imagewriter fonts as "near letter quality". **Creative Computing** (April 84) thought so highly of the DMP Utilities they called them "a necessity". Find out for yourself. Circle the reader's service card and we'll send you an actual print sample. Then you can see the many images your Imagewriter can convey.

**Vilberg Brothers Computing, Inc.**  
PO Box 4576, Madison, WI 53711-4576  
(608) 274-6433

DMP Utilities costs \$50. (WI res add \$2.50 sales tax)  
Apple, AppleWorks, Imagewriter, Applesoft Toolkit, and Apple DMP are trademarks of Apple Computer, Inc.

Higher Text II is a trademark of Synnergistic Software.  
Visicalc is a trademark of Visi-corp.

CIRCLE 244 ON READER SERVICE CARD

## CONVERSE WITH YOUR COMPUTER

**AT LAST! A FULL IMPLEMENTATION** of the original ELIZA program is now available to run on your Apple computer! Created at MIT in 1966, ELIZA has become the world's most celebrated artificial intelligence demonstration program. ELIZA is a non-directive psychotherapist who analyzes each statement as you type it in and then responds with her own comment or question—and her remarks are often amazingly appropriate! Designed to run on a large mainframe, ELIZA has never before been available to personal computer users except in greatly stripped down versions lacking the sophistication which made the original program so fascinating. Now, our new Apple version possessing the **FULL** power and range of expression of the original is being offered at the introductory price of only \$25. And if you want to find out how she does it (or teach her to do more) we will include the complete **SOURCE PROGRAM** for only \$20 additional!

Order your copy of ELIZA today and you'll never again wonder how to respond when you hear someone say, "Okay, let's see what this computer of yours can actually do!"

**READ WHAT THE EXPERTS SAY ABOUT OUR VERSION OF ELIZA:**  
"Much more than a mere game... You'll be impressed with ELIZA... A convincing demonstration of Artificial Intelligence." —PC MAGAZINE

"Delightful entertainment... An ideal medium for showing off your system." —MICROCOMPUTING MAGAZINE

"ELIZA is an astounding piece of software... A fascinating program to use and study." —BARON'S MICROCOMPUTER REPORTS

"ELIZA is a great way to introduce your friends to computers... A very funny party game." —PETER A. McWILLIAMS

"ELIZA is an exceptional program, one that's fun to use, shows off your machine, and has great historical interest." —POPULAR COMPUTING MAGAZINE

"This version of ELIZA is the best we have seen. As a party game, it is unmatched." —HOME APPLICATIONS FOR THE C-64

**ELIZA IS AVAILABLE IN THE FOLLOWING FORMATS:**  
1. Protected Version ..... \$25  
(Protected Version can be run but not listed or modified)

2. Un-protected Applesoft BASIC Source Version ..... \$45  
(Source Version can be listed and modified as well as run)

Both versions include a six page user manual and will run on Apple II, Apple II+, Apple IIe and Apple IIc.

Source Version also available for Macintosh if you have Microsoft BASIC.

Please add \$2.00 shipping and handling to all orders

(California residents please add 6 1/2% sales tax)

**ARTIFICIAL INTELLIGENCE RESEARCH GROUP**

921 North La Jolla Avenue, Dept. A  
Los Angeles, CA 90046  
(213) 656-7368 (213) 654-2214

MC, VISA and checks accepted

CIRCLE 294 ON READER SERVICE CARD

leasing would look good.

Many other factors can weigh into the decision, including the value of the car at the end of the ownership period (for buying, the higher the better), the difference in the size and timing of the payments, the up-front costs (sales tax) when buying and so on. But the most important consideration is Mr. B's deductible business usage of the car.

## Instant Analysis

Mr. B. again enters the necessary information into the Financial Calculator, and almost instantly he has his answers. The results are the total cash payments, tax savings, and total net expenses. (He and you need to make sure that the lease is an operating lease, not a capital lease. A capital lease is treated differently.)

Mr. B.'s bottom line is again the present value of all the costs, except that this time they are for leasing. With a lease, Mr. B. does not have to pay sales tax on the purchase cost of the vehicle, so he doesn't need to adjust the present value of leasing costs.

## The Finished Product

Which number is larger, the present value of buying or the present value of leasing? Whichever one it is, it represents the method that Mr. Backfire

should reject. The *lower* the present value of the costs, the better.

What, then, should the Backfires do? Take a look at Mr. B.'s analyses (figure 1). Based on this information, he should opt for buying. Notice that Mr. B. didn't deduct his income-tax savings from sales tax (marginal rate times sales tax) in the buying analysis because even without this additional reduction in cost, buying was less expensive.

As you can see, leasing, contrary to popular opinion, is not always better than buying. As our friend Mr. B. has found, it can be a costly alternative. +

*Ken Landis has consulted with professional investment advisers and planners on the use of computers since 1978.*

## ► PRODUCT INFORMATION

### Financial Cookbook

Electronic Arts  
2755 Campus Drive  
San Mateo, CA 94403  
(415) 571-7171

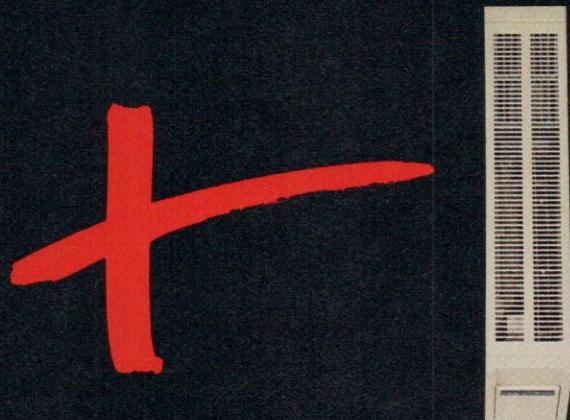
**List Price:** \$50

**Requires:** Apple II, II Plus, IIe, or IIc;  
64K RAM; one disk drive  
**CIRCLE 351 ON READER SERVICE CARD**

| BUYING ANALYSIS           |          | LEASE ANALYSIS                          |          |
|---------------------------|----------|---|----------|
| Inputs                    | Outputs  | Inputs                                  | Outputs  |
| Purchase Price            | \$12,075 | First-month summary:                    |          |
| Amount financed           | \$9,200  | Initial payment                         | \$500    |
| Length of loan (in years) | 4        | Monthly payment                         | \$280    |
| Loan interest rate %      | 12       | Number of payments                      | 48       |
| Car's value when sold     | \$2,500  | Final payment                           | \$280    |
| Years until sale          | 4        | Tax credit %                            | 6        |
| Investment tax credit %   | 6        | Business deduction %                    | 10       |
| Business deduction %      | 10       | Interest rate earned %                  | 8        |
| Interest rate earned %    | 8        | Compounding periods                     | 365      |
| Compounding periods       | 365      | Marginal tax rate %                     | 28       |
| Marginal tax rate %       | 28       |   |          |
|                           |          | Inputs                                  | Outputs  |
|                           |          | First month summary:                    |          |
|                           |          | Monthly cash payment                    | \$280    |
|                           |          | Depreciation tax savings                | \$7      |
|                           |          | Interest tax savings                    | \$26     |
|                           |          | Tax credit                              | \$72     |
|                           |          | Total tax savings                       | \$33     |
|                           |          | Net monthly expense                     | \$210    |
|                           |          |   |          |
|                           |          | Outputs                                 |          |
|                           |          | Monthly summary:                        |          |
|                           |          | Monthly cash payment                    | \$280    |
|                           |          | Tax savings                             | \$8      |
|                           |          | Net monthly expense                     | \$272    |
|                           |          |   |          |
|                           |          | Inputs                                  |          |
|                           |          | Summary                                 |          |
|                           |          | Total cash payments                     | \$11,629 |
|                           |          | Total tax savings                       | \$1,081  |
|                           |          | Down payment                            | \$2,875  |
|                           |          | Due on sale                             | \$0      |
|                           |          | Total expense, net                      | \$13,423 |
|                           |          | Present value, net exp.                 | \$12,227 |
|                           |          | Present value, purchase costs           | \$10,302 |
|                           |          |   |          |
|                           |          | Summary                                 |          |
|                           |          | Total cash payment                      | \$14,220 |
|                           |          | Total tax savings                       | \$404    |
|                           |          | Total expense, net                      | \$13,816 |
|                           |          | Present value, lease costs              | \$12,321 |
|                           |          |   |          |
|                           |          | Buying is \$2,019 (\$12,321 - \$10,302) |          |
|                           |          | less expensive than leasing.            |          |

Figure 1: A comparison of buying and leasing figures

# Simple Addition.



## Your Apple II+ Or IIe And Our 10 MB Sider.

For thousands of individuals and businesses, that addition has been very simple indeed. Particularly when you consider these two simple facts. One, The Sider

is the highest quality, 10-megabyte hard disk subsystem on the market today. And two, at \$695, it is the unquestioned value-leader on the market today.

And little wonder. It's from First Class Peripherals, a company dedicated to quality, cost savings, customer convenience and support. And a company backed by Xebec, the computer industry's leading manufacturer of disk controllers, whose decade-long reputation for system-engineered solutions has resulted in customers like IBM, HP, ITT, AT&T, Texas Instruments and Toshiba, to name just a few.

But the most important customers we have are the thousands of Apple users who've already, in a few short months, bought The Sider—and the thousands, like yourself, who are perhaps just learning about the finest, easiest-to-install Winchester subsystem going. Using only top-of-the-line components. Run-

ning four operating systems (more than the Profile). Backed by a top-of-the-line one year warranty. And supported through a toll-free hotline, in place now, to answer your technical questions. You can even take The Sider for a test drive with our 15-day, no-hassle return policy.

Add up the plusses. Then pick up the phone. Order The Sider today and we'll pick up the freight. There are really only two numbers you need to remember. 1-800-538-1307. And, oh yes, \$695.



# 1-800-538-1307

**FIRST  
PERIPHERALS  
CLASS**



2158 Avenue C  
P.O. Box 6187  
Bethlehem, PA 18001

# Tecmar Sweetens Macintosh® with Hard Disk Power

## Mac Drive™

Tecmar's Mac Drive gives you a 10 megabyte fixed hard disk or a 5 megabyte removable hard disk. You can add a 5 megabyte removable hard disk to either of the above.



### With Tecmar's Mac Drive . . .

- Your Macintosh runs much faster than with the built-in floppy.
- Mac Drive will provide up to 38 times more storage than floppies.
- You can minimize the use of floppies.
- You can access files and save time by loading programs from Mac Drive.
- You can take your removable Mac Drive cartridge with you for added security.

**TECMAR**  
Tecmar Sweetens Apples™

Tecmar Inc. 6225 Cochran Road Solon (Cleveland), Ohio 44139-3377 Phone:(216)349-0600 Telex: 466692

CIRCLE 205 ON READER SERVICE CARD

**A+ / MAY 1985**



# A+/MAY 1985

# Macintosh

FEATURING THE 128K COMPUTER

## FEATURING THE APPLE 32 LINE

# Desktop Publishing

## *New Solutions for Typesetting*

## *Stock-Option Investment Decisions*

## Three Personal-Money-Management Programs

Reviews:  
ThinkTank 512  
MusicWorks

# Designing

*The Dow Jones News/  
Retrieval service can  
help you make  
investment decisions.*

# Tame the Bulls and Bears with Your Macintosh

**I**t wasn't until I prepared my tax return for 1984 that I discovered that my full-service stockbroker was making more money on my investment transactions than I made in profits for the year. To add insult to injury, individual investors such as you and I pay commissions to our brokers even if the price of the stock they bought for us drops into a black hole.

#### Toward Financial Independence

If you are an experienced investor, you can make a profound change in the way you invest your money. You can use your Macintosh and a telephone modem to call the Dow Jones News/Retrieval (DJN/R) service for the latest financial news and quotes for thousands of securities. You can read the *Wall Street Journal* to get instant fundamental and technical data on stocks, bonds, options, mutual funds, and precious metals. Armed with this information, you are ready to do battle with Wall Street's bulls and bears.

After spending some time analyzing information from DJN/R, I developed a trading strategy. Now I make my own investment decisions.

Each morning, my Macintosh calls DJN/R automatically. It gets all the

current quotes I need and puts them into my Multiplan template, where they are instantly analyzed. I then call my discount broker and give him my orders: "Buy General Motors, go long on pork bellies, but let's short gold and the XMI index." I save more than 50% on commissions by making my own informed decisions. I am now on the road to financial independence—unless Americans stop eating bacon for breakfast.

If you are an experienced investor, you too may be able to base your investment decisions on the up-to-the-minute financial data available from DJN/R. To get the most from this service, you will need the following:

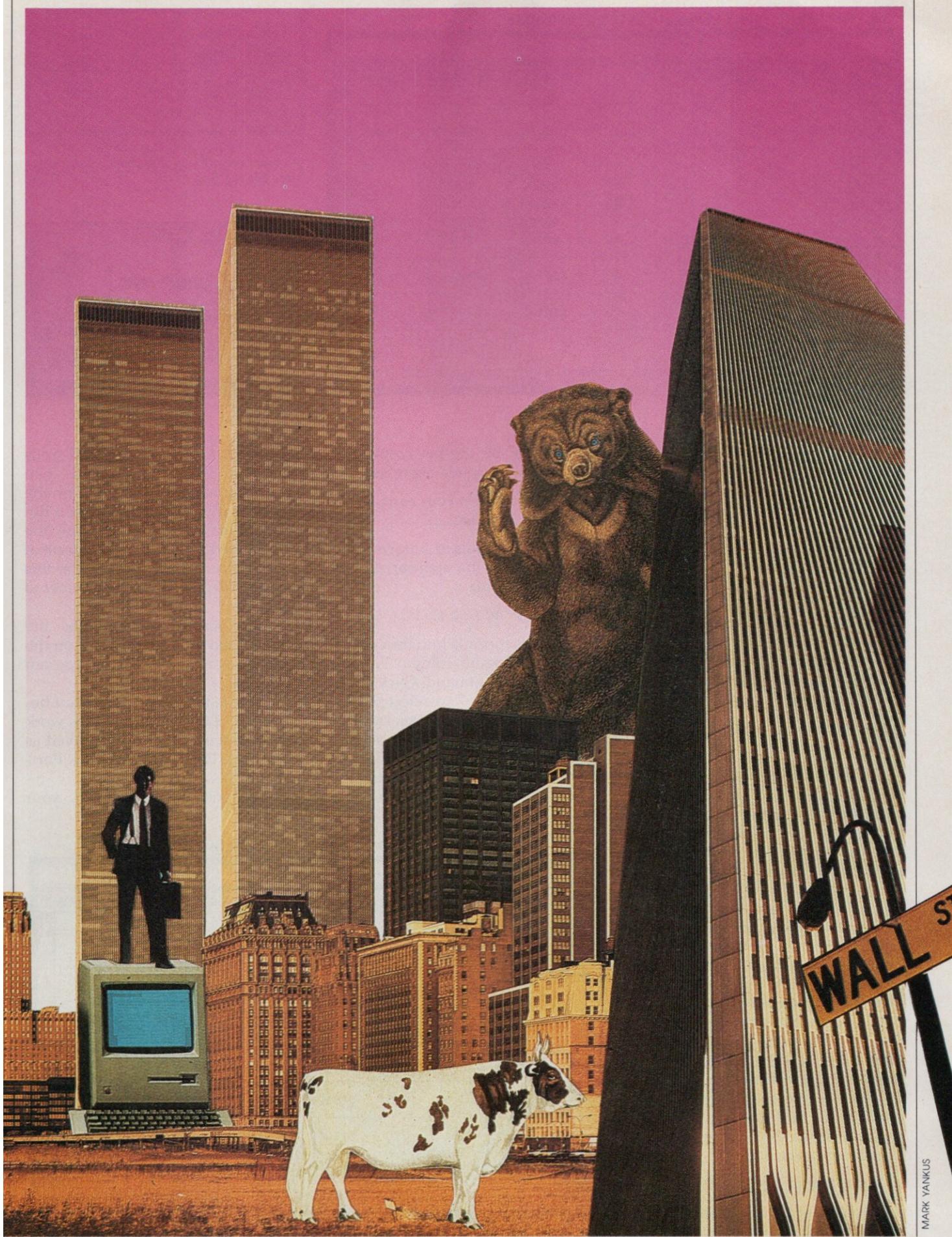
- A modem
- Microsoft Multiplan
- Dow Jones Straight Talk terminal program
- Dow Jones Spreadsheet Link
- A password for Dow Jones News/Retrieval
- Microsoft Chart (optional)

With Multiplan you can design templates that analyze current information for selected securities. Dow Jones Straight Talk is the terminal program that connects you with the DJN/R financial service. Spreadsheet Link can automatically retrieve in-

vestment information that interests you from the Dow Jones financial databases and plug it into the cells of your spreadsheet template for analysis. By eliminating on-line time required to type in your requests, Link will save you money. You can even use Link to retrieve historic quotes for your favorite stocks and later plot them with Microsoft Chart. Price charts of financial data can make it easy to spot trends.

# T

To get the most from the combination of Multiplan and Spreadsheet Link, you must design your Multiplan template with the Link program in mind. The Link program must receive a signal that it is to acquire a particular cell entry from the news service. A special syntax will do the trick. For example, you can set up the syntax so that column entries preceded by V— are values obtained from the news service. The row labels in the first column will contain the names of the target stocks, bonds, or other investment items you want to research. The stan-



MARK TANKE

Figure 1: The Spreadsheet Link template

dard stock-exchange symbols for these items must also be preceded by V-. As a start, enter the simple template presented here. After you master this one, you can enhance it to suit your needs.

First enter the labels for rows 1 and 2 as well as for column 1, as shown in figure 1.

To analyze this information, you need some formulas. To calculate gains or losses, subtract the net cost from the current value, as expressed in this formula.

$$\text{Gains (Losses)} = \text{Current Value} - \text{Net Cost}$$

Do the following to enter the formula. In row 4, column 6 press =, click on the Current Value cell for that row, press - (the minus sign), and click on the Net Cost cell in the same row. This will give you the formula =RC(-2)-RC(-1). To enter this formula into the other cells in column 6, drag the cursor to select the cells in column 6 for the other stocks. The selected stock cells are highlighted in black. Now choose Fill Down from the Edit menu.

To get the Net Cost total, click on row 10, column 6, and type =SUM. Then drag the cursor down the cells that are to be summed in column 6. To get the average Net Cost, type =AVERAGE( into row 12, column 6, and drag down the column of stocks. This action gives you

$$=\text{AVERAGE}(\text{R}[-8]\text{C}:\text{R}[-4]\text{C})$$

To calculate percent change, divide the difference between current value

and net cost by the net cost, which the following formula expresses.

$$\text{Percent Change} = (\text{Current Value} - \text{Net Cost}) / \text{Net Cost}$$

Enter the formula as follows: Enter = and click on the appropriate cells to get the formula

$$=(\text{RC}[-3]-\text{RC}[-2]) / \text{RC}[-2]$$

Copy this formula into the cells for the other stocks in column 7, using the Fill Down command. Click on the header of column 7 to select the entire column, and choose Percent from the Format menu. Now enter remaining totals and averages for the cells that require them in rows 10 and 12.

In order to set the number of deci-

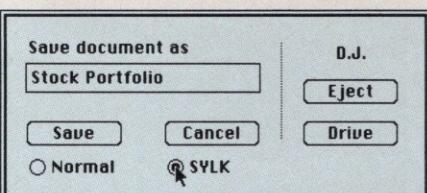


Figure 2: The Save As Dialog box. The Link program can work only with templates that are saved as SYLK files.

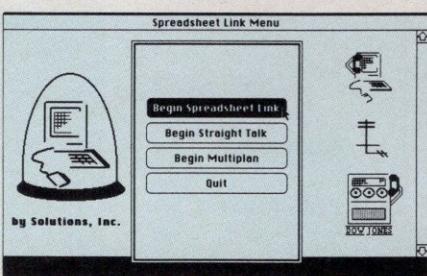


Figure 3: The Spreadsheet Link menu

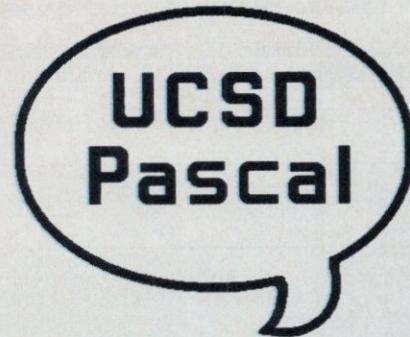
mal places to zero, choose All Cells from the Select menu, and then choose Number of Decimals from the Format menu. Type 0, and press Return. To have column 2 show the price of the shares with three decimal places, click on the header for this column and enter 3 for the number of decimals.

When you have completed the template, save it as a SYLK file on the disk that contains the Link program (figure 2).

This last step is very important because the Link program can work only with templates that are saved as SYLK files. Use the name Stock Portfolio for this sample template.

When you are ready to try your

Figure 4: The template with values from the Dow Jones News/Retrieval service



# Now Macintosh speaks your language.

The MacAdvantage: UCSD Pascal. Everything the serious programmer needs to develop user-ready applications on the Mac.

Here's the development environment that helps you design fully featured programs directly under control of the Macintosh operating system. In *compiled* UCSD Pascal, the serious programmer's language of choice. With immediate access to virtually all Mac ROM routines including pull-down menus, overlapping windows, clipboard, desk accessories and, of course, the mouse.

Now you can write large, fast programs for the 128K or 512K Macintosh. Or the Lisa. With Apple Pascal compatibility.

The MacAdvantage: UCSD Pascal comes complete with powerful, easy-to-use development tools and utilities. And one feature that's *really* easy to like: A low price tag.

For more information, call toll-free 800-451-8080 (In California, 800-824-7867).

SofTech Microsystems publishes software, too. Interested? Call our toll-free number or mail the coupon.

**SOFTech**  
**MICROSYSTEMS**

16875 West Bernardo Drive,  
San Diego, California 92127  
(619) 451-1230

MacAdvantage: UCSD Pascal is a trademark of SofTech Microsystems, Inc. UCSD Pascal is a registered trademark of the Regents of the University of California. Apple is a trademark of Apple Computers, Inc. Macintosh is a trademark licensed to Apple Computer, Inc.



CIRCLE 177 ON READER SERVICE CARD

Mail to:  
Customer Sales and Support, SofTech Microsystems, Inc.  
16875 W. Bernardo Drive, San Diego, CA 92127

YES. I want to create Macintosh programs that speak my language. Send me information on:  
 The MacAdvantage: UCSD Pascal    Designer Series  
 I'm interested in SofTech Microsystems publishing my software. Tell me more.

Name \_\_\_\_\_

Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_

Zip \_\_\_\_\_

Telephone (      )

|   |                                       |                                      |
|---|---------------------------------------|--------------------------------------|
| Area of activity:                             | <input type="checkbox"/> Retailer     | <input type="checkbox"/> Student     |
| <input type="checkbox"/> Commercial developer | <input type="checkbox"/> Educator     | <input type="checkbox"/> Other _____ |
| <input type="checkbox"/> Fortune 1000         | <input type="checkbox"/> Personal Use |                                      |

Also available for Macintosh: The Designer Series (FORTRAN-77, Assembler, Development Environment, etc.)

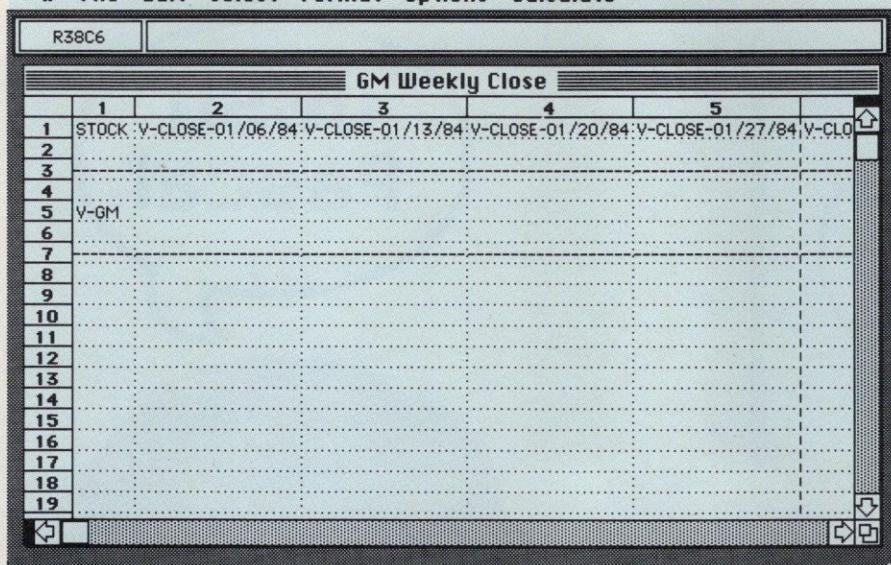


Figure 5: A Link template for GM's 1984 Friday close prices

Link template, double-click on the menu icon from your Link disk. You will see the menu as illustrated in figure 3. You can choose to go on-line with Straight Talk or Link, or you can choose to start Multiplan in order to design more templates. Click on Link from the menu. The program will ask you to choose a spreadsheet template. Double-click on Stock Portfolio. To save you on-line time with DJN/R, the Link has an editor built into it to check your template for accuracy of syntax before it calls the service for you. It is similar to a spelling checker. If an error is present, you can choose to let the Link program correct it for you with its dictionary of acceptable requests. Unfortunately, the errors the program corrects are not saved to the template on disk; you must correct them manually later and save the changes.

When the template is in good form, Link dials your access number, logs on to DJN/R, and automatically fetches all the information you requested with the codes in the template. Then it logs off and asks if you want to save the data. It saves the data under a name formed from the name of the template and the word *data* as a suffix. In our example, the data is automatically saved as a SYLK file called Stock Portfoliodata.

When you return to the Link menu, click on Multiplan and open the Stock Portfolio template. Now choose Open from the File menu and choose Stock Portfoliodata. The values retrieved from the service are put

into the template, and the formulas are automatically calculated to give you results similar to those shown in figure 4.

You can use the Link template whenever you want the current prices of these stocks from Dow Jones. Also available is a wealth of other information to help you make sophisticated investment decisions. You can even get information on insider trading on the stocks you are tracking.

## Linking with Chart

Professional traders use charts to help make investment decisions. The visual display of information a chart provides makes it easy to spot trends. You can use Link and Microsoft Chart to design your own charts so that you can track a wide range of values available from Dow Jones that are important for your analyses. Try the sample template in figure 5.

Here, Link is receiving instructions to get the Friday closings of General Motors stock for 1984. It takes ten minutes or so to type in the 52 dates, but once it's completed, you can use this template for any set of stocks.

The syntax for the historical quote of the closing price is *V-CLOSE-MM/DD/YY*. Don't forget to take advantage of the Fill Right command to help you duplicate the basic structure in the 52 cells. If you fill the top row of 52 cells, starting in column 2 with *V-CLOSE-01/06/84*, you will have to alter only four numbers for each cell. Don't forget to save the template as a SYLK file.

Follow these steps to create your chart:

- Open Link and choose your 1984 closing-price template. In about six minutes, the Friday closing prices for General Motors are pulled into your Mac.
- Choose Multiplan from the Dow

Figure 6: After you paste the Friday closing prices into the data list, choose the number 2 scatter chart.

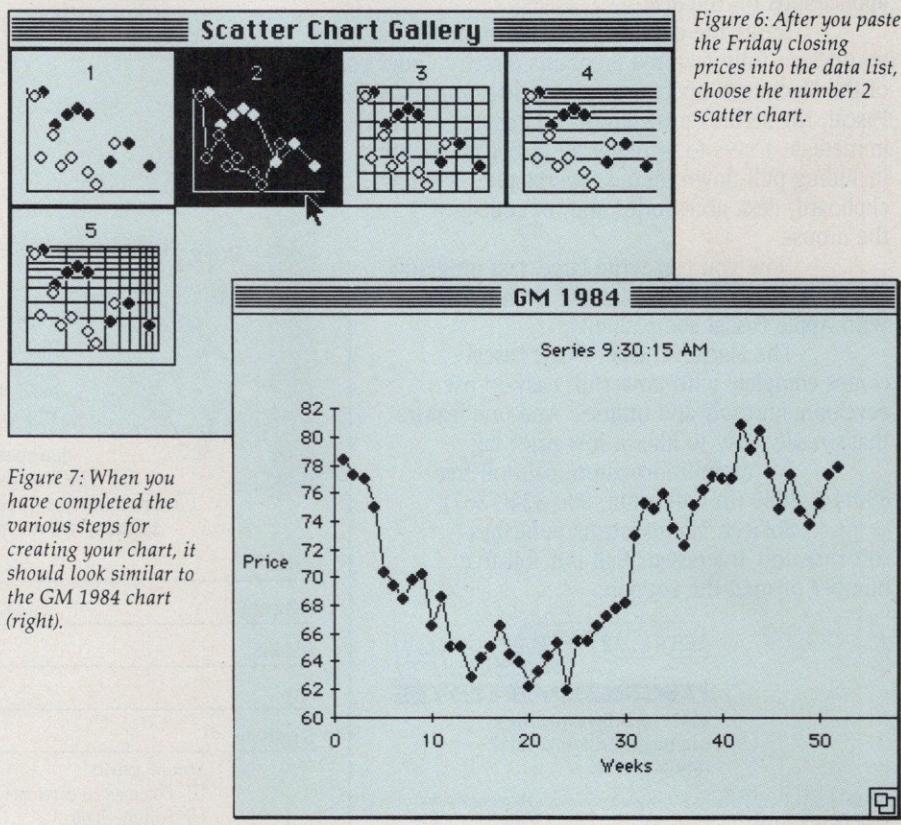


Figure 7: When you have completed the various steps for creating your chart, it should look similar to the GM 1984 chart (right).



VOLUME 1, NO. 6

1985

BOSTON MA. 02132

## MULTI-COLUMN TEXT AND MIXED GRAPHICS

MacPublisher transforms Apple acintosh into a text & graphics editing, layout, and page-layout system that produces multi-column newsletters, fliers, catalogs, ads, etc. Several MacPublisher articles (and pictures) can be on the desktop at the same time. Articles may be copied and carried over to other columns or pages. You may cut out one and paste into another.

The MiniPage is a "What You See What You Get" representation of full page layout. Articles on the dummy Page show as blocks, with numbers of lines & characters, and page, column jumps/continuations. You may photocopy or photo-offset Imagewriter printouts for very low-cost small-volume publishing. MacPublisher's output can also be printed on Apple's incredible new LaserWriter, or on Allied Linotype's new laser typesetter, giving you a range of print qualities from 72 to 600 dots per inch! All Macintosh fonts, Styles and Sizes may be set-ragged or justified, condensed or wide, and with the interline spacing (leading) adjusted to the pixel!

MacPublisher is an electronic publishing system - with editing, composition, and reproduction - under the control of your mouse, and it is "integrating software" that lets you combine your best work from all your Macintosh programs to a superb presentation format.

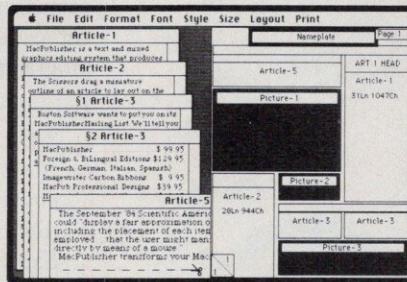
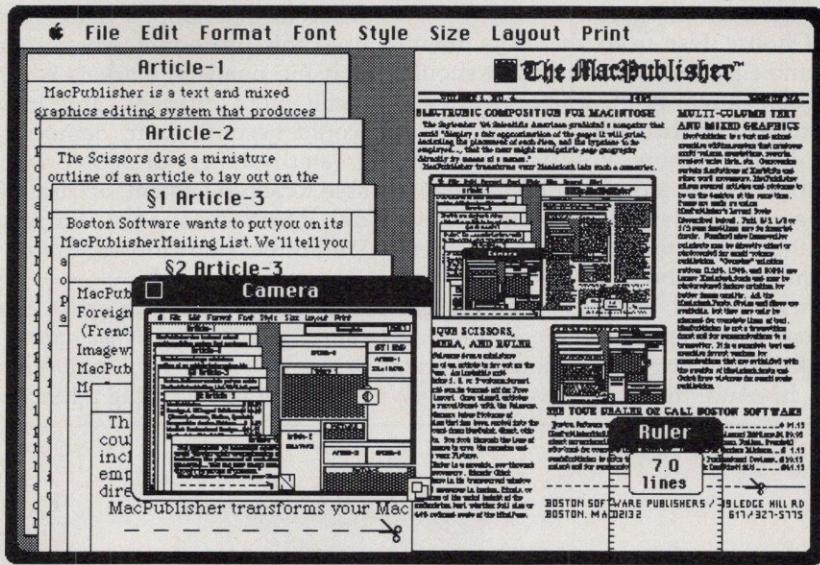
As a customer said, "MacPublisher is what I bought my Mac for!"

## ELECTRONIC PUBLISHING FOR MACINTOSH

"Apple Computer's new laser printer [makes it] possible for individuals with personal computers to become their own typesetters, using computers to lay out and then print pages containing both text and graphic illustrations...It's going to turn the entire [printing] industry upside down" ----- The New York Times

"MacPublisher, together with Macintosh and the LaserWriter... demonstrate the unique capabilities of MacOffice"---RELEASE 1.0

"We particularly like [MacPublisher's] integration of editing and page layout functions and the tools available to edit copy to fit a layout."----- Seybold Report on Publishing Systems



## THE LAYOUT TOOLS

The Scissors drag a miniature outline of an article to be laid out or repositioned on the MiniPage or Dummy Page. An invisible grid (1, 2, or 3-columns) can be turned off for Free Form layout.

The Camera can take a Picture of anything that has been copied into the Clipboard from MacPaint, MacVision, Thunderscan, clip art, etc. You use the Camera to size, crop the margins, and frame your Picture.

The Ruler is a see-through and movable desk accessory. Simply Click anywhere in its transparent window and it measures inches, cm, pixels, or lines of the point height of the underlying text. Click on the MiniPage, and it cuts the article to fit perfectly in the measured space.

MacPublisher runs on 128K or 512K Macintosh, and on Macintosh XL it has an extra-large MiniPage. This ad was produced with MacPublisher and printed on the insanely great Apple LaserWriter.

## SEE YOUR DEALER OR CALL BOSTON SOFTWARE

Boston Software wants to put you on its MacPublisher Mailing List. We'll tell you about our carbon ribbons to enhance the output of your Imagewriter, clip art for professional newsletters, and MacLock, an improved Mac security kit.

MacPublisher.....\$ 99.95  
Foreign & Bilingual Editions.....\$129.95  
{French, German, Italian, and Spanish}  
MacPublisher Designs.....\$39.95  
MacLock (antitheft kit).....\$49.95  
Imagewriter Carbon Ribbons.....\$9.95



BOSTON SOFTWARE PUBLISHERS  
BOSTON, MA 02132

19 LEDGE HILL ROAD  
617/ 327-5775

Jones menu and open your GM 1984 template.

- Open the GM 1984 data file to insert the values you retrieved from the service into the GM 1984 template.
- Choose the 52 values by clicking on row 4, column 2, and then shift-clicking on row 4, column 53.
- Choose Copy from the Edit menu to copy these values into the clipboard.
- Quit Multiplan and open Microsoft Chart without resetting the Macintosh.
- Choose Paste from Chart's Edit menu to paste the Friday closing prices into the data list.
- Choose the number 2 scatter chart, as shown in figure 6.
- Choose List from the Data menu and click on Plot. Your chart should look similar to the one in figure 7.

#### Utopian Nightmare?

Wait a minute. Will this approach move us toward the utopian nightmare of individuals punching keys rather than talking to each other? And what about reading the *Wall Street Journal* on the screen, rather than with the stain of fresh printer's ink on your fingers. Not too romantic, is it? And the topper is that Dow

Jones and Company, Inc., hasn't been able to get those hilarious *Wall Street Journal* cartoons to appear on the screen as you peruse IBM's earnings for the last quarter.



Still, your independence in making investment decisions will be worth it. When you are "connected" to the electronic stock ticker, with all the technical and fundamental information that you can access, your decisions will be more sound. Perhaps you are wondering what would happen if all investors used this procedure. My response is that the financial markets would become more efficient, and investing would become more democratic, as greater numbers of people would be able to access instant, accurate financial information. May the winds of Wall Street blow in your favor. +

Vahé Guzelimian is an artist, educator, consultant, and free-lance author based in Cardiff-by-the-Sea, California. He is the author of *Becoming a MacArtist*.

## PRODUCT INFORMATION

### Multiplan Version 1.02

Microsoft Corporation  
10700 Northup Way  
Bellevue, WA 98004  
(800) 426-9400

**List Price: \$195**

**CIRCLE 360 ON READER SERVICE CARD**

### Microsoft Chart

Microsoft Corporation  
10700 Northup Way  
Bellevue, WA 98004  
(800) 426-9400

**List Price: \$125**

**CIRCLE 361 ON READER SERVICE CARD**

### Dow Jones Straight Talk

Dow Jones and Company  
P.O. Box 300  
Princeton, NJ 08540  
(800) 257-5114

**List Price: \$79**

**CIRCLE 362 ON READER SERVICE CARD**

### Dow Jones Spreadsheet Link

Dow Jones and Company  
P.O. Box 300  
Princeton, NJ 08540  
(800) 257-5114

**List Price: \$249**

**CIRCLE 363 ON READER SERVICE CARD**



*The Prodigy Comes Of Age!*



ExperTelligence  
559 San Ysidro Rd.  
Santa Barbara, CA 93108  
(805) 969-7874

Macintosh is a trademark licensed to Apple Computer, Inc.

**CIRCLE 278 ON READER SERVICE CARD**

*ExperLogo for the Macintosh* is a powerful extension of the Logo computer language. ExperLogo excels as the patient tutor for those being introduced to computers for the first time, while at the same time it serves as a powerful development tool for the skilled programmer.

ExperLogo's innovative features include:

- 2-D, 3-D and Spherical Graphics
- Compiled Speed
- Powerful Data File Input/Output Capability
- Ability to Process Data Using Arrays
- Expanded Set of List Processing Primitives
- Friendly Mac-like User Interface
- Easy Access to the Macintosh Toolbox

Speed, combined with other advanced features that eliminate memory constraints and provide for sophisticated data file manipulation, are some of the reasons ExperLogo is now ready to assume the additional role as a serious program development language.

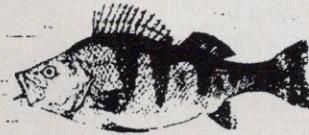
ExperLogo embodies power and versatility while retaining Logo's original virtues of being easy and fun to use. ExperLogo is available at your local computer dealer. Ask for a demonstration and see for yourself the amazing speed and capabilities.

Have an ExperLogo experience!

# MAGIC™

## VIDEO DIGITIZER

**MAGIC™ — Macintosh Graphics Input Controller**  
*The ultimate graphics digitizer*



### WOODWARD & LOTHROP

#### Technical Specifications:

The MAGIC unit is a microprocessor-based intelligent controller that transforms a selected portion of a video image into a serial bit stream which is sent to the Macintosh computer at 500,000 bits/second.

#### Video Input:

All known 2:1 Interlace 1.4 volt P-P composite video signals.

Acceptable sources include: Video Camera, Video Tape Recorders, Video Discs, and other Computers. Acceptable Signal Standards include: NTSC RS-170, PAL, SECAM.

#### Camera Specifications:

Horizontal Resolution: 550 dots. Vertical Resolution: 700 line. Light Range: 20,000 to 1. Lens Type: C-Mount 16mm f 1.6. Lens Mount Type: "C" Mount Type.

#### MAGIC without Camera includes:

- MAGIC unit with power transformer and Macintosh interface cable
- Software disk with MAGIC Application Program, HP Laser Program and sample pictures
- Instruction Manual

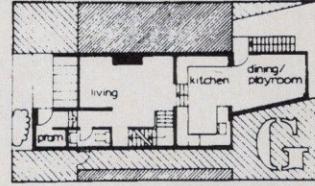
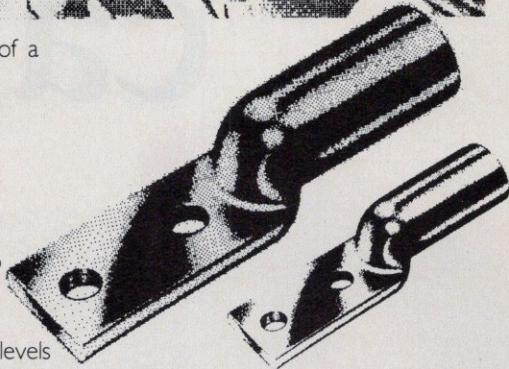
#### MAGIC with Camera includes:

- Everything in MAGIC without camera plus
- High resolution black and white video camera
- Camera interface cable

All pictures are unretouched as captured by the MAGIC video digitizer system. They were all printed by the Hewlett Packard HP2686A Laser Jet Printer.

#### MAGIC™ at a glance:

- Makes full screen black & white pictures in  $\frac{1}{3}$  of a second (512 x 342)
- Makes 100% MacPaint compatible files via the standard Save Dialog Box
- Two capture modes—Black & White and user selectable Pattern Mode
- Black & White Mode allows you to make high contrast line copies, outlines, and reverse video pictures
- Pattern Mode allows you to assign any of 38 different patterns to one of 256 different light levels
- Fast enough to allow you to focus the video camera right on the Macintosh screen (2.5 Images per Second)
- 100% mouse driven interface so there are no messy knobs or moving parts to wear out
- Runs from either the Modem or Printer Serial Port
- Connector on unit allows real-time monitoring of incoming video signal
- Precision  $\frac{1}{8}$ " graduated rulers to precisely size digitized images
- Ability to select any 512 x 342 area of the 768 x 480 incoming video signal for digitizing
- Displays MacPaint files full screen (512 x 342) in under 2 seconds
- Provides quick launch to MacPaint (without returning to Desktop)
- Comes with a utility program that allows you to print any MacPaint document at 75, 100, 150 or 300 dots per inch on the Hewlett Packard HP2686A LaserJet printer.



Color change—for instance, the use of a single hue in an achromatic

Here are just a few prominent companies and institutions who have purchased the amazing MAGIC™ video digitizer.

Apple Computer, Inc.

AT&T Bell Laboratories

Dow Jones

IBM Corporation

Wang Laboratories, Inc.

U.S. Library of Congress

3M Corporation

General Electric

Honeywell



**AT&T**  
 Information Systems

Logos captured by MAGIC

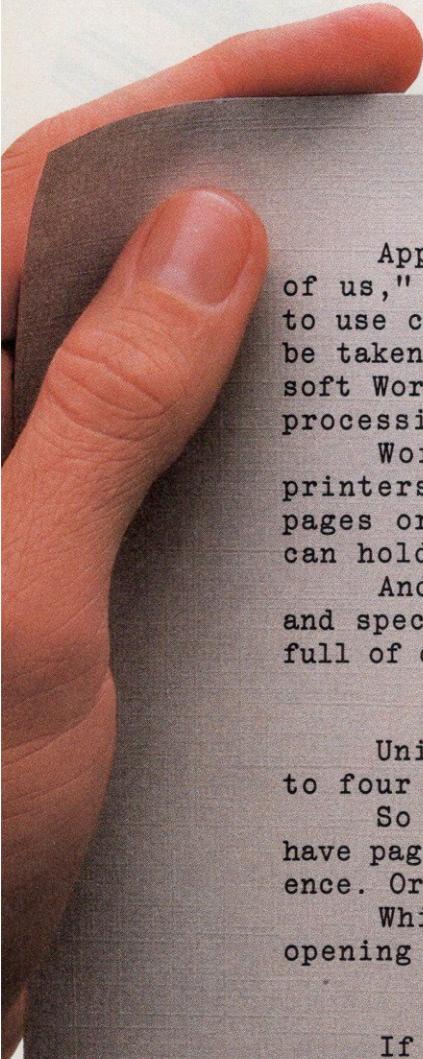
To order, call or write: New Image Technology, Inc.

Suite 104  
 10300 Greenbelt Road  
 Seabrook, MD 20706  
 301/464-3100

|  |          |
|--|----------|
| MAGIC with camera .....                                | \$549.00 |
| MAGIC without camera .....                             | \$399.00 |
| Micro Nikkor f2.8 55mm lens with C-mount adapter ..... | \$225.00 |
| Demonstration disk .....                               | \$ 9.95  |

Visa and MasterCard are accepted.  
 Maryland residents add 5% sales tax.

# Now the can do some



Apple's Macintosh, "the computer for the rest of us," is probably the most advanced and easiest to use computer on earth. But until now, Mac couldn't be taken seriously for word processing. Enter Microsoft Word for the Macintosh. Mac's professional word processing program.

Word runs the most popular letter quality printers. It doesn't limit your manuscripts to 10 pages or even 50 pages. Because one Word document can hold as many pages as you can fit on a disk.

And Word not only sets up footnotes, columns and special formats in a flash, it has a whole disk full of other features to make your writing go faster.

#### Word does windows.

Unique to Word is its ability to "window" up to four pieces of work on the screen at once.

So while you're typing one document, you can have pages from three others on the screen for reference. Or to cut and paste between documents quickly.

Which can save a lot of the time you'd spend opening and closing files.

#### Key phrases at a keystroke.

If you have a lot of stock paragraphs you use in your writing, Word's glossary feature puts them at the tip of your typing fingers. Just store the pieces of text you need and you can recall them instantly.

And if you want an alternative to mouse work, you can run your Mac the old fashioned way. Because Word gives you the option to execute commands from the keyboard.

By the way, you don't have to write off your MacWrite documents to convert to Word. It'll run them all right off the bat.

# rest of us serious writing.

## Reader-friendly form letters.

With Microsoft® Word, you also get a sophisticated "conditional" text merging feature that lets you make customized form letters and documents.

So instead of sending out 800 "Dear Client, we've moved" notices, you can mail a letter that will read like personal correspondence.

## Get the max out of Mac.

Microsoft Word has scores of features that have all been designed to take full advantage of Mac's easy operating style.

So you don't have to be a professional to use it.

Word is just one of a whole family of programs we've written for Apple's® Macintosh™.

Which means it can exchange data with Microsoft Multiplan®, Microsoft Chart, and Microsoft File. And because our programs work alike, if you learn one, you're well on your way to learning the rest.

**MICROSOFT**®  
The High Performance Software™ So as of now, you have everything you need to put Mac to work. Just give it the Word.

For the name of your nearest Microsoft dealer, call (800) 426-9400. In Washington State, Alaska, Hawaii and Canada, call (206) 828-8088.

Microsoft and Multiplan are registered trademarks and The High Performance Software is a trademark of Microsoft Corporation. Apple is a registered trademark and Macintosh is a trademark licensed to Apple Computer, Inc.

CIRCLE 320 ON READER SERVICE CARD



*An  
organizational  
tool  
with  
countless  
possible  
applications*

# Think Tank 512

**T**

hinkTank 512 is an outlining program that combines graphics, word-processing, and database elements. Using a series of headlines with many levels of subheads, you can organize your thoughts in a logical hierarchy, which you are then free to rearrange. It is a big improvement over its predecessor, ThinkTank 128.

ThinkTank 512 is advertised as an executive organizational tool, but it can be much more than that. You can put anything you need to organize and reorganize—a speech, a paper, a book, or a week's activities—into ThinkTank 512.

#### Working with Headlines

When you type a ThinkTank headline onto the screen, the program shows its "level"—subordination under another headline—by how far it is indented. A plus or minus sign precedes each headline, the former indicating that subheads are present, and the latter that the headline stands alone (see figure 1). You can turn a line of text into a subhead under a headline by moving it to the right. Command-R and Command-L give you movement to the right or left, respectively, and you have the alternative of dragging lines on the screen to the level of indentation you want.

So far, ThinkTank sounds like a word processor, but its first special touch is its "collapsible" and "expandable" headlines.

When you double-click on a head-

line, all its subheads disappear. With your outline's subheads collapsed, you can view the headlines alone—glance through the important points of a speech, for instance, without having to scroll through all the details as well. Double-clicking on a collapsed headline expands it, restoring its subheads. You can control headline collapse and expansion with a variety of mouse moves, keyboard controls, and menu selections.

Repositioning headlines within a document is simple, and, again, you have a choice of keyboard, mouse, or menu control. Holding the mouse button down puts a gray box around the selected headline and changes the cursor to an arrow (see figure 2). The selected headline remains stationary as you move the arrow to point to the

new location, and releasing the mouse button switches the headline and all its subheads to the new spot.

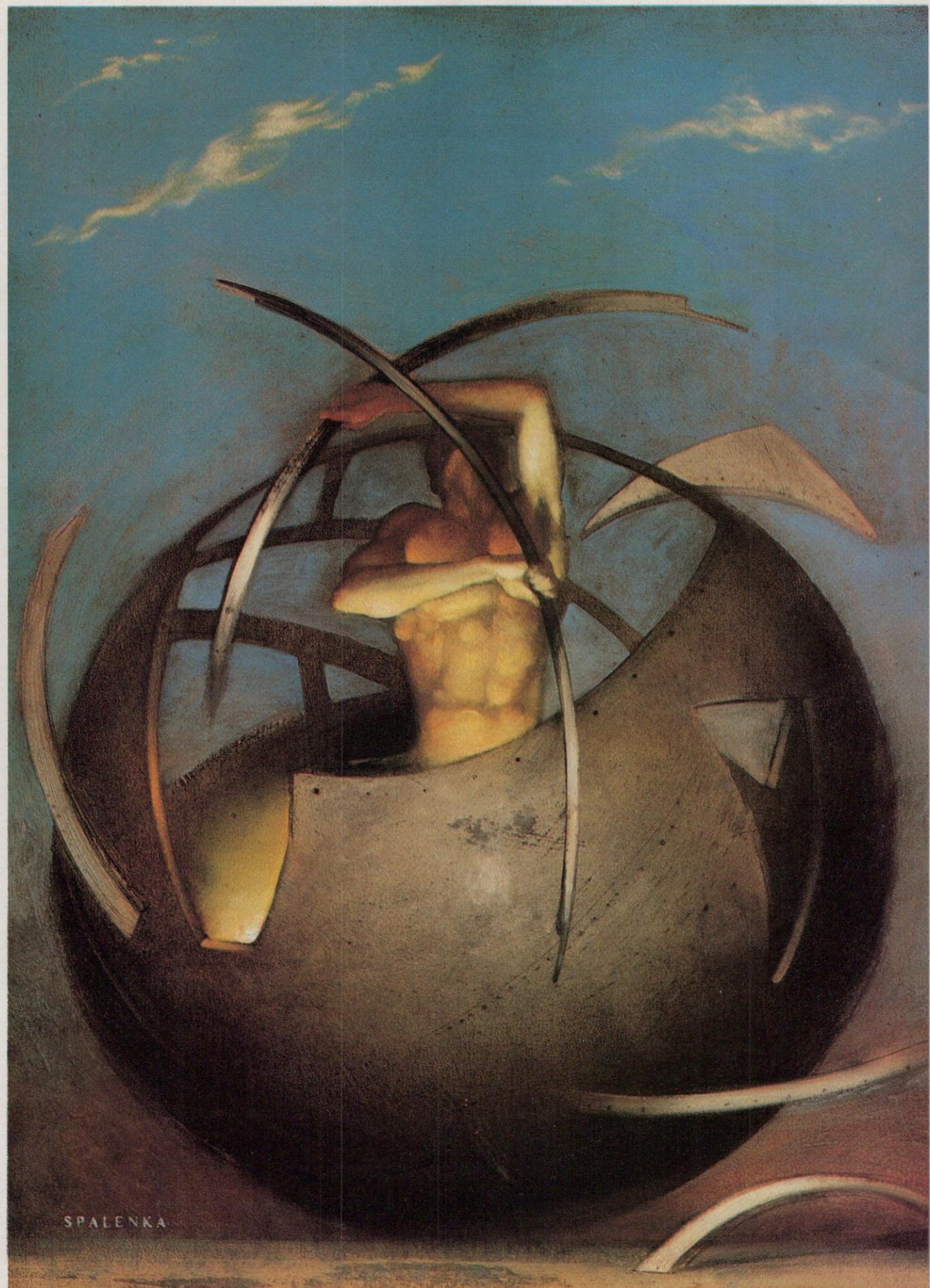
Another organizing option in ThinkTank is its Sort feature, which alphabetically sorts the subheads of any headline you select. (Choosing the main, or "summit," headline sorts the entire document.)

Standard editing techniques are not available in the headline window, but you don't need to do much besides backspace to correct the brief titles you use as headlines. The Cut and Copy features apply to an entire headline and all its subheads when you work in the main window. The program has a Search feature with a Replace option that can help in large editing chores.

**A**

document comprising only headlines can be helpful, but it is limiting. ThinkTank 512, unlike the 128K version, lets you open a window for any headline and enter text as you would with a word processor (see figure 3). You can also use a window for graphics.

The ThinkTank interface has been the object of some criticism because it is not the Macintosh standard. The ThinkTank main window has no title bar and no scroll controls—it is nothing, in fact, but a white rectangle sur-



SPALENKA

GREG SPALENKA

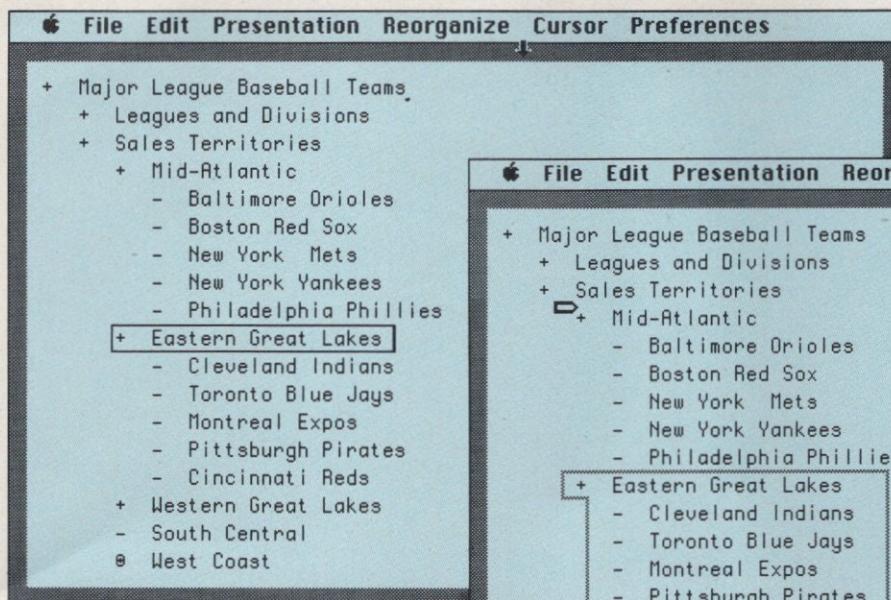


Figure 1: A ThinkTank outline: The headline *Leagues and Divisions* is collapsed; *Sales Territories* has been expanded, with two of its subheads also expanded. The headline *Eastern Great Lakes* is currently selected for editing. The plus and minus leader characters indicate whether or not a headline has subheads; a circle around the leader character, such as the one in front of *West Coast*, means a window is attached to the headline. The cursor in the gray scroll area becomes an arrow that indicates the direction in which the arrow will scroll.

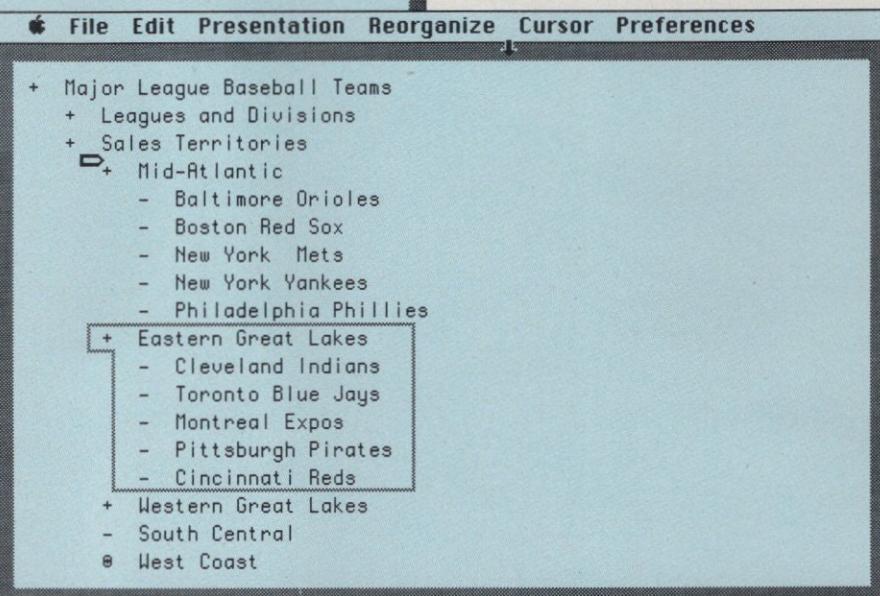


Figure 2: When you select a headline to move it, all its subheads are automatically selected as well. The mouse cursor changes to a block arrow. Here, the *Eastern Great Lakes* headline and its associated subheads are going to be shifted above *Mid-Atlantic*.

rounded by a gray border.

To scroll the ThinkTank window, you work in the gray edges. Clicking in the gray area above or below the window scrolls the text vertically, using the side areas scrolls the document horizontally, and clicking in the corner scrolls it diagonally. Diagonal scrolling is almost a necessity in ThinkTank, in which continually indented subheads go off the right side of the screen in no time.

The ThinkTank window is definitely nonstandard, but—I know this is Macintosh heresy—it is more intuitive than the normal procedure. I do miss the scroll box that lets me know what portion of the document I am working in, though. Also missing is the ability to go directly to a portion of your document by dragging the scroll box.

#### Text Windows

Double-clicking on any headline expands or collapses it, and clicking on its initial character opens a window for that headline. You can also use a keyboard sequence to open a window, and you can choose or change to a small window or a screen-sized one at any time.

The editing capabilities in a text

window are not those of a full-featured word processor, but they are more generous than those you have available for editing headlines, and they are adequate. A variety of cursor controls lets you move around in the text. Using the  $\#$  key and numbers, you can move by line or by page, or to the beginning or end of the text.

#### Graphics Windows

The window you open for any headline can contain graphics (see figure 4), and ThinkTank has an interesting system for importing graphics.

First, you must prepare a scrapbook of the graphics you want to incorporate. If you have the scrapbook on the ThinkTank disk, all you need to do is choose Paste Scrapbook from the Edit menu, and the program pastes the entire scrapbook into your document. The scrapbook pages—named PICT 1, PICT 2, and so on—appear as headlines, and you can move any of them to any part of your outline. Opening a window on the headline lets you view the graphic.

You can resize the graphics window by using a size box in the lower right corner; the size of the picture itself is unaffected, but the portion that you view changes.

In addition to being able to paste in graphics such as charts, floor plans, and graphs, you can use ThinkTank's special Slide Show feature to arrange an on-Mac demonstration.

The Slide Show flashes designated windows on the screen, one after another. You can preset the delay time in 60ths of a second or have the screen change when you click the mouse button. The headline that titles the "slide" can appear or not, as you choose, and you can select the Repeat option, which makes the show begin again after all the slides have been shown.

The Slide Show option works smoothly, but it pales in comparison to a dedicated graphics-presentation program such as the Slide Show Magician, so the best I can say about it is that it is nice.

#### Printing

Although I liked ThinkTank 128, its printing options disappointed me; ThinkTank 512, on the other hand, provides most of the options I want and a few I hadn't considered.

With ThinkTank 512, you can print an entire document or selected portions, and you can apply many options to the portion of the document

The fastest selling, highest quality case made for the Macintosh Computer.

# MacTote.™

PrintTote for  
Imagewriter  
coming soon!



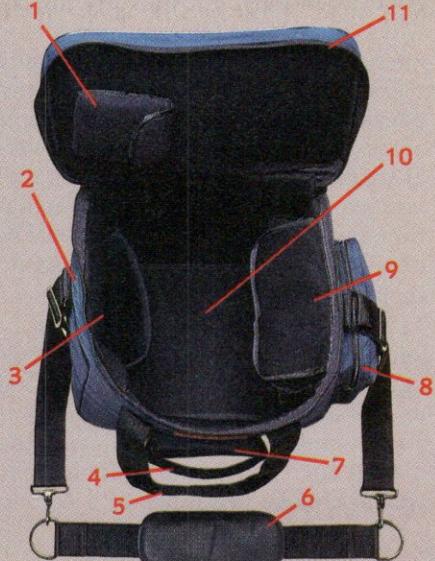
Now your Macintosh Computer can leave your home or office fully protected and in style.

The MacTote computer case is clearly the finest carrying case manufactured especially for your Macintosh Computer, and for a number of easy-to-see reasons:

1. Padded pouch for mouse;
2. Open pouch for manuals or notes;
3. Open, padded pouch for keyboard;
4. Side handle for easy carrying and stability;
5. Padded, Velcro handle (no snaps);
6. Padded, non-slip shoulder strap;
7. Velcro pouch for disks or accessories on side of case;
8. Zippered padded pouch for disk drive;
9. Padded pouch for accessories, modem, cords, etc., and extra padding to protect Macintosh's screen;
10. Reinforced bottom fully supports and distributes weight of Macintosh;
11. Heavy-duty nylon zippers.

Optimum Computer Luggage has extensive experience in making top-of-the-line totes and accessories and

MacTote is the latest in a long line of beautiful and functional luggage. Made



of long-wearing and completely water-resistant Cordura, MacTote gives you every feature you'll ever need for carrying your Macintosh and peripherals.

Another attractive feature is MacTote's low price, which makes it even easier to pick up and carry away.

Call our 800 number today for the dealer nearest you so you can get a MacTote for your Macintosh.

Who says you can't take it with you?

Call (800)447-0300  
Or in CA TOLL FREE (800)632-4200.

## OPTIMUM COMPUTER LUGGAGE

*The Finest Quality  
Doesn't Have To Cost More.*

9005 Complex Drive  
San Diego, CA 92123

Macintosh is a trademark licensed to Apple Computer, Inc.

MacTote is a trademark of Optimum Computer Luggage

CIRCLE 176 ON READER SERVICE CARD

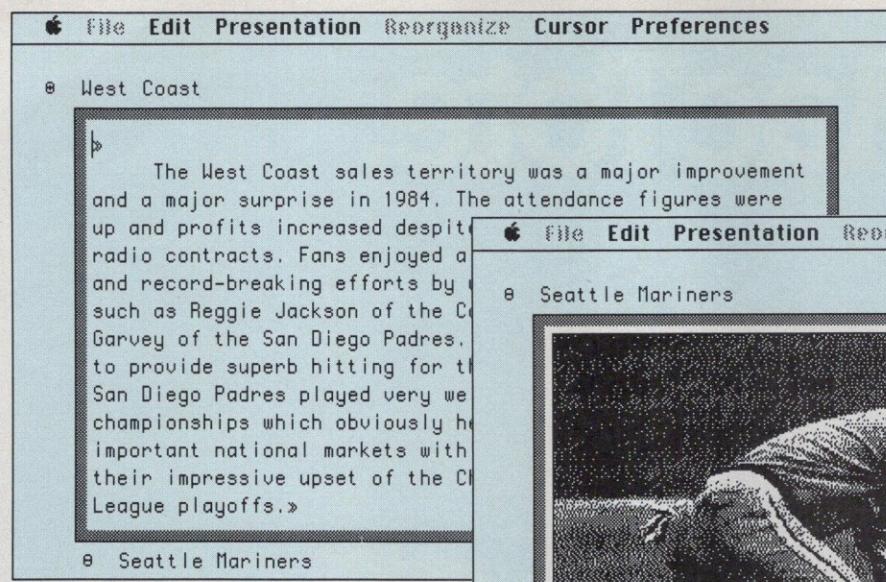
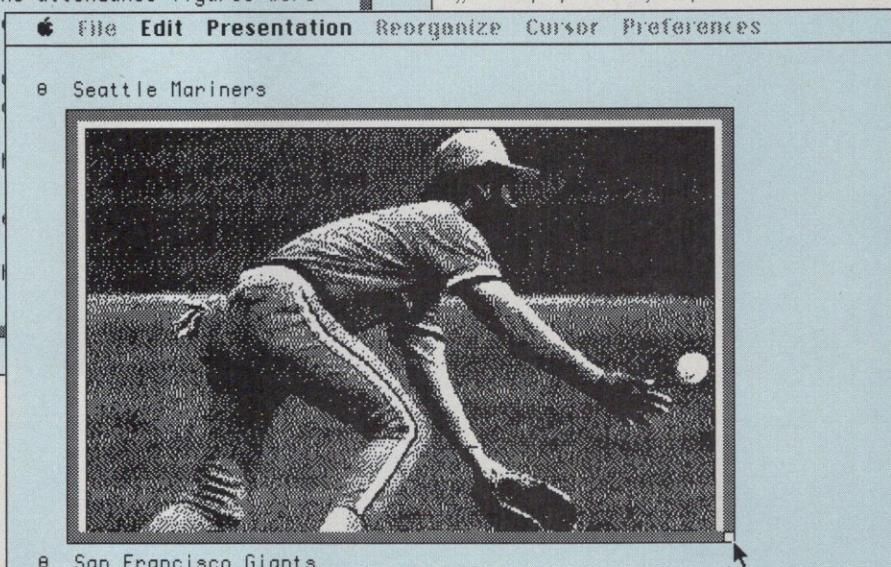


Figure 3: You can open a text window for any headline, but you can scroll and resize it only vertically.



you choose to print.

First, you can decide how many levels of your outline to print—only the main ones, main plus one sub-head level, and so on. You can also specify how many levels will print in boldface. You can separately define the level to which your windows should print. So, you can have many combinations: headlines only, windows only, headlines and windows to the third level, and so forth.

If you choose to include a header or footer, it will consist of the date, the main headline, and the page number. Also available are a choice of single-, double-, or triple-spacing; numbering of headlines; the standard Mac print-quality options; and a separate table of contents.

### The Word-Processing Link

You can move items from ThinkTank to MacWrite or Word by copying them onto the clipboard, and, although this technique is not covered in the documentation, you can use the clipboard to move things *into* ThinkTank as well as open ThinkTank outlines directly from within either of the word processors.

Copying an outline (or a portion of the outline) onto the clipboard and then pasting it into a word-processing program leaves you with a list of headlines preceded by plus and minus signs, but they are all aligned at the left, with no indentations for the various levels. Opening a ThinkTank outline directly from within a word-processing program leaves you with left-aligned headlines that are preceded by such comments as .HEAD 1 + or .HEAD 4 -. Again, the levels

have no indentations.

Either way, you must do a lot of searching and replacing to get rid of the leader characters. At least you can kill two birds with one stone and insert spaces, arrows, bullets, or whatever, to format each headline the way you want it, as you remove the unwanted characters.

Working in reverse, you can use the clipboard to move a list of words or phrases into ThinkTank; if the elements are separated by carriage returns, the first one will be treated as a major headline and the rest as its sub-heads.

### Documentation

ThinkTank's documentation has good intentions, but they are not always carried out. Obviously modeled after Apple's manuals, it is visually pleasing, with brief sentences and pages divided vertically into topic areas. It falls short, however, in several areas. It isn't missing anything that you won't learn from experimentation, but experimenting should not be necessary with a quality program such as this.

Many of the documentation problems involve inconsistent terminology. What has been *windows* all along in the text suddenly becomes *paragraphs* in both the manual and the dialog box. When the manual tells you to choose headlines to a certain

level, it leaves you wondering if the summit headline counts as a level or not. It notes that you can have the headlines numbered, but it does not describe the numbering system.

You won't find any mention in the manual of how to use ThinkTank with another program—either putting ThinkTank files into a word processor or reversing the process.

### Backups and Upgrades

ThinkTank 512's copy protection is one of the standard Macintosh protection methods: If you use a copy of the master disk, the computer will still ask you to insert the master when you start the program. This approach limits your ability to use a hard-disk drive fully to organize your software library. You can get a second master disk if you send the registration card to Living Videotext—the master backup is free.

If you have upgraded your Mac to 512K and also want to upgrade your ThinkTank 128, you can send your 128 disk and \$100 to Living Videotext, and the company will send the new version.

If you are not upgrading your Mac, you may be curious about how ThinkTank 128 compares to its successor. The 128 version lacks text and graphics windows, and it has fewer optional keyboard commands. It offers no printing options—any head-

# JUST ARRIVED!

# The first complete desk management program for the Mac.

It's here! A powerful software program featuring dynamic storage/retrieval capabilities for your Mac. It's called THE DESK ORGANIZER®. And it's ready to help you organize yourself, your work, you name it.

At the core of THE DESK ORGANIZER is a *free-form filing system* that files anything you want, just by typing it. Notes. Letters. Reports. Phone numbers. Names and addresses. And you can retrieve or update at any time.

Surrounding this system are easy-to-use tools that add a new dimension to your Mac:

THE DESK ORGANIZER's extensive *correspondence facility* replaces Mac's limited notepad. Its *calculator* adds an electronic paper tape—and a powerful formula calculator (the Mac has neither). And THE DESK ORGANIZER offers *unlimited alarms* that chime gently to remind you of meetings. Plus a *telephone dialer* that automatically searches files, locates the proper number and connects you.

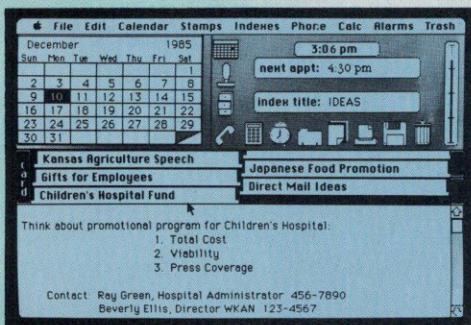
What's more, THE DESK ORGANIZER increases the filing capacity of the Mac—by storing hundreds of Mac notes and letters on a single diskette.

Born to run on the Mac, THE DESK ORGANIZER can *co-reside with other Mac programs*—to keep you completely organized no matter what you're working on.

To get this infallible electronic secretary for **only \$99**, see your Mac software dealer.

**OR CALL WARNER SOFTWARE (212) 484-3070.**

Warner Software, Inc., 666 Fifth Ave., New York, NY 10103  
A Warner Communications Company

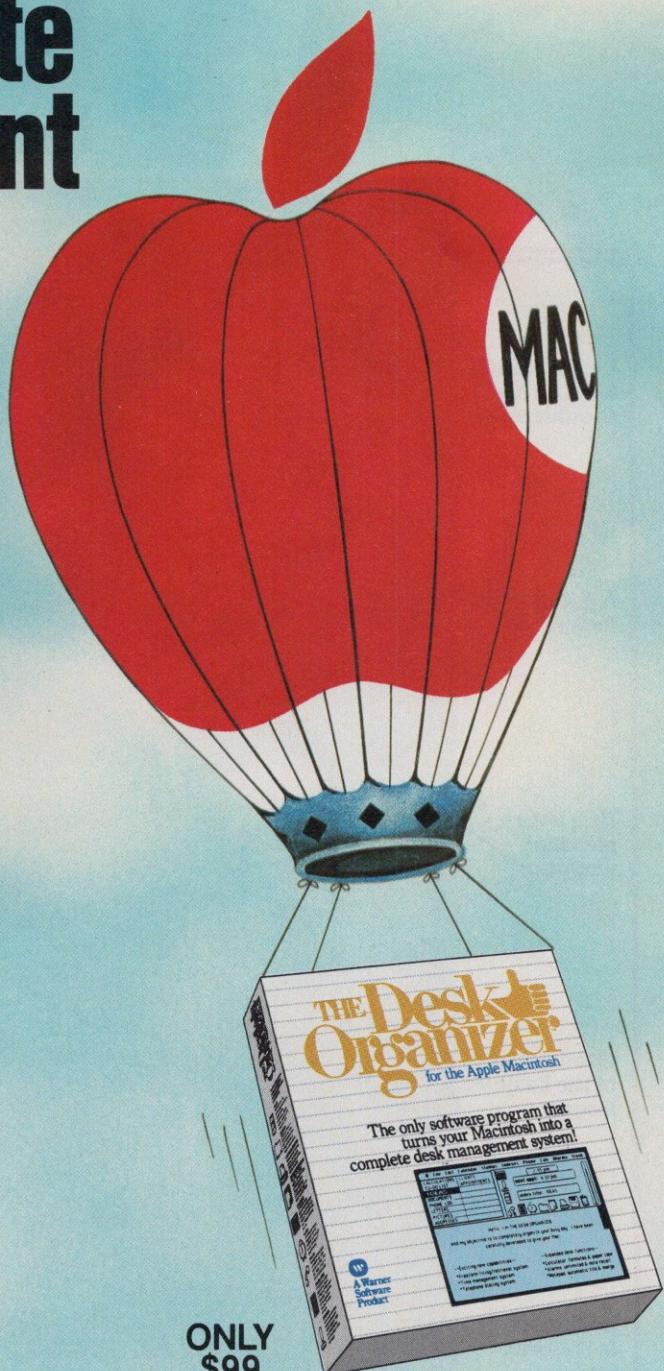


**INCLUDED FREE:** 25 business form letters and a library of useful formulas. Runs on 128K and 512K Macs.

**Truly a major software breakthrough!**

Macintosh® is a registered trademark of Apple Computer, Inc. The Desk Organizer® is a registered trademark of Conceptual Instruments Company.

CIRCLE 193 ON READER SERVICE CARD



# What do your re

## Introducing Ensemble.™ Now

He has a good head on his shoulders.

A good listener.

He's a very pleasant person.

Good grasp of the basic issues.

He has his feet firmly planted on the ground.

He's got a mind like a steel trap.

Tremendous analytical abilities.

He's dynamic.

A first rate problem-solver.

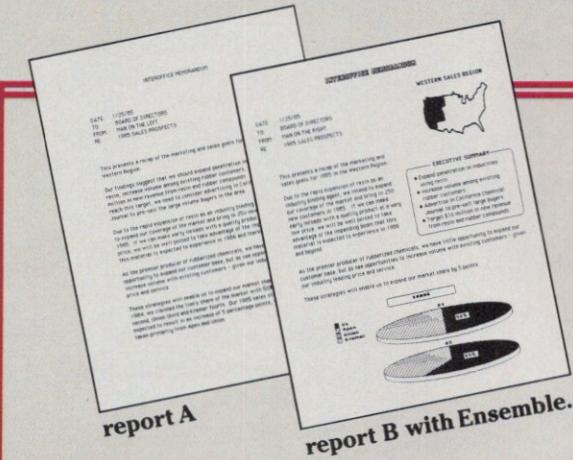
This guy is going places. Fast!

Executive with report A

Executive with report B done with Ensemble.

# ports reveal about you?

## You Can Dress Your Reports For Success.



Which report would you rather submit? Report B, submitted by the executive on the right was prepared with Ensemble. It integrates text, numbers and graphics. It's more interesting. It's more persuasive. And it's more impressive.

**E**very tool you need to generate impressive business reports is on a single Ensemble software disk. Ensemble is the first fully integrated business software package for the Macintosh.<sup>TM</sup>

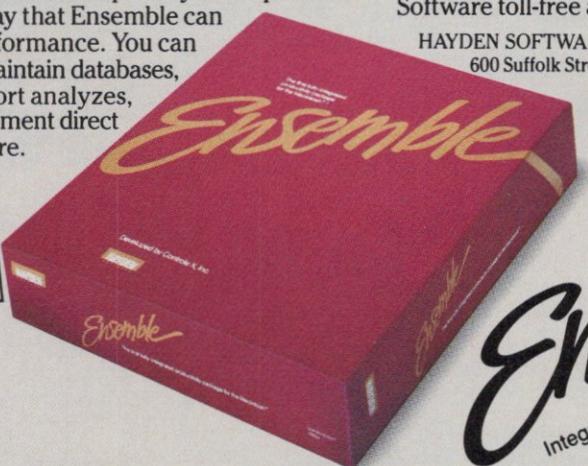
Ensemble combines Word Processing, Database Management, Report & Form Design, Calculations and Graphics in one very powerful and productive program.

It's all here—everything you need to merge text, numbers and graphics in your reports.

For example, with Ensemble you could draft an analysis of market trends; support your findings by inserting a spreadsheet, illustrate a critical comparison with a bar graph; highlight your conclusions by creating a border of stars around them and dramatize your recommendation with artwork you design especially for the report with MacPaint.<sup>TM</sup>

Ensemble's Report Creation capability is unique. But, it's not the only way that Ensemble can help improve your performance. You can also use Ensemble to maintain databases, conduct decision support analyzes, design brochures, implement direct mail programs and more.

RUNS IN  
128K AND 512K

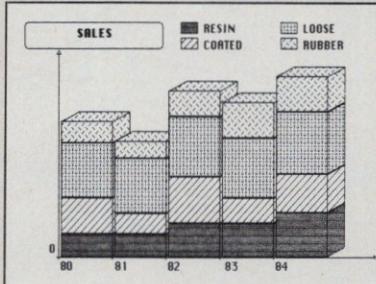


Best of all, Ensemble is as easy to use as your favorite personal computer. Ensemble was developed with you and your Macintosh in mind. It takes full advantage of the Macintosh User Interface, features a remarkably fluid operating style, and is compatible with MacWrite<sup>TM</sup> and MacPaint.

You can design your own "customized" spreadsheet formats with Ensemble. And a variety of calculation options are available including: all arithmetic, logical and comparative functions.

| PROFIT ANALYSIS |      | % of Net      |      |
|-----------------|------|---------------|------|
|                 |      | Cost of Goods | 0.25 |
|                 |      | Expenses      | 0.45 |
| Net Sales       | Q1   | Q2            | Q3   |
| 5000            | 3000 | 3000          | 7000 |
| Cost of Goods   | 1250 | 750           | 750  |
|                 | 1250 | 750           | 750  |
| Expenses        | 2250 | 1350          | 1350 |
|                 | 2250 | 1350          | 1350 |
| Profit          | 1500 | 900           | 900  |
|                 | Q4   | Total         |      |
|                 | 2100 | 5400          |      |

Now you can easily create handsome two and three-dimensional business graphics with a sweep and a click of your mouse. Ensemble provides bar graphs, line graphs, pie charts, a time line graph and a scatter chart.



Thousands of business reports are prepared every day. Most are submitted for approval. Some are read. A few are discussed. Only a handful are remembered.

You can make a lasting impression with Ensemble. See your local software dealer today. Or call Hayden Software toll-free at 800-343-1218.

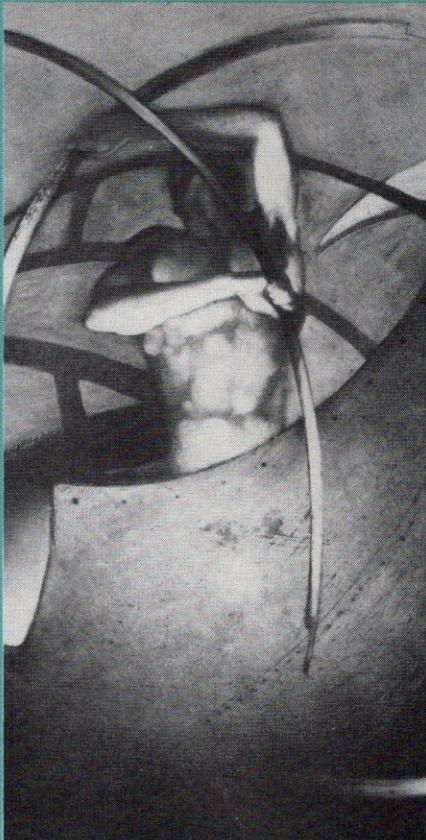
HAYDEN SOFTWARE COMPANY, INC.  
600 Suffolk Street, Lowell MA 01854 (617) 937-0200

**HAYDEN**  
SOFTWARE

*Ensemble*  
Integrated software that makes you look good.

**T**hinking of ThinkTank as just an outliner can inhibit your use of the program. You'll be surprised at what you can do with "just" an outliner, with a little imagination. Although I didn't do all of these things in one day, I did every one of them recently—and I've hardly made use yet of ThinkTank 512's windows, so you could do all this with the 128 version, too. Read through this list, and then imagine what you might be able to do with ThinkTank.

- Outline a book: A book proposal takes a lot of work, and the foundation is the book outline. Making revisions is an easy matter, both during the initial proposal stage and later as you write the book.
- Outline a seminar: I've actually outlined two seminars, one to introduce noncomputerists to the Mac and another for new Mac owners. It was like outlining a speech, with notes to myself along the way about what programs I would demonstrate, whom I still needed to contact about the demo machines, and so on. If I were a teacher, I would find lesson plans easier to arrange with ThinkTank than in my plan book.
- Outline an article. This type of project—similar to outlining a book, but on a smaller scale—is familiar to me. If I were in school—on the student end of things—I'd organize term papers this way; in business, reports would benefit from a finely tuned outline.
- Arrange a database: Confronted with a database-management program that didn't take kindly to the addition or renaming of fields, and some complicated data that had to be pulled into some sort of order, I used ThinkTank to set up the field categories and renamed and rearranged them. Then I used the database program, knowing I had the right setup to start with.
- Alphabetize a list of words: My Word document had a list of more than 100 BASIC reserved words



## *A Day in the Life of a ThinkTanker*

listed in order of appearance in a book; I needed them listed in alphabetical order. It was simple to use the clipboard to move the list to ThinkTank, sort the words, and open the sorted outline when I was back in Word.

- Index a book: Indexing the page proofs of a book is normally no easy task, but with ThinkTank it was a breeze. As I read through the book, I typed in each word I wanted to appear in the index, followed by its page number. Subcategories (such as "Arrays, numeric") were easy to arrange as subheads. An overall alphabetical sort arranged the items and made duplicates easy to find and fix ("pixels, 18" and "pixels, 37" became "pixels, 18,37"). Select-

ing categories such as Arrays and choosing the Sort option again arranged all the subcategories alphabetically.

One of ThinkTank's most useful applications, setting up and maintaining a calendar, is perhaps its least obvious one, and it is so versatile I'm not sure what to call it.

I begin with main headings of Days and Categories; under the first come the days of the week, and under the second come the divisions of Work, Home, and Misc.

Work is easy to divide into the subcategories of my computer-related work: Books, Magazine Articles, Seminars. Each has its own subdivisions, such as a list of the magazines I write for, further broken down into current article assignments, and so on. The Home category is a to-do list of odds and ends—my son's gymnastics classes, a doctor's appointment, a note to call the cable company. Misc. is just that—social engagements, users' group meetings, and so on.

I break each category down into its detailed components and open windows where necessary for a lot of text, usually in the Work category when I think of some information I want to put in an article.

When I have typed in all my current commitments and goals, I choose headlines from the Category half of the outline and copy them. Then I paste them into the first half of my outline, under the appropriate day. By the time I'm finished, I have Work, Home, and Misc. categories under every day of the week.

Such an outline takes less time to set up than you would expect, and it is a cinch to update. If I don't get all my Monday things done, I drag them down to Tuesday; when I've attended to an item, on the other hand, I can cut it out of the outline.

I printed out this outline once—I knew I was a busy person, but I never knew just *how* busy until I saw everything in print.

If you're a busy person, you can make use of ThinkTank, too.

line you choose will have all its subheads printed, to all levels, in standard-quality print. The 128 version is still a versatile program, however. All the activities I describe in "A Day in the Life of a ThinkTanker," which accompanies this article, are possible with the 128 edition.

#### What's Missing?

ThinkTank 512 is wonderful, but it's not perfect. Of the few minor problems in this first release, only one will cause you concern: You cannot print double-spaced text. Choosing double-space gets you triple-spaced printouts, and choosing triple-space results in quadruple-spaced text.

ThinkTank 512 has more run-time on my Mac than any other application except Microsoft Word—as a writer, I can't use anything more often than a word processor. ThinkTank 512 runs a close second, though, and I give it heavy use as a basic outliner and an all-round organizer.

This program deserves rave reviews. It is useful, versatile, and deceptively easy to use. In addition to the ingenuity of the overall concept and its excellence in practice, one of its finer points also deserves praise: You can avail yourself of almost every feature in three different ways—by mouse, keyboard command, or menu selection.

Being a RAM-resident program, ThinkTank 512 is extremely fast, and the amount of available memory does not limit it, as it did the 128K version. Along with providing extra features, 512 lets you have up to 3200 headlines in your document, an outline as large as 270K, and text windows that can each contain up to 32K.

ThinkTank 512 may push me to my limit of computing power, but I don't think I'll be able to return the compliment. +

*Sharon Aker is a free-lance journalist specializing in Macintosh applications. Her books include the recent MacPack from Ashton-Tate and the forthcoming Microsoft BASIC on the Mac from Scott, Foresman.*

#### PRODUCT INFORMATION

##### ThinkTank 512

Living Videotext  
2432 Charleston Road  
Mountain View, CA 94943  
(415) 964-6300

**List Price:** \$245

**Requires:** Macintosh 512K

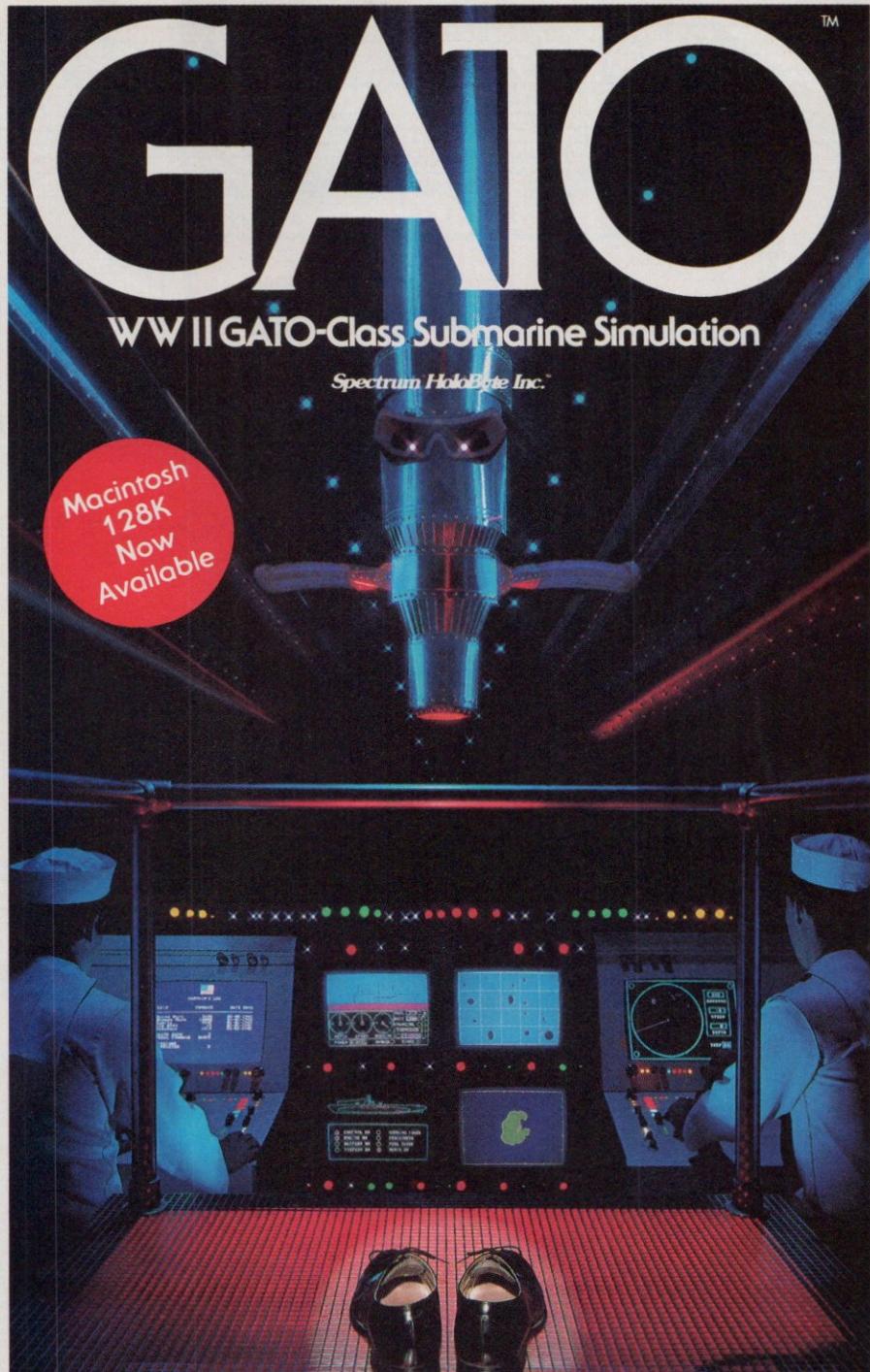
CIRCLE 365 ON READER SERVICE CARD

# GATO™

WW II GATO-Class Submarine Simulation

Spectrum Holobyte Inc.

Macintosh 128K Now Available



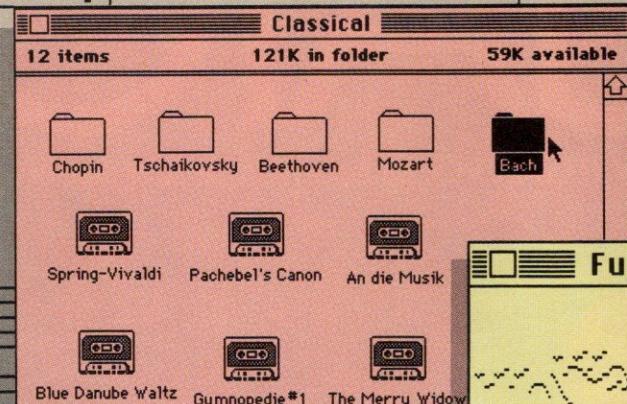
Now YOU step in!



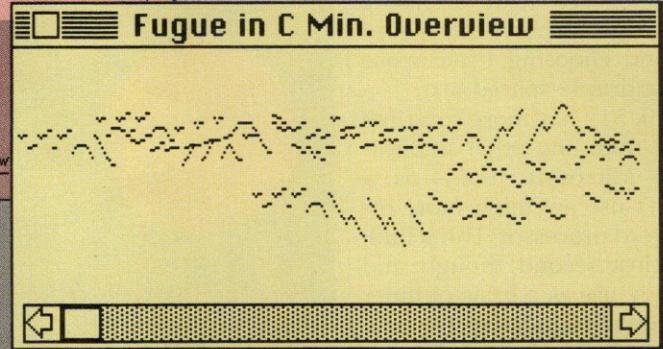
IBM PC Series (Inc. PCjr)  
128K RAM  
One Double-Sided Disk Drive  
COLOR Graphics Adapter  
Graphics Monitor  
(RGB recommended)

Apple IIe and IIc  
128K RAM  
One Single-Sided Disk Drive  
Joystick Optional  
(64K, 80 Column Cards  
available for \$179.95)

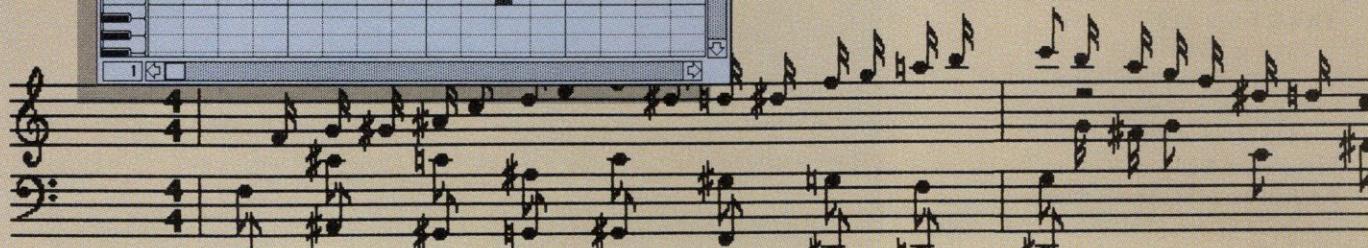
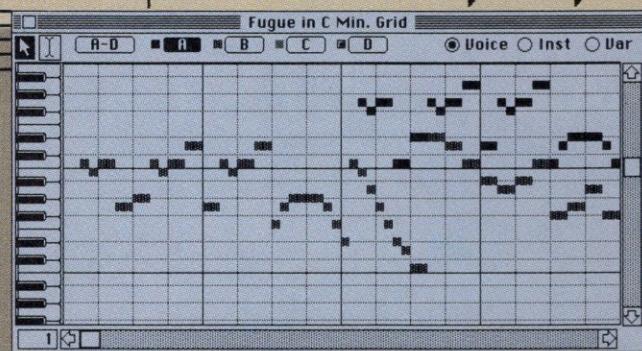
SPECTRUM HOLOBYTE, INC., 1050 Walnut, Suite 325, Boulder, CO 80302 (303) 443-0191. Check your local computer store or wherever software products are sold. Dealer Inquiries call: (800) 621-8385 x262. Written by Paul Arton and Ed Dawson. IBM and Apple are registered trademarks of International Business Machines Corp. and Apple Computer, Inc. respectively.



"Fugue in C Minor," one of MusicWork's many prerecorded melodies, has been selected from the Bach folder (above). As the music plays, you can view the music through three windows: a conventional staff, an overview (right), or a special grid (below).



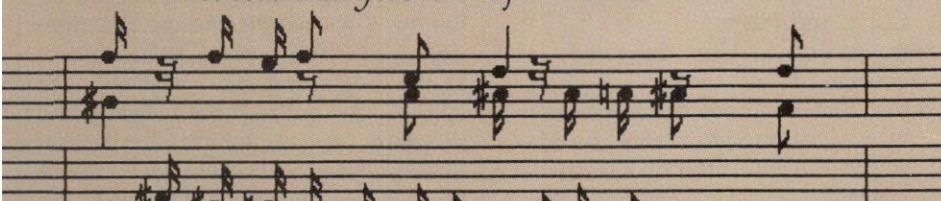
# Music





SOFTWARE/BY GREG STONE

*It was  
love at first sound  
with Hayden Software's*



# Works



**W**

hen I walked into my local computer store and found MusicWorks running on a Mac, it was love at first sound. Out came my wallet, and I went home \$80 poorer, but rich in the spirit of excitement that had brought me to the Mac in the first place.

Here was a simple program for composing, arranging, and transcribing music and listening to the results. It was hardly the kind of full-blown music system covered in "Opening Musical Vistas," in the November 1984 *A+* (pages 50-59), but then, it didn't carry the price tag of one of those systems.

The program gives you

- More than 40 musical selections to listen to or modify
- Three methods to see your music—an overview window, a conventional staff, and a special grid
- Four voices, a composing range of eight octaves, eight different instruments, and 12 ways to play them
- Sheet music printouts of individual voices or entire scores
- The ability to play an entire song, repeat a song or specific sections, and listen while you compose or edit

An ability to read sheet music is certainly helpful in using the program, but hardly necessary. Anyone can simply copy music into the program from a published score and then play it, making simple modifications, such as having one instrument play all four voices or using different instruments for different sections and voices. (The program has a keyboard-like grid system for composition without conventional notation.)

#### Keying Up

To copy a song from a book or sheet music, you open the MusicWorks icon and select Staff from the Windows menu (see facing page). You are presented with standard treble and bass staves, all blank, of course. Choose Meter from the Windows menu and set the time to match the piece you're copying. Similarly, choose Key Signature from the Windows menu and set the key. (If you don't know the keys by their letter designations, just experiment until the sharps or flats at the start of the staff on the screen match the sharps and flats at the start of the piece you're copying.) Click on the A but-

ton to indicate you are about to put in a note for the first voice.

From there, MusicWorks is like a musical version of MacPaint. You point to a note you desire, click on it, move the pointer to the correct location on the staff, and click again. You can erase or reposition the note. You place appropriate rests, sharps, flats, or naturals on the staff in a similar manner. If, at any point, you want to hear what you have put on the staff, just click on the Play button on the control panel.

I had great fun with these steps alone and gained a larger appreciation for music in the process. Two reasons for this increased appreciation were the ability to hear what I'd just "written," and the ability to hear any one or more of the four voices I'd selected. I found myself listening first to the melody and then going back and listening to one or more of the other voices. (You can select the third voice, for example, and also highlight that voice alone on the musical staff.) Finally, I put it all together and really heard the piece for the first time, for my ears were now much more sensitive to all that was happening musically, rather than being focused on one portion of the music.

Changing instruments for portions of music is also enjoyable. The differences here are sometimes subtle, but you can create the changes so quickly that comparing instruments is simple. The program comes with eight instruments, but you can create your own unusual sounds with the two synthesizers provided, simply by drawing wave forms.

Two other windows provide visual representations of the music. One is an Overview window, which looks

like a flattened drum of a music box (see page 112). The staff shows only a few measures of music at a time and must be manually scrolled, which you can do while the music is playing. The overview shows much more, and you can jump on the staff to any portion displayed on the overview, by pointing to that portion and double-clicking. Using the two views in this way is useful for following the general course of the music, and then checking on a specific section.

Finally, you can also use the third window, the "grid," for writing music (see page 112). In fact, anything you write on the staff also appears on the grid, and vice versa. The grid resembles a keyboard and provides another way to represent the length and pitch of notes.

MusicWorks also gives you

- editing features that include Cut, Copy, and Paste
- the ability to alter the tempo and volume of your music
- the chance to hook the Mac to a hi-fi by way of one wire from the Mac's sound output to the hi-fi's auxiliary input
- the option of transposing any music you copy into MusicWorks merely by selecting a new key from the key signature's dialog box
- the ability to apply any of 12 variations to the way a note or group of notes is played
- the ability to move any note or any group of notes up or down in half steps or complete octaves by simply selecting a menu item or by

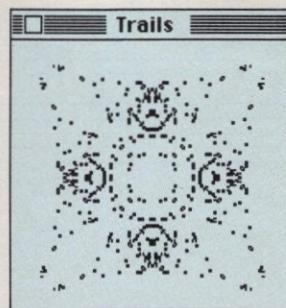


Figure 2: Trails doodling screen

typing a command-key sequence

- the option of flipping a selected group of notes on its vertical or horizontal axis

You can see that MusicWorks is plenty of program for the money. The program is smart—it won't let you put too many notes in a measure, for example—and it takes full advantage of the Mac's user interface. The programmers have a sense of humor—be sure to check out the volume-control box on the control panel (see figure 1)—and they have provided some pleasant surprises. A little doodling screen called Trails, for instance, is a new desk accessory that's great to play with while you listen to the music (see figure 2).

Don't expect miracles, though. A few aspects of MusicWorks could be better. It would be nice, for example, to hear an individual note as it was placed on the staff. It also would be handy if you could change the time signature within a piece. (It's set once, at the beginning, and any changes apply to the entire piece.) Finally, the program has a length limit that makes it fine for the average song but limits longer work. In 4/4 time, the limit is 64 measures. From a playback standpoint, I would appreciate a way to chain selections together to simulate a long-playing record performing several selections in sequence.

Of course, serious musicians would want more—musical keyboard input, eight voices, and a greater range, for instance—and these features will undoubtedly show up eventually, but with a higher price tag. If your interests are more casual, though, you'll find MusicWorks well worth the investment. +

*Greg Stone is a free-lance writer and director of community relations at Southeastern Massachusetts University. He has contributed to numerous science and computer magazines.*

## PRODUCT INFORMATION

### MusicWorks

Hayden Software Company  
600 Suffolk Street  
Lowell, MA 01854  
(617) 937-0200

**List Price:** \$79.95  
**Requires:** Macintosh, 128K RAM

CIRCLE 489 ON READER SERVICE CARD

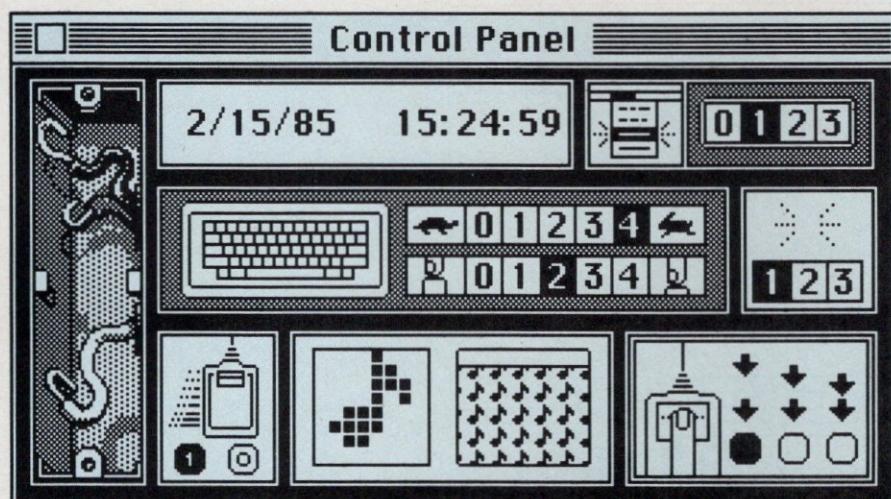


Figure 1: The MusicWorks control panel

# The most BASIC.

Microsoft® BASIC is the language spoken by nine out of ten microcomputers worldwide. It's the language with the most programs written for it.

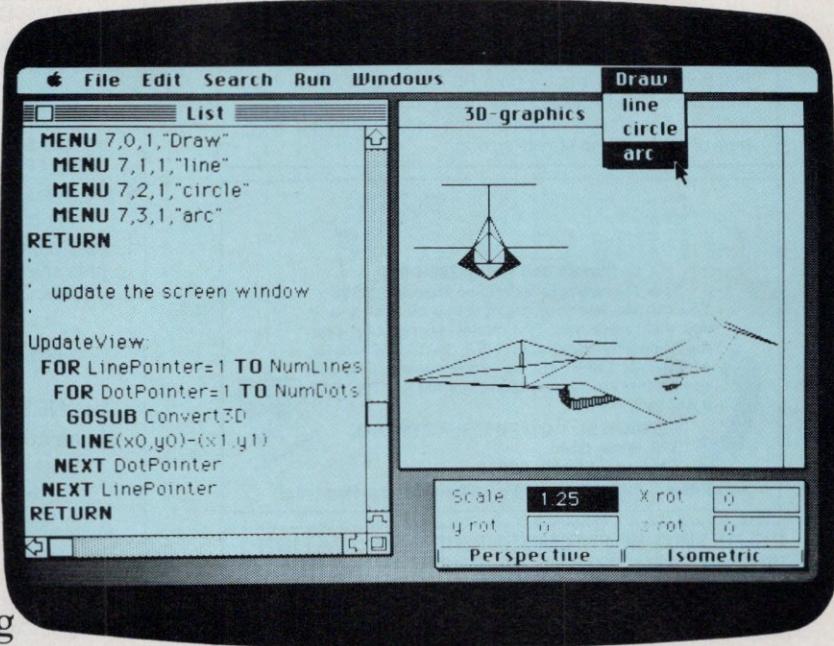
So if you want to access the power of your Macintosh™, only one language makes the most sense. Mac's first language, Microsoft BASIC.

Not only is it the industry standard, it's the most advanced BASIC for Macintosh. It lets you add mouse commands. Graphics. Windows. Change type fonts and styles. Customize menus. Incorporate music and sound effects. Write your own dialog boxes. Basically, it lets you take advantage of everything that makes Mac 'Mac.'

It makes editing programs as easy as cutting and pasting and pointing and clicking. Debugging is easier

than ever with the advanced trace command.

It's no wonder Microsoft is the most logical choice for the Macintosh.



**MICROSOFT**® We've written more Macintosh programs than any other software company. Including Mac's spreadsheet, Multiplan®.

So if you want to get the most out of your Macintosh, call (800) 426-9400 for the name of your nearest Microsoft dealer. In Washington State, Alaska, Hawaii and Canada, call (206) 828-8088.

Microsoft and Multiplan are registered trademarks of Microsoft Corporation.

Macintosh is a trademark licensed to Apple Computer, Inc.

CIRCLE 175 ON READER SERVICE CARD

# Microsoft

## BUY HARDWARE AND SOFTWARE AT WHOLESALE +8% AND GET 14-30 DAY SOFTWARE RENTALS†.

In just the last few months, The **NETWORK** has saved its members more than \$24,000,000 and processed over 100,000 orders.

### 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                  | General Motors           |
| Barclays Bank         | Gillette                 |
| Bell & Howell         | Hewlett Packard          |
| Citibank              | Hughes Aircraft          |
| Columbia University   | IBM                      |
| Data General          | IT                       |
| Exxon                 | Kodak                    |
| Farm Bureau Insurance | Multimate                |
| Frontier Airlines     | United Nations           |
| General Mills         | Yale University          |
| General Electric      | Veteran's Administration |

plus thousands of satisfied consulting firms, small businesses, user groups, municipalities, government agencies and value-wise 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.

### CALL TOLL FREE 1-800-621-S-A-V-E

In Illinois call (312) 280-0002

Your Membership Validation Number: M555  
You can validate your membership number and, if you wish, place your first money-saving order over the phone by using your VISA, MASTERCARD or AMERICAN EXPRESS. Our knowledgeable service consultants are on duty Mon-Fri 8 AM to 7 PM, SAT 9 AM to 5 PM CST.

PERSONAL COMPUTER NETWORK  
320 West Ohio  
Chicago, Illinois 60610

Call now...Join the PC NETWORK and start saving today!

### PC NETWORK • MEMBERSHIP APPLICATION

YES! Please enroll me as a member in the PC NETWORK™ and rush my catalog featuring thousands of computer products, all at just 8% above DEALER WHOLESALE PRICES. I will also periodically receive "THE PRINTOUT", a special up-date on merchandise at prices BELOW even those in my wholesale catalog, and all the other exclusive, money-saving services available to Members.

555

I am under no obligation to buy anything. My complete satisfaction is guaranteed. Please check (✓) all boxes that apply:

|   |  |  |
|---|--|--|
| <input type="checkbox"/> Basic Membership   | <input type="checkbox"/> One-year membership for \$8   | <input type="checkbox"/> Special V.I.P. Membership*              |
| <input type="checkbox"/> Two-year membership for \$15 (SAVE \$1)  | <input type="checkbox"/> One-year membership for \$15  | <input type="checkbox"/> Two-year membership for \$25 (SAVE \$5) |
| <input type="checkbox"/> Business Software Rental Library for \$25 add'l. per year—with 14 day rentals  | <input type="checkbox"/> BOTH Business and Game Software Rental Libraries for \$30 add'l. per year—with 30 day rentals |  |
| <input type="checkbox"/> Games Software Rental Library for \$10 add'l per year  | <input type="checkbox"/> *VIP members receive advance notice on limited quantity merchandise specials                  |  |
| <input type="checkbox"/> Bill my credit card: <input type="checkbox"/> VISA <input type="checkbox"/> MasterCard <input type="checkbox"/> American Express |  |  |

Account Number:

Exp. Date  mo.  year

Check or money order enclosed for \$

Name

Address  Apt. No.

City  State  Zip

Telephone (  )

Please provide the following information to insure compatibility with your system (check all boxes that apply):

|                                    |                                    |                                    |                                 |
|------------------------------------|------------------------------------|------------------------------------|---------------------------------|
| <input type="checkbox"/> APPLE //e | <input type="checkbox"/> APPLE //c | <input type="checkbox"/> APPLE //+ | <input type="checkbox"/> IBM-AT |
| <input type="checkbox"/> MACINTOSH | <input type="checkbox"/> LISA      | <input type="checkbox"/> APPLE III | <input type="checkbox"/> IBM PC |

Other:

Signature  (Signature required to validate membership)

Copyright ©1984, PC NETWORK INC.

### FEATURED PRODUCTS

|   |  |           |
|---|--|-----------|
| <b>HABA MACINTOSH ADD ON DRIVE</b>          | 400KB Drive with Haba Quick Find Software  | CALL      |
| <b>CENTRAL POINT COPY II + COPY II-MAC</b>  |  | 23.00*    |
| <b>OKIDATA NEW PERSONAL PRINTERS</b>        | Microline 182/120CPS/Epson Graphics/ LQ Mode + More!                               | 200.00*   |
|   | Okimate Color 20 80CPS/100+ Colors/Epson Graphics/LQ Mode + More! (Need Interface) | 109.00*   |
| <b>SILVER REED EXP 400 10CPS LQ</b>         |  | 230.00*   |
| <b>MONOGRAM DOLLARS &amp; SENSE</b>         | for Apple II + /E and Mac  | 57.00*    |
| <b>LIVING VIDEO TEXT Think-Tank +/E/MAC</b> |  | 75.00*    |
| <b>HAYES MICROMODEM IIe</b>                 | With Smartcom I  | 200.00*   |
| <b>AMDEK MONITORS</b>                       | V300G Composite Green  | 110.00*   |
|   | V300A Composite Amber  | 120.00*   |
| <b>IBM PC 256K HARD DISK SYSTEM</b>         | 1-320K Drive/1-10MB Hard Disk/256K CPU   | 1,962.52* |
| <b>COMPAQ PORTABLE HARD DISK SYSTEM</b>     | 10MB/1 Floppy/256K   | 2,735.00* |
| <b>LOTUS 1-2-3</b>                          | Best Price Anywhere  | 265.00*   |
| <b>BRAND NAME MACINTOSH DISKETTES</b>       | Box of 10 Guaranteed for Life Includes free Flip & File Case                       | 28.00*    |

\*NETWORK Members pay just 8% above these wholesale prices plus shipping.

### Complete Apple Systems

The **NETWORK** offers fantastic discounts on these three complete Apple packages.

#### ► APPLE //c

128K System  
Modem Port  
Serial Printer Port  
Mouse/Game Port  
Composite/RGB/TV  
40/80 Column  
Monitor Port  
QWERTY/DVORAK  
Keyboard  
Built in Drive  
Software



\$ TOO LOW TO PRINT!

#### ► APPLE //e PROFESSIONAL SYSTEM

128K //e CPU  
80 Column Card  
2 Disk Drives  
Software



\$ TOO LOW TO PRINT!

#### ► MACINTOSH BASE SYSTEM

192K Memory  
400K Diskette  
Keyboard  
Mouse  
Software



\$ TOO LOW TO PRINT!

Wholesale Prices Change Rapidly...if you ever see a lower price advertised anywhere please call! You will find the Network's Price will always be the best!

# ... AS A PC NETWORK MEMBER ONLY!

Listed below are just a few of the over 20,000 products available at our **EVERYDAY LOW PRICES!** Most Mac titles listed below are now shipping!

## GAMES & EDUCATIONAL SOFTWARE

(Please add \$1 shipping and handling for each title ordered from below.)

|  | Wholesale | Wholesale   |           |
|--|-----------|---|-----------|
| Bluechip Barron, <i>Millionaire or Tycoon</i>                  | \$ 35.97* | Orion, <i>Bird (Orbit Look Alike)</i>               | \$ 22.00* |
| Broderbund Loadrunner  | 19.75*    | Penguin Graphics, <i>Magician—Mac Only</i>          | 28.57*    |
| Broderbund Choplifter  | 19.00*    | Penguin Transylvania, <i>Macintosh Version Only</i> | 20.97*    |
| CBS Goren-Bridge Made Easy                                     | 48.00*    | Scarborough Mystery                                 | 22.77*    |
| CBS Mastering the SAT  | 90.00*    | Screenplay Professional BlackJack                   | 39.88*    |
| CBS Murder By Design, <i>Macintosh Version Only</i>            | 25.97*    | Sierra On-Line, <i>Logger Mac Too!</i>              | 21.00*    |
| Computer Games, <i>Fracions or Piece of Cake</i>               | 17.00*    | Sierra On-Line, <i>Crossfire</i>                    | 18.00*    |
| Designware, <i>Creature Creator or Spacicopter</i>             | 22.80*    | Si-Tech Wizardry                                    | 34.00*    |
| Designware, <i>Crypto-Cube or Trap-A-Zord</i>                  | 22.80*    | SubLogic Flight Simulator II                        | 28.50*    |
| Epyx, <i>Temple of Apshai</i>                                  | 21.97*    | SubLogic Flight Simulator                           | 31.00*    |
| Hayden Davinci— <i>Houses/Interiors or Landscapes—Mac Only</i> | 29.97*    | SubLogic Night Mission Pinball                      | 20.00*    |
| Hayden Sargon III  | 28.47*    | Spinaker, <i>Alphabet Zoo</i>                       | 15.97*    |
| Hayden, <i>Computer Test</i>                                   | 11.97*    | Spinaker, <i>Delta Drawing</i>                      | 24.07*    |
| Infocom, <i>Zork I, II, or III</i>                             | 21.50*    | Spinaker, <i>Delta Drawing</i>                      | 15.97*    |
| Infocom, <i>Deadline, Witness or Suspended</i>                 | 27.00*    | Spinaker, <i>Hey Diddle Diddle</i>                  | 15.97*    |
| Infocom, <i>Deadline, Starcross, Suspended</i>                 | 35.97*    | Spinaker, <i>Kinder Comp</i>                        | 15.97*    |
| Macintosh Version Only   |           | Spinaker, <i>Rhymes &amp; Riddles</i>               | 15.97*    |
| Infocom, <i>Enchanter, Sorcer, Zork II &amp; III, Infidel</i>  | 29.97*    | Spinaker, <i>Story Machine</i>                      | 15.97*    |
| Macintosh Version Only   |           | Spinaker, <i>The Most Amazing Thing</i>             | 20.77*    |
| Infocom, <i>Planet Fall, Sea Stalker, Witness, Zork II</i>     | 23.97*    | Video MacGammer & Chibbage— <i>Mac Only</i>         | 29.40*    |
| Macintosh Version Only   |           | Video MacVegas— <i>Mac Only</i>                     | 35.40*    |
| MicroLab Miner 2049er  | 22.80*    | Virtual Combinatics Micro Cookbook                  | 21.00*    |

## BUSINESS SOFTWARE

(Please add \$2.50 shipping and handling for each title ordered from below.)

|                                       | Wholesale | Wholesale  |            |
|---------------------------------------|-----------|--|------------|
| ASPER/WANG Grammatic                  | \$ 42.00* | Microsoft Word for Macintosh                         | \$ 110.00* |
| ATI How to Use Wordstar               | 40.00*    | Microsoft Word Processor                             | 110.00*    |
| ATI How to Use Multiplan              | 42.00*    | Microsoft Multiplan for Macintosh                    | 110.00*    |
| Broderbund Street Writer              | 40.00*    | Microsoft Basic for Macintosh                        | 85.00*     |
| Central Point Copy II Plus            | 23.00*    | Microsoft Chart for Macintosh                        | 71.00*     |
| Dow Jones Software Market Analyzer    | 198.00*   | MicroSoft Crostak                                    | 105.00*    |
| Dow Jones Software Market Manager     | 171.00*   | Monogram Dollars & Sense                             | 57.00*     |
| Eagle's Eye Decisions                 | 113.00*   | Monogram Dollars & Sense for Macintosh Version Only  | 89.98*     |
| Horowitz's How to Prepare 1985        | 177.00*   | Others—Refer to "Software" section                   | 23.00*     |
| Living Videotext Think-Tank Mac-Tool! | 75.00*    | Softcraft Fancy Fonts                                | 125.00*    |
| LJK DataPerfect                       | 80.00*    | Software Publishing PFS File                         | 71.00*     |
| LJK LetterPerfect                     | 60.00*    | Software Publishing PFS Write                        | 71.00*     |
| Mark of the Unicorn Mouse Stampede    | 23.97*    | Software Publishing PFS Graph                        | 71.00*     |
| Microsoft AppleTalk Compiler          | 99.00*    | Software Publishing PFS File & Report Macintosh Pack | 117.00*    |
| Microsoft Multiplan (DOS or CPM)      | 105.00*   | Stoneware DB Master Version— <i>Mac Tool!</i>        | 199.00*    |
| Microsoft MS, Financial Statement     | 57.00*    | TMaker Click Art for Macintosh Version Only          | 29.97*     |
| Microsoft A.L.D.S.                    | 70.00*    | Verbatim Disk Drive Analyzer                         | 23.00*     |

## HARDWARE

(Please add shipping and handling charges found in Italics next to price.)

|   | BOARDS & BUFFERS | PRINTERS |
|---|------------------|----------|
| Apple Macintosh Base System   |                  |          |
| Apple Apple IIC   |                  |          |
| Apple II  |                  |          |
| Columnar Desktop & Portable Systems   |                  |          |
| Compaq All Models   |                  |          |
| COMPAT Hard Disk Portable   |                  |          |
| 10MB Hard Disk/Floppy/256K  |                  |          |
| <b>DATAGENERAL DG ONE</b>   |                  |          |
| 128K1 Drive— <i>The Real Portable!</i>  |                  |          |
| Eagle Desktop PC and Print Portables  |                  |          |
| EGIC 386SX/387SX/387SX/387SX/387SX  |                  |          |
| IBM PC Professional Hard Disk   |                  |          |
| DISKODIF/10MB Hard Disk/256K  |                  |          |
| IBM PCAT All Configs  |                  |          |
| Sayme M60 350 MB Hard Disk Compatible   |                  |          |
| Sayme M60 350 MB Color Portable IBM Drive   |                  |          |
| 2" Drive/Monitor/256K   |                  |          |
| Tava PC Complete IBM Compatible (256K/2 Drives)   | 1,200.00*        | (25.92)  |
| Texas Instruments Professional  |                  |          |
| <b>DISK DRIVES &amp; CONTROLLERS</b>  |                  |          |
| Alps AP-1000 Dual Apple Drives in One Case  |                  |          |
| Alps AP-1000 Same as 100A with One Drive  |                  |          |
| Alps AP-1000 Sline Drive in Case  |                  |          |
| Apple MODELS  |                  |          |
| Apple Macintosh Hard On Drive   |                  |          |
| Corvus 10MB Hard Disk   |                  |          |
| Devon Hard Drisks for Macintosh   |                  |          |
| Franklin Data X-10 10MB Hard Disk   |                  |          |
| HABA Macintosh Hard on Drive  |                  |          |
| 4000 10MB Hard Disk/256K Quick Find Software  |                  |          |
| Micro-Sol A2 14.5K Drive  |                  |          |
| Micro-Sol Floppy Controller   |                  |          |
| Rane Elite 11.53K Drive   |                  |          |
| Rane Elite II 326K Drive  |                  |          |
| Rane Elite III 652K Drive   |                  |          |
| Rane Floppy Controller  |                  |          |
| Peripherals 3200 10MB SCSI Drive—No Case  |                  |          |
| Shuttle AP-50 Full Height Add-On  |                  |          |
| Tandon TM100 10 Full Height Drive Only  |                  |          |
| Tecmar 10MB Hard Disk for Macintosh   |                  |          |
| <b>MEMORY CHIPS</b>   |                  |          |
| All chips guaranteed for life.  |                  |          |
| 84K Memory Upgrade Kit (3 chips)  |                  |          |
| 84K Dynamic Ram Chips (Each)  |                  |          |
| <b>MODEMS</b>   |                  |          |
| Anchor Volkmodem  |                  |          |
| Anchor Mark X LOWEST PRICE 1200BPS  |                  |          |
| HAYES COMPATIBLE EXTERNAL MODEM!  |                  |          |
| Hayes Modemcom II w/Smartcom  |                  |          |
| Hayes Smartmodem 300  |                  |          |
| Hayes Smartmodem 1200 with new  |                  |          |
| Smartmodem 1200 1000 External   |                  |          |
| Navigation Apple Card II  |                  |          |
| Novation 212 Apple Card   |                  |          |
| Prometheus ProModem 1200  |                  |          |
| Prometheus Macintosh Modem Pac  |                  |          |
| Rizon R12/2A Stand Alone 1200BPS  |                  |          |
| U.S. Robotics Password/Compact 1200BPS External   |                  |          |
| <b>MONITORS</b>   |                  |          |
| Amdtek Video 300 Composite Monitor  |                  |          |
| Amdtek Video 300A Composite Monitor   |                  |          |
| Amdtek Video 310A/IBM Type  |                  |          |
| Monochrome Monitor  |                  |          |
| Amdtek Color 300 Composite Color  |                  |          |
| Color 300A  |                  |          |
| Amdtek Color 300A RGB Monitor   |                  |          |
| Princeton HX-12 RGB Monitor   |                  |          |
| Taxan 210 Combination RGB/Composite Display   |                  |          |
| Zenith ZVM-123 High Res Green (Consumer Reports Rated Best Buy!)  |                  |          |
| Zenith ZVM-131 13" RGB Color w/Green Switch   |                  |          |
| <b>ACCESSORIES &amp; SUPPLIES</b>   |                  |          |
| Brand New Macintosh Diskettes   |                  |          |
| Box of 100 3.5" 1.44MB for Life   |                  |          |
| Box of 100 3.5" 1.44MB for Life   |                  |          |
| PC Network Macintosh Case   |                  |          |
| Chalkboard Powerpad   |                  |          |
| Kensington Microwave System Saver Fan   |                  |          |
| Koala KoalaPad Touch Tablet   |                  |          |
| Hayes Mach II Joystick for Ile  |                  |          |
| Hayes Mach III Joystick w/Fire Button for Ile   |                  |          |
| Hayes Modem External Modulator  |                  |          |
| Apple Macintosh Carrying Case   |                  |          |
| Micro Macintosh Eye   |                  |          |
| PC Network Cooling Fan with Surge Protector & Dual Outlets  |                  |          |
| WP Printer Paper 2600 Sheets Microline Parts  |                  |          |
| Mac-Tool! Indicates the Mac version is available at the same price.   |                  |          |
| PC Network Members pay just 8% above the wholesale price, plus shipping. All prices reflect a 3% cash discount. Wholesale prices fluctuate rapidly—all prices in this issue have been prepared 60 days in advance. Please call for latest prices. Minimum shipping \$2.50 per order. Personal checks please allow 10 working days to clear. |                  |          |

## ... WITH THESE 15 UNIQUE 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 600 PAGE WHOLESALE CATALOG** — Members receive our 600 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. NOW UPDATED QUARTERLY!**

**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—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 DISCOUNT 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 30 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 PRINTOUT** — Issued Quarterly at no charge to Network members only! The Printout contains all the New Product listings and price changes you need to keep your Catalog up to date. Also, we buy excess dealer inventories, and store bankruptcy closeouts, which we turn around and make available to our members at fantastic savings via **THE PRINTOUT**.

**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!!**

CALL TOLL FREE 1-800-621-S-A-V-E (orders and membership only)  
In Illinois call (312) 280-0002 validation M555

CIRCLE 315 ON READER SERVICE CARD



# Introducing a pocketful of miracles.

It's the new BASF Qualimetric™ 3.5" Micro FlexyDisk®. Its name is a lot bigger than its size, and a lot smaller than its capacity. Our new Micro fits into more than shirt pockets. It fits into several of the hottest new small portable personal computers—like Apple™ Computer's new Macintosh™ and Lisa™ 2 and Hewlett-Packard's HP-150 Touchscreen PC.

The Qualimetric part is what makes our Micro FlexyDisk different from the others that will inevitably follow. It indicates a new standard in design, production, inspection, and testing. This standard enables us to warranty the Micro for a lifetime.\* No more, no less. In addition, we certify that each bit of every byte on or between every track on each Micro FlexyDisk is

\*Contact BASF for a copy of our warranty.

100% error-free. That's because we know, while each Micro FlexyDisk may only cost a couple of bucks, the hours and brain cells you put into it are priceless.

For those occasions when you need more than a pocketful of miracles, we provide a handy and virtually earthquake-proof 5-pack. It's sized to slip easily into your briefcase, handbag, or backpack.

For a plethora of technical details about our new Micro FlexyDisk and even more important information on where to buy it, call toll-free. 1-800-343-4600.

**BASF**  
Celebrating 50 years of magnetic recording

CIRCLE 153 ON READER SERVICE CARD



*Apple's  
Macintosh Office strategy  
has major  
implications for  
the publishing industry.*

# Desktop Publishing

The publishing industry may never be the same. Apple's Macintosh Office strategy provides elegant new hardware and software solutions for various important publishing tasks at an unprecedented low cost. The Macintosh Office strategy is inexpensive enough for small self-publishers, yet powerful enough to meet many needs of large printing and publishing companies. This approach to publishing definitely warrants consideration by any business that is involved with the creation of printed materials.

The Macintosh computer is the star of the Macintosh Office, but many other microcomputers can play supporting roles, including the rest of Apple's computers and the IBM Personal Computer series. Other key players in the scenario include the low-cost AppleTalk Personal Network, which interconnects up to 32 computers and peripherals, fileservers that allow the sharing of mass-storage devices, the advanced LaserWriter laser printer, the POSTSCRIPT graphics language, and Allied/Mergenthaler's POSTSCRIPT-compatible versions of the Linotron 101 and Linotronic 300 typesetting machines (for further details refer to "The Macintosh Office" and "The AppleTalk Personal Network Technical

LESLIE! PLEASE  
SEND TO ROSEMARY  
AND ROSEMARY  
THURSDAY!



Now Compatible with The Macintosh™ Office

# THE MOST REVOLUTIONARY ATTACHMENT TO THE MACINTOSH SINCE THE MOUSE.

The Bernoulli Box™, the cartridge disk subsystem that revolutionized mass storage for the IBM PC, XT, AT, most compatibles, and the TI Professional, now proudly adds Apple's Macintosh to the list.

The Bernoulli Box and its 5-megabyte removable cartridges together deliver unparalleled data base dynamics. And that, more and more, is what your business needs today. Not centralized, monolithic banks of information, but data bases defined by job function and software application. Data bases that give people the versatility to work more productively.

But there is more. More performance and reliability. Transfer rates and access times faster than most Winchesters. No head crashes ever. And cost per megabyte that Winchesters cannot touch.

The Bernoulli Box's cartridge capacity, portability and absolute interchangeability give your business more options. You can

easily build primary data bases. You can package individualized data bases, software and all—for payroll, accounting, marketing, computer graphics—in convenient, dedicated cartridges. And you can pack all of the data into a briefcase, an interoffice envelope, or even a file drawer.

The Bernoulli Box. When placed beside Apple's "computer for the rest of us," the best box you can buy. **For the dealer nearest you, call 1-800-556-1234, ext. 215.**  
**In California, call 1-800-441-2345 ext. 215.**

CIRCLE 124 ON READER SERVICE CARD

**i-MEGA**™

iMEGA Corporation  
1821 West 4000 South  
Roy, Utah 84067



THE  
**BERNOULLI**  
BOX™

PREVIOUS PAGE:  
LASERWRITER TYPOGRAPHY COURTESY  
ADOBE SYSTEMS, INC.  
DOW/CLEMENT PHOTOGRAPHY

Specifications," pages 26-37 in the March 1985 issue of *A+*).

Although the Macintosh Office strategy was designed for a broad range of business uses, the software and hardware for some applications still need further development. In the area of publishing, however, Apple has made some significant strides that promise to change the publishing industry by providing low-cost, yet high-quality, page-layout and typesetting systems for personal computers. This new development is so significant that it has already been dubbed "desktop publishing," a designation that we feel is especially appropriate since it represents a major milestone in desktop computing. The name is also a play on words that alludes to the desktop analogy that describes the Macintosh's operating system.

**U**p to now, most electronic page-layout and typesetting systems have been built around expensive minicomputers. The cost of these electronic publishing systems ranges from around \$50,000 for a single workstation with a laser printer to \$500,000 and up for a larger system with several workstations, a laser printer, and a typesetting machine. The Macintosh Office technology offers the first full-blown electronic publishing system for personal computers at a fraction of the expense of previously available systems. A Macintosh Office system for electronic publishing costs less than \$10,000 for a single workstation and a laser print-

er and \$30,000-\$50,000 for a larger system with several workstations, a laser printer, and a typesetting machine.

The availability of Allied/Mergenthaler's Linotron 101S and Linotronic 300 typesetting machines means that the quality of the typeset output can be top-notch. Allied/Mergenthaler is the most respected name in typesetting, and its endorsement of the Macintosh Office technology is to the publishing industry what IBM's entry into microcomputers was to the computer industry.

Until now, the avenues open to publishers have been fairly narrowly delimited. In a typical publishing operation, you create documents on a typewriter or word processor. Someone then enters this draft copy into a typesetting machine, which produces a galley proof. Next, the galley is proofread, and any necessary corrections are made. The corrected galley is pasted up by hand, together with any illustrations or graphics, during the page-layout process. The final layouts are known as camera-ready copy, because the last step is to photograph them to create the plates for the actual printing process.

Because the procedure we've just described is both time-consuming and costly, many shortcuts have been devised, but these methods usually produce fairly crude results. The simplest small-scale publishing involves creating text on a typewriter, pasting it up—with any illustrations—by hand, and reproducing the results with a photocopy machine. Many small newsletters and catalogs are created in this manner, although it is quite tedious and the results can be of fairly poor quality.

The next step up is to use a computer and a printer, which produces documents that don't look much better than those created with a typewriter, except for the ability to produce right- and left-justified margins. You can achieve more professional quality by transmitting documents electronically to a typesetting house or sending your disks to it.

**A**

A major fiscal drawback of such an arrangement is that unless the files are error-free, every change, affectionately known as an *ae*, for author error, can be expensive to correct, since you have to have the documents retypeset, at a typical cost of \$10 to \$20 per page. Furthermore, you have to adjust to the typesetters' schedule. This process makes small-scale publishing a difficult enterprise that usually results in a compromise in quality.

The Macintosh Office's desktop publishing system changes all that. You can generate near-typeset-quality documents on the LaserWriter for less than five cents a page. For many small-scale publishing operations, LaserWriter output will be good enough to use as camera-ready copy. Traditional publishers, and others with a need for true typesetting, can produce typeset documents on either the Linotron 101S or the Linotronic 300 for less than \$1 per page.

#### Apple Leads in Desktop Publishing

About a year ago, Apple planted the seeds of desktop publishing by introducing the Macintosh and the Imagewriter printer. In tandem, these



# Output Devices

The Macintosh, its applications, and page-layout products constitute the input tools for desktop publishing. Once you've designed a document or a publication, you have to produce it. For output, your options range from dot-matrix printing at the low end to professional typeset quality at the high end.

## IMAGEWRITER

Although the vertical resolution of this dot-matrix printer is only 72 dpi, it may suffice for some desktop-publishing applications. If its quality is not sufficient for the final product, you may want to use it for preliminary tasks.

For example, you can use the \$595 ImageWriter for proofreading. You first print your document on the ImageWriter and then proofread it and make corrections before you go on to the final product. You can also use the ImageWriter for rough layouts, again before you proceed with the final product.

The final product can be output from the LaserWriter, if its quality is good enough for your needs, or high-resolution typesetting from one of the Allied/Mergenthaler typesetting machines.

In either case, and depending on your resources, you could purchase an ImageWriter and a LaserWriter or Linotronic, or you could purchase only the ImageWriter and take your finalized disks to a service bureau with a LaserWriter or Linotronic machine.

## LASERWRITER

This printer is based on the Canon LBP-CX laser print engine. Apple has

built a powerful computer into the printer to accommodate the PostScript language. In fact, the LaserWriter contains more computing power than the Macintosh does.

The LaserWriter has a 12-MHz 68000 microprocessor (as opposed to the 6 MHz 68000 of the Macintosh), 1.5 megabytes of RAM and half a megabyte of ROM where the resident typefaces are stored. Built-in font masters—stored as outlines of the fonts—are Times, Helvetica, and Courier, all in Roman, bold, italic, and bold italic; and a symbol font. The printer has AppleTalk and RS-232 connections.

The LaserWriter prints on paper, acetate transparencies, preprinted forms, and envelopes at four to eight pages per minute, depending on the task at hand. A replaceable cartridge that you need to change every 3000 pages contains the toner and photiconductor.

In addition to the PostScript page-descriptor language, the LaserWriter has Diablo 630 emulation, which circumvents PostScript, for printing text that looks like daisy-wheel output. This feature is compatible with the information many word processors generate.

The LaserWriter's list price of \$6995 includes built-in fonts, corresponding screen fonts, software for installing the printer drivers in the Macintosh, and one cartridge.

## LASERGRAFIX 1200

QMS sells a PostScript controller for the Macintosh that plugs into QMS's Lasergraftix 1200 printer. The controller costs \$5000, however, and the printer itself lists for \$24,095. This

printer weighs nearly four times what the LaserWriter weighs (270 vs. 70 pounds), and it offers the same resolution: 300 dpi.

The Lasergraftix 1200's printing speed is rated higher than that of the LaserWriter (12 vs. 8 pages per minute), and it has a duty cycle of 15,000 pages per month, which means it can handle a heavier print load than the LaserWriter can.

QMS will also produce an even more capable PostScript-compatible laser printer later this year called the Lasergraftix 2400. The 2400, which costs about \$40,000 for the printer and controller, will accept larger paper than the LaserWriter does (up to 11 by 17 inches), is rated at a speed of 24 pages per minute, and has a duty cycle of 30,000 pages per month, which is about ten times that of the LaserWriter.

## LINOTRON 101S AND LINOTRONIC 300

This typesetting machine sets type in three resolutions: high (1400 × 1446 dpi), regular (1400 × 723 dpi), and proofing (1400 × 362 dpi). The list price of the Linotron 101S without PostScript is \$19,950.

The Linotronic 300 sets type in three resolutions: high (2540 × 2540 dpi), regular (1270 × 1270), and proofing (1270 × 635). The list price is \$38,950.

PostScript versions of both typesetting machines are slated for release in the third quarter of 1985 and will probably sport slightly higher price tags than their non-PostScript counterparts. Both typesetters use photographic paper for output in all three resolutions.

products allow you to get a reasonable printed representation of text and graphics you produce on the relatively-high-resolution Mac screen. In fact, several newsletters, including *Show Page* and *Mac Street Journal*, have been produced this way.

#### New Horizons

Now, several new products from Apple and other companies have fully developed the concept of desktop publishing.

The most significant of these products is Apple's LaserWriter printer, which contains in its memory Adobe's PostScript, a graphics language that is to typesetting what the word processor is to writing and editing.

With a LaserWriter and standard Macintosh applications, you can print out anything you can produce on the screen, but instead of getting the 72-dot-per-inch (dpi) resolution of the Macintosh screen, the LaserWriter can produce output at 300 dpi.



In addition to providing higher-resolution text characters, the LaserWriter printer's built-in computer smooths out shapes that were originally created with a program such as MacDraw at lower resolutions. The result is text of almost typeset quality and graphics that display fewer of the imperfections that are typical of dot-matrix output. For example, the jagged edges of objects you create with MacDraw are much less noticeable when PostScript has tamed the shape.

#### Beneficiaries

Who is likely to benefit from this new brand of desktop publishing? Initially, the groups listed below will be among the beneficiaries. When two new typesetting machines that we discuss in this article become available from Allied/Mergenthaler Linotype, however, self-typesetting of a high quality—in the vicinity of 2500 dpi—will become an option (see "Output Devices").

- **Newsletter publishers:** Thousands of people and organizations that produce their own newsletters can do the whole job themselves.
- **Service bureaus:** Résumé and word-processing services will be able to give their clients a choice of typefaces and formats. Producers of



## The C for the Macintosh and Apple II

#### FOR THE MACINTOSH

AZTEC C68k is the most powerful, portable, and professional C compiler and software development system for the Apple Macintosh. It is available in three configurations.

**AZTEC C68k-c (Commercial System) . . . . . \$499**

For serious Macintosh developers who want to program in C there is no parallel to AZTEC C68k-c. AZTEC C68k-c produces smaller and faster code in less time than any system benchmarked. The supporting utilities and commands of AZTEC C68k-c create a Macintosh development environment with the power and flexibility needed for producing professional results.

All C features are faithfully supported providing portability with UNIX C and AZTEC C compilers available for the APPLE II, MS DOS, PC DOS, CP/M-86, CP/M-80, TRSDOS, and C64.

Features include: C compiler, 68000 Macro Assembler, modular programming, overlay linker, debuggers, mouse based editor, Z(Vi) editor, SHELL development environment (UNIX was developed to support software development - this environment incorporates the best of UNIX), comprehensive support of the Macintosh including the toolbox to provide straight forward development of Macintosh programs and desk accessories, make, diff, grep, terminal emulator (source), grow (source), desk accessory (source), ramdisk (source), UNIX I/O, MATH, UTILITY, and MACINTOSH run time libraries (source), full support for 512K Mac and Lisa Macworks, 600+ page manual, resource maker, calling C routines from PASCAL, PASCAL from C, and assembler subroutines, no-royalty license.

Manx support includes one year of computer tracked updates and technical telephone support.

**AZTEC C68k-d (Developer's System) . . . . . \$299**

AZTEC C68k-d provides a less expensive development system for programmers on limited budgets. AZTEC C68k-d includes C compiler, 68000 Macro Assembler, Linker, debuggers, editor, toolbox support, run time libraries (object), sample programs (source), and a 600 page manual.

**AZTEC C68k-p (Personal System) . . . . . \$199**

For students and professionals doing serious non-commercial work. Includes C compiler, Linker, run time libraries, sample programs (source), debugger, and editor. Restricted license.

**C-TREE Database (Aztec object format) . . . . . \$149**

**C-TREE Database (Object + Source) . . . . . \$390**

#### FOR THE APPLE II

**AZTEC C65/DEV (Developer's System) . . . . . \$299**

This C compiler and software development system comes with C compiler, 6502 assembler, SHELL, overlay linker, UNIX I/O, Screen, and Graphics libraries, editor, utilities, and support for ProDOS.

**AZTEC C65 . . . . . \$199**

C compiler, 6502 assembler, Linker, libraries, Apple DOS 3.3 support.

**AZTEC C65 Personal . . . . . \$99**

C compiler and development system. Restricted license.

# MANX

TO ORDER OR FOR INFORMATION  
CALL OR WRITE:

MANX SOFTWARE SYSTEMS  
Box 55 • Shrewsbury, NJ 07701  
TX 4995812



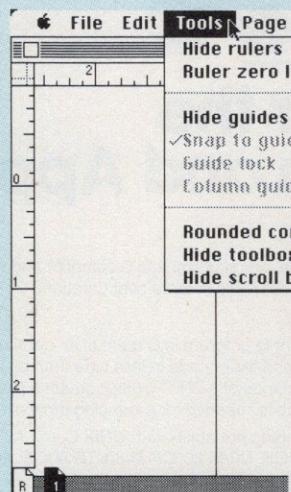
CALL:  
800-221-0440  
201-530-7997 (NJ)

TECH SUPPORT - 201-530-6557

CP/M-80 and CP/M-86 are trademarks of DRI Macintosh and PRO DOS are trademarks of Apple  
TRS DOS is a trademark of Tandy UNIX is a trademark of AT&T

CIRCLE 189 ON READER SERVICE CARD

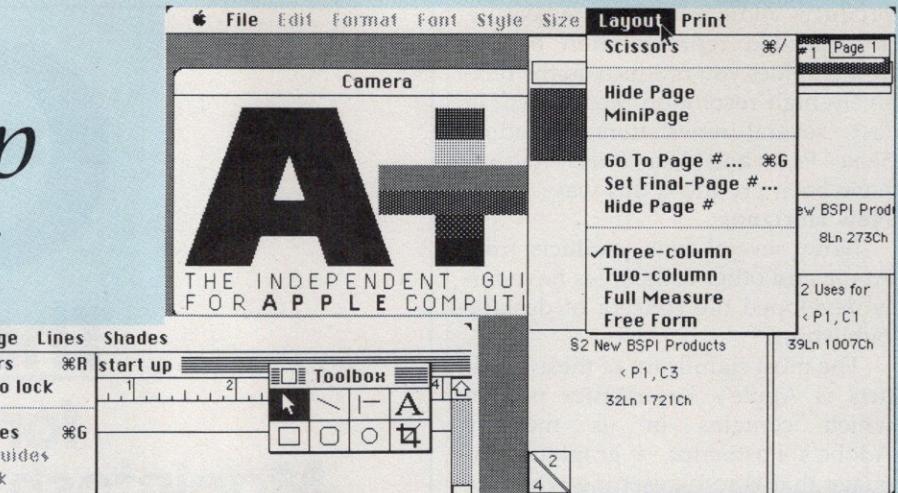
# Software for Desktop Publishing



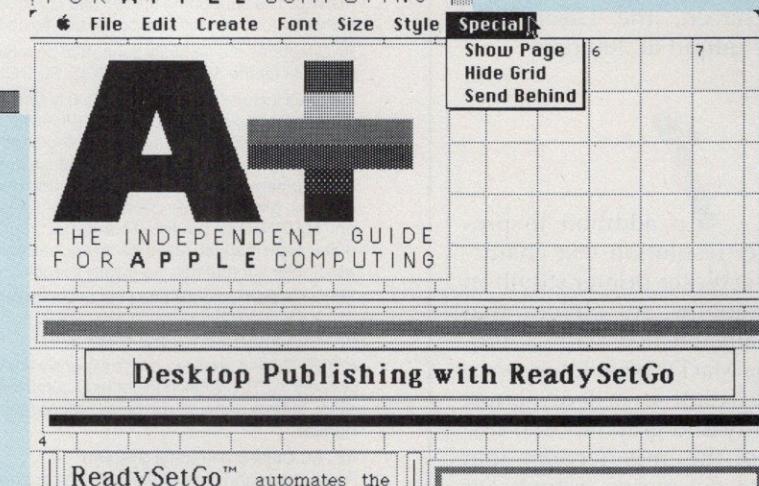
In order to create documents that look their best on a laser printer or typesetting machine, you need to have software that supports typeset-quality fonts. Currently Apple is offering the following typeset-quality fonts: Times Roman, Helvetica, Courier, and a special symbol font. Later this year, Apple, in conjunction with ITC and Adobe, will introduce about 50 more fonts, including Avant Garde, American Typewriter, Bookman, Palatino, Zapf Chancery, and Zapf dingbats. In order to employ these fonts, you must use a software program that allows you to install new fonts with the Font Mover utility.

Desktop-publishing software currently falls into three categories: word-processing software, graphics software, and page-layout software. Programs for word processing include MacWrite, Microsoft Word, and Jazz. All of these programs allow you to install typeset-quality fonts and also let you mix text with graphics, but none of them are as good at combining text and graphics as the page-layout software described below.

Graphics software that is suitable for desktop publishing includes MacPaint, MacDraw, and Microsoft Chart. Each of these programs has its own particular virtues, and you may well end up using all three. Digitizing devices such as the ThunderScan or



Above: MacPublisher from Boston Software Publisher  
Left: Page Maker from Aldus  
Below: ReadySetGo from Manhattan Graphics



## Desktop Publishing with ReadySetGo

ReadySetGo™ automates the

any of the several digitizing cameras available are an excellent addition to a desktop-publishing system since they allow you to bring logos, drawings, pictures, and other images into the Mac easily for image processing. (We'll be reviewing these devices in an upcoming issue of *A+*.)



Although MacPaint may be easier to use than MacDraw, note that MacDraw can produce a published image of much higher quality than MacPaint can. The difference in quality is because the maximum resolution of MacPaint is the same as the resolution of the Mac screen, which is 72 dots per inch, but MacDraw can create output at the maximum resolution of the output

device—300 dots per inch with the laser printers and up to 2540 dots per inch on a typesetting machine.

We are currently aware of three page-layout programs that turn the Macintosh into an electronic page-composition system. The programs are ReadySetGo from Manhattan Graphics, MacPublisher from Boston Software Publishers, and PageMaker from Aldus. These programs allow you to create professional-looking published materials that include text and graphics created with other programs (see figures 1-3). All of these programs work with the LaserWriter and other PostScript-compatible output devices, and all of them are simple to use. None of the programs utilize the full power and flexibility of PostScript, however. *A+* will be taking a closer look at these programs in the months ahead.

business forms will be able to provide fast turnaround to their customers.

• **Cottage-industry vanity publishers:** Until and if the vanity presses avail themselves of this technology, anyone with a Macintosh and a LaserWriter can provide nearly the same preprinting services to would-be authors at considerably lower cost.

• **Existing publishers:** Publishers that do not already have expensive page-makeup systems can use the LaserWriter to produce drafts for page layout and galley proofs for writers and proofreaders.

• **Small presses:** These organizations usually operate on a shoestring. After a one-time investment in a Macintosh, LaserWriter, and page-layout software, literary journals, for example, can produce inexpensive, professional-looking results.

• **Documentation departments:** If the documentation departments of high-technology companies don't spend a small fortune typesetting their manuals, they often crank them out on a letter-quality printer. Documentation that is photocopied from letter-quality or line-printer output has a ponderous technical-manual appearance. With the LaserWriter/Macintosh combination, documentation departments can quickly produce near-typeset-quality manuals. Macintosh-software developers will find this technique especially appropriate, since it lets you generate Macintosh screen dumps and merge them into the documentation, using PageMaker, ReadySetGo, or MacPublisher (see "Software for Desktop Publishing," page 124).

Contract documentation houses that have a LaserWriter may develop an edge over their competition. Documentation firms—or any company that can spring for one of the Mergenthaler laser typesetters from Allied Mergenthaler Linotype—will have a self-contained publishing operation.

#### Ecumenism

Bruce Blumberg, Apple's LaserWriter product manager, says that the LaserWriter is "very ecumenical. It hooks up to anything that can generate PostScript code." Thus, the LaserWriter is not dependent solely on the Macintosh.

The printer has an RS-232 connection as well as an AppleTalk connection. When software that can produce

| DISK DRIVE<br>SALE   |                    |                 |              |
|--|--------------------|-----------------|--------------|
| TOP QUALITY APPLE COMPATIBLE   |                    |                 |              |
| Super 5 Direct Slim Drive  | .....              | \$185           |              |
| AP-100-A Two-In-One (Alps Mechanism)   | .....              | \$369           |              |
| AP-100-C Slim Line (Alps Mechanism)  | .....              | \$185           |              |
| AP-50 Full Height (Shugart SA390 Mechanism)  | .....              | \$159           |              |
| NEW Super 5 Direct Slim Drive for Apple //c  | .....              | \$189           |              |
|  |                    |                 |              |
| List<br>Price  | Our<br>Price       | List<br>Price   | Our<br>Price |
|  |                    |                 |              |
| <b>HARDWARE FOR APPLE</b>  |                    |                 |              |
| 16K Ram Card for Apple II, II+, Z-80 Card for Apple II, II+, and Cooling Fan with Two Outlets and Surge Protection             | \$ 79 42<br>185 69 | 69 35           |              |
| High Quality Joystick with Fire Button for (Specify II- or II+) Computer Case Similar to II- Replacement Keyboard              | 49 29<br>149 59    | 49 29<br>159 69 |              |
| Computer Case with Built-in Numeric Keypad   | 299 119            |                 |              |
| RF Modulator   | 49 19              |                 |              |
| Power Strip with Surge Protection and 6 Outlets  | 59 20              |                 |              |
|  |                    |                 |              |
| <b>ADVANCED LOGIC SYSTEMS</b>  |                    |                 |              |
| CP/M Card (6 MHz w/ CP/M 3.0)  | 399 289            |                 |              |
| Z Engine (Universal Z-80)  | 199 19             |                 |              |
| Smarterm II (80 Col for II, II+, //e)  | 179 149            |                 |              |
| Business Card w/ T-Maker   | 499 369            |                 |              |
|  |                    |                 |              |
| <b>CHI PRODUCTS (HAYES PRODUCTS)</b>   |                    |                 |              |
| Mach II Joystick for II-   | 39 35              |                 |              |
| Mach III with Fire Button for II-  | 49 42              |                 |              |
| PaddlesStick for II-   | 49 35              |                 |              |
| Mach II Joystick for //e   | 44 38              |                 |              |
| Mach III with Fire Button for //e  | 54 45              |                 |              |
| PaddlesStick for //e   | 44 35              |                 |              |
|  |                    |                 |              |
| <b>CALIFORNIA COMPUTER SYSTEMS</b>   |                    |                 |              |
| Clock, Calendar  | 120 95             |                 |              |
| 7711 Async Serial Interface for Printer & Modem  | 135 99             |                 |              |
|  |                    |                 |              |
| <b>CHALKBOARD</b>  |                    |                 |              |
| Power Pad for II, II+, and //e   | 99 79              |                 |              |
| Starter Kit  | 49 39              |                 |              |
|  |                    |                 |              |
| <b>KENSINGTON MICROWARE</b>  |                    |                 |              |
| System Saver Fan   | 89 65              |                 |              |
|  |                    |                 |              |
| <b>KOALA TECHNOLOGIES</b>  |                    |                 |              |
| Koala Pad with Software for //e, //c   | 124 75             |                 |              |
| Muppet Learning Keys w/ Software for //e & //c   | 79 55              |                 |              |
| Gibson Light Pen System w/ Software for II, II+, //e   | 250 159            |                 |              |
|  |                    |                 |              |
| <b>MICROSOFT</b>   |                    |                 |              |
| SoftCard II  | 425 309            |                 |              |
| Premium SoftCard //e   | 395 289            |                 |              |
|  |                    |                 |              |
| <b>MICROTEK</b>  |                    |                 |              |
| Dumping-GX   | 89.95 79           |                 |              |
| BAM-16MM (16K RAM Card w/ Software)  | 99 89              |                 |              |
| 64K Ram Card   | 199 159            |                 |              |
| 128K Ram Card  | 299 229            |                 |              |
| Magnum 80me (80 Col, 64K) for //e  | 139 119            |                 |              |
|  |                    |                 |              |
| <b>ORANGE MICRO</b>  |                    |                 |              |
| Grappler   | 175 105            |                 |              |
| Buffered Grappler (16K buffer)   | 239 159            |                 |              |
| Serial Grappler  | 119 99             |                 |              |
|  |                    |                 |              |
| <b>PERSONAL COMPUTER PRODUCTS</b>  |                    |                 |              |
| Appli-Card 6MHz/64K Memory (II, //e)   | \$375 \$279        |                 |              |
|  |                    |                 |              |
| <b>PRACTICAL PERIPHERALS</b>   |                    |                 |              |
| GraphCard (with 6' parallel cable)   | 99 79              |                 |              |
| Microbuffer II+ (Internal buffer, serial and parallel; fits inside Apple)  |                    |                 |              |
| 16K Microbuffer II+  | 259 199            |                 |              |
| 32K Microbuffer II+  | 299 229            |                 |              |
| 64K Microbuffer II+  | 349 269            |                 |              |
| Microbuffer In-Line (Stand-Alone Buffer)   |                    |                 |              |
| 32K Microbuffer In-Line (Specify Par or Ser)   | 299 229            |                 |              |
| 64K Microbuffer In-Line (Specify Par or Ser)   | 349 269            |                 |              |
|  |                    |                 |              |
| <b>PRACTICAL PERIPHERALS</b>   |                    |                 |              |
| Serial to Parallel Converter for //c   | 109 89             |                 |              |
|  |                    |                 |              |
| <b>PROMETHEUS</b>  |                    |                 |              |
| Promodem 1200 w/Mac Pac for Macintosh  | 549 399            |                 |              |
| Promodem 1200 w/Cable for //c  | 509 379            |                 |              |
|  |                    |                 |              |
| <b>SWEET MICRO SYSTEMS</b>   |                    |                 |              |
| Mockingboard D for //c   | 229 169            |                 |              |
|  |                    |                 |              |
| <b>TRONIX/MONOGRAM</b>   |                    |                 |              |
| Dollars & Sense for //c  | 120 89.95          |                 |              |
| Dollars & Sense for Mac  | 149.95 119         |                 |              |
|  |                    |                 |              |
| *We keep on top of all the new products coming out for Apple //c and Macintosh. Give us a call if you don't see what you need! |                    |                 |              |
| <b>PRINTERS</b>  |                    |                 |              |
| COMREX (Div. of Epson)   |                    |                 |              |
| Comriter CR-1/e Par. (LQ, 20 CPS, 3K Buffer)   | 599 429            |                 |              |
| Comriter CR-1/e Serial   | 629 449            |                 |              |
| Keyboard   | 199 169            |                 |              |
| Tractor  | 120 99             |                 |              |
|  |                    |                 |              |
| <b>EPSON</b>   |                    |                 |              |
| All LATEST Printer Models  | CALL               |                 |              |
|  |                    |                 |              |
| <b>OKIDATA</b>   |                    |                 |              |
| All printer models   | CALL               |                 |              |
|  |                    |                 |              |
| <b>SILVER REED</b>   |                    |                 |              |
| EXP-400 LQ 13 CPS  | 399 289            |                 |              |
| EXP-500 LQ 16 CPS  | 549 359            |                 |              |
| EXP-550 LQ 19 CPS  | 649 429            |                 |              |
|  |                    |                 |              |
| <b>STAR MICRONICS</b>  |                    |                 |              |
| SG 10 (NLQ, 120 CPS, 2K Buffer)  | 299 269            |                 |              |
| SG 15 (NLQ, 120 CPS, 16K Buffer)   | 499 459            |                 |              |
| SD 10 (NLQ, 160 CPS, 2K Buffer)  | 449 419            |                 |              |
| SD 15 (NLQ, 160 CPS, 16K Buffer)   | 599 549            |                 |              |
| SR 10 (NLQ, 200 CPS, 2K Buffer)  | 649 599            |                 |              |
| SR 15 (NLQ, 200 CPS, 16K Buffer)   | 799 709            |                 |              |
| Powertype LQ (18 CPS)  | 499 379            |                 |              |
|  |                    |                 |              |
| <b>TOSHIBA</b>   |                    |                 |              |
| P1340 (NLQ, 144 54 CPS) (Ser. or Par)  | 995 739            |                 |              |
|  |                    |                 |              |
| <b>MONITORS</b>  |                    |                 |              |
|  |                    |                 |              |
| <b>AMDEK</b>   |                    |                 |              |
| V300 Green (12" Hi Res)  | 179 139            |                 |              |
| V300A Amber (12" Hi Res)   | 199 155            |                 |              |
| Color 300 (13" lo Res)   |                    |                 |              |
| Composite  | 399 269            |                 |              |
|  |                    |                 |              |
| <b>COMREX (DIV OF EPSON)</b>   |                    |                 |              |
| CR-5650 A 12" Amber  | 139 119            |                 |              |
| CR-5650 G 12" Green  | 139 119            |                 |              |
|  |                    |                 |              |
| <b>TAXAN</b>   |                    |                 |              |
| 12" Hi Res Amber   | 180 149            |                 |              |
| 12" Hi Res Green   | 170 139            |                 |              |
|  |                    |                 |              |
| <b>MODEMS</b>  |                    |                 |              |
|  |                    |                 |              |
| <b>HAYES</b>   |                    |                 |              |
| Smartmodem 300 w/ Smartcom I, Cable for //c  | 339 259            |                 |              |
|  |                    |                 |              |
| <b>KENSINGTON MICROWARE</b>  |                    |                 |              |
| Maccessories: Starter Pack   | 90 65              |                 |              |
| Maccessories: Portable Modem   | 140 99             |                 |              |
|  |                    |                 |              |
| <b>KOALA TECHNOLOGIES</b>  |                    |                 |              |
| MacVision Digitizer for Mac  | 399.95 249         |                 |              |
| Koala Pad w/ Software for //c  | 125 75             |                 |              |
| Muppet Learning Keys w/ Software for //c   | 79 55              |                 |              |
|  |                    |                 |              |
| <b>MICROSOFT</b>   |                    |                 |              |
| Chart for Mac  | 125 89             |                 |              |
| Multiplan for Mac  | 195 135            |                 |              |
|  |                    |                 |              |
| <b>MITSUBA</b>   |                    |                 |              |
| Super 5 Direct Slim Drive for //c  | 369 189            |                 |              |
|  |                    |                 |              |
| <b>NOVATION</b>  |                    |                 |              |
| Smart Cat I w/Mite Software for Mac  | 499 319            |                 |              |
|  |                    |                 |              |
| <b>PRACTICAL PERIPHERALS</b>   |                    |                 |              |
| Serial to Parallel Converter for //c   | 109 89             |                 |              |
|  |                    |                 |              |
| <b>PROMETHEUS</b>  |                    |                 |              |
| Promodem 1200 w/Mac Pac for Macintosh  | 549 399            |                 |              |
| Promodem 1200 w/Cable for //c  | 509 379            |                 |              |
|  |                    |                 |              |
| <b>SWEET MICRO SYSTEMS</b>   |                    |                 |              |
| Mockingboard D for //c   | 229 169            |                 |              |
|  |                    |                 |              |
| <b>DISKETTES</b>   |                    |                 |              |
|  |                    |                 |              |
| <b>BASF</b>  |                    |                 |              |
| SS DD 5 1/4" Box of 10   | 40.00 19           |                 |              |
| SS DD 3 1/2" Box of 5  | 29.95 22.95        |                 |              |
|  |                    |                 |              |
| <b>MAXELL</b>  |                    |                 |              |
| SS DD 5 1/4" Box of 10   | 38.70 19           |                 |              |
|  |                    |                 |              |
| <b>VERBATIM</b>  |                    |                 |              |
| SS DD 5 1/4" Box of 10   | 49 19.95           |                 |              |
| SS DD 3 1/2" Box of 10   | 59.95 39.95        |                 |              |
| Disk Drive Analyzer (Specify Apple)  | 39.95 29.95        |                 |              |
| Disk Drive Head Cleaning Kit   | 10.95 8.95         |                 |              |
|  |                    |                 |              |

Call for most recent LOW LOW prices!

To order or for FREE catalog, phone 312-355-9726

If you don't see what you need, call us... we probably have it.

We accept check, money order, **VISA**, **Mastercard**, or **American Express** (include # and expiration date). Our prices reflect a 2% cash discount. 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.** If in the Chicago area, we invite you to visit our retail showroom, located at 24 W 500 Maple Ave., Naperville.

**MICRO CITY** P.O. Box 571  
Downers Grove, IL 60515



CIRCLE 115 ON READER SERVICE CARD

# Sailing on the changing tides of business, there is no room for uninformed decisions.

You don't go sailing without the right navigational instruments.

And you don't make business decisions without the right information.

With Dow Jones Straight Talk™ and your Macintosh™ personal computer, you have the right information to make seaworthy business decisions.

## Widgets, Inc.: To Acquire or Not?

Let's say you need to know everything you can about Widgets, Inc. and the entire miniwidgets industry. You're thinking about an acquisition. You need solid research.

And you need it for the important meeting at 4 p.m.

## Dow Jones Straight Talk: Helping You Make Informed Decisions

Straight Talk can help. Straight Talk could even make you a hero. Here's how: Two clicks of the mouse and you're logged on to the information you need with Dow Jones News/Retrieval,™ the foremost electronic resource for business and financial information, and other communications services.

With pull-down menus, you can move easily between databases, checking current news and stock quotes, reviewing exclusive stories from the up-to-date file of **The Wall Street Journal**, searching out financial information on a specific corporation or industry.

Now use your Clipboard, Note Pad and Scrapbook to save it.

Since Straight Talk supports MacWrite,™ you can thread all this data together with your own informed comments.

Now the final report: Use the different type sizes and styles to highlight special sections for your boss. Your conclusion: Don't acquire the company. It's on thin ice.

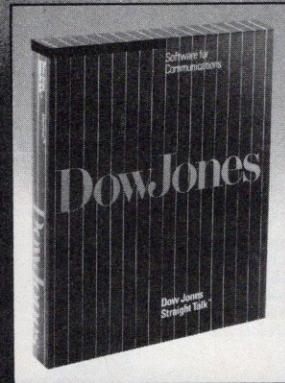
With Straight Talk, hours worth of research can be condensed into just minutes.

And, as the meeting ends, you can barely hold back that big grin.

From now on your career should be smooth sailing.

## A World of Information on Your Desk

At \$79, Dow Jones Straight Talk is the least expensive, most diligent researcher and electronic know-it-all you'll ever come across.



### Dow Jones Software. For informed decisions.

Dow Jones News Retrieval is a registered trademark of Dow Jones & Company, Inc. Dow Jones Software and Dow Jones Straight Talk are trademarks of Dow Jones & Company, Inc. Macintosh is a trademark licensed to Apple Computer, Inc. MacWrite is a trademark of Apple Computer, Inc.

Copyright © 1985 Dow Jones & Company, Inc. All Rights Reserved.

In addition to business and financial information, you can click into world and national news, sports, weather, an encyclopedia, airline schedules and fares, movie reviews and MCI mail.

And Straight Talk is from Dow Jones, publisher of **Barron's** and **The Wall Street Journal**, and for over 100 years a standard in timely, reliable information.

Dow Jones Straight Talk for the Macintosh. A precision instrument designed to make sure your ship comes in.

To obtain a free brochure and information on where you can conveniently purchase Dow Jones Straight Talk, fill out the coupon or call:

**1-800-345-8500 ext. 272**

(Alaska, Hawaii and foreign call 1-215-789-7008 ext. 272)

Fill out this coupon and mail to:  
A. Callahan, Dow Jones & Company,  
P.O. Box 300, Princeton, N.J. 08540.

Yes, please send me a free brochure on  
Dow Jones Straight Talk™ and  
Dow Jones News/Retrieval®.

Name \_\_\_\_\_

Company \_\_\_\_\_

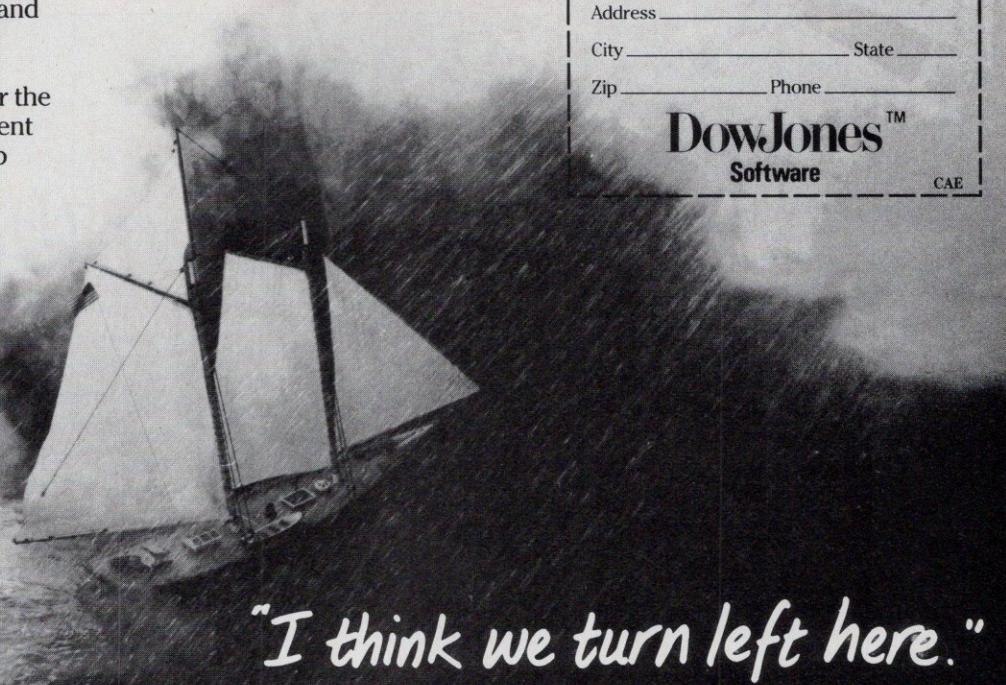
Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

Zip \_\_\_\_\_ Phone \_\_\_\_\_

**DowJones™**  
Software

CAE



*"I think we turn left here."*

# LOOK AT THESE PRICES!



**VERIFLEX**  
The new 10-pack  
diskette in a FREE  
hard plastic storage  
case.

**VERIFLEX** Lifetime warranty. Clipped at 65%. Certified  
100% error free. Meets or exceeds industry standards — ISO, ECMA,  
ANSI & JIS. Reinforced hub rings. Write  
protect tabs and labels. This is a high quality  
diskette manufactured by a nationally  
recognized company.

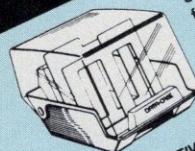
|                      |            |
|----------------------|------------|
| 5 1/4" Single Sided/ | \$ .99 ea. |
| Double Density       | \$1.09 ea. |
| 5 1/4" Double Sided/ |            |
| Double Density       |            |

|   |            |
|---|------------|
| Verbatim  |            |
| Verex Apple compatible diskettes<br>in 10-pack boxes. | \$ .99 ea. |
| 5 1/4" Single Sided/                                  |            |
| Double Density  |            |

|                      |            |
|----------------------|------------|
| 3M                   |            |
| 5 1/4" Single Sided/ | \$2.19 ea. |
| Double Density       |            |
| 5 1/4" Double Sided/ |            |
| Double Density       | \$3.25 ea. |
|                      | \$4.25 ea. |

|                             |  |
|-----------------------------|--|
| SONY                        |  |
| 3 1/2" S/S Micro Disk       |  |
| 3 1/2" D/S Micro Disk       |  |
| Minimum Order 50 Diskettes. |  |

## DATA-CASE



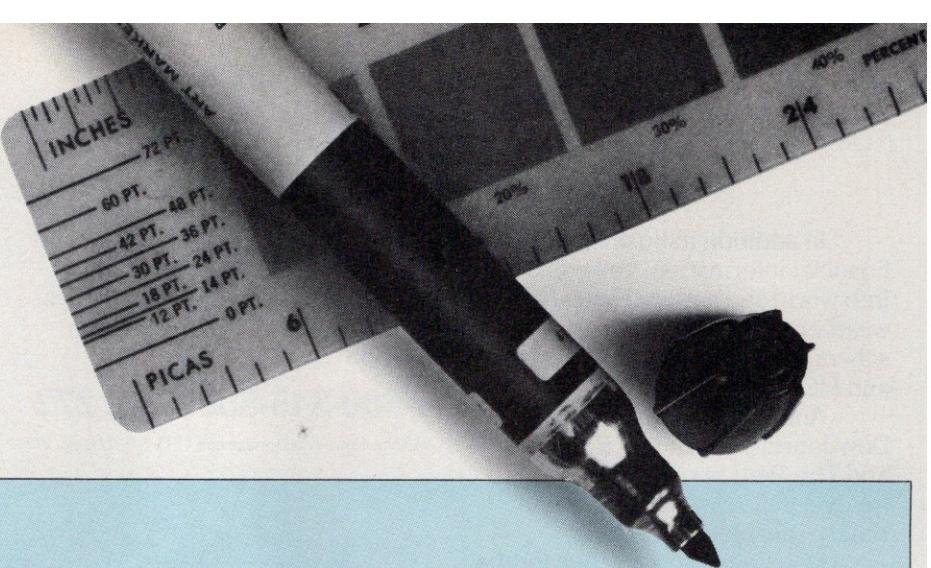
Stores and files up to 50  
5 1/4" diskettes. Made  
from durable styrene  
plastic. With order of 100  
or more diskettes  
\$8.95  
Only  
Regular \$9.95

**INNOVATIVE CONCEPTS, INC.**  
CALL  
TOLL FREE **1-800-USA-FLEX**  
IN ILLINOIS 1-312-351-9700

Please mention this ad when calling in your order. Master Card,  
Visa, C.O.D. or net 30 days with approved credit. Prices subject to  
change without notice.

**COMARK**  
COMARK, INC. 135 N. Brandon  
Glendale Heights, Illinois 60139

CIRCLE 291 ON READER SERVICE CARD



## TeX on the Mac

Perhaps the best link between the Macintosh and the LaserWriter will be TeX, the typesetting language invented in 1978 by Stanford's Donald Knuth, widely regarded as the world's foremost computer-science authority. TeX contains features such as automatic hyphenation, line breaks, and page-break capabilities that far exceed those of any other software. It is well suited for complex text-processing tasks such as book production.

Page-layout software such as PageMaker, MacPublisher, and ReadySetGo requires you first to write the text; then to create the graphics, if any; and, finally, to call up a new program to format the text and bring in the graphics.

**W**ith TeX, on the other hand, documents you've created on virtually any computer or word processor can contain embedded formatting commands that will generate completely-laid-out pages in any of a variety of user-specified formats. TeX is a rich and powerful language. One of its handiest features is that it lets you create custom macros, which enable you to issue a single command. These macros represent lists of commands that instruct the output device to format large blocks of text automatically.

At least two companies are now

working on TeX for the Macintosh, together with automatic conversion utilities that will change its output into the PostScript commands that the LaserWriter, the Linotron 101S, the Linotronic 300, and other PostScript-compatible devices can recognize.

One version of TeX reportedly is being developed by a company called TextSet for release later this year. TextSet is also working on a TeX-to-PostScript support package that will come out at the same time. This product will allow integration of graphics into the final output.

Kellerman & Smith is another company that will also release TeX for the Macintosh later this year. It plans a screen-preview driver and a driver for the ImageWriter, both of which will make calls to the Macintosh's built-in QuickDraw routines. A large collection of fonts, known in the TeX world as AMR or CMR (computer-modern) fonts, will come with the product.

Compared to standard word-processing programs, TeX is particularly adept at hyphenation, typesetting tables, and complex mathematical constructs and equations.

TeX already exists on many large computers and is soon to be released for the IBM PC. (Addison-Wesley has announced a product called MicroTeX for the PC, and another company, Personal TeX, has a product called PCTeX.) On the Macintosh, TeX will let ordinary users lay out entire books with relative ease.

PostScript code is developed for the Apple II or IBM Personal Computer, for example, these computers will also be able to drive the LaserWriter. Either the Apple II or the PC can be connected directly via the RS-232 serial port or can use an AppleTalk interface card, which Apple plans to release in the fall. Adobe, the creator of PostScript, has also released a product called TranScript that allows UNIX-based systems to use the LaserWriter.

Additionally, the Macintosh is not dependent on the LaserWriter for high-quality output. Allied Mergenthaler Linotype is producing versions of its Linotron 101S and Linotronic 300 typesetters that have PostScript built into them. When these typesetters are available late in the year, Macintosh users will be able to produce typeset output at resolutions up to 2540 dpi.

A likely scenario for a publisher will be to do layouts and galley work with the LaserWriter and then go to a typesetting machine for the finished work. Owners of the typesetting machines will be able to sell typesetting services to Macintosh users who can't afford to spend the \$20,000-\$40,000 that these printers will cost.

This new era of desktop publishing raises some questions, and the answers to them depend on the needs and viewpoints of the parties involved.

From the point of view of composition (i.e., typesetting), you cannot get real typeset quality by using the LaserWriter. You must use either the Linotron 101S or the Linotronic 300 to get true typeset quality. Three-hundred-dpi resolution is good, but it suffers in comparison to the Linotronics' superb output.

Nevertheless, many of the people who will use the Macintosh and LaserWriter for desktop publishing may find that they don't need true typeset output. What they can get with the LaserWriter will be impressive indeed, since its results are so much better than those of daisy-wheel printers, with their fixed pitch, static character spacing, and lack of graphics capabilities, and dot-matrix printers, with their low resolution and ill-formed, sometimes difficult-to-read letters. Furthermore, someone laying out a document with the Macintosh/LaserWriter and a page-makeup system will have total control over the appearance of the document.

## BACKUP PROTECTED SOFTWARE WITH COPY II MAC™

From the team who gave you COPY II PLUS and COPY II PC comes a powerful, easy-to-use disk backup utility for your MACINTOSH computer. Features include:

- Bit Copy Program
- Make Files Visible/Invisible
- Sector/File Editor
- Format/Verify Disks
- Repair Damaged Disks
- Copy Protect/Unprotect
- Undelete Files
- Copy Files/Disk

Increase the power of your MACINTOSH . . . use **COPY II MAC**

Available at your local dealer or direct from us.

**CENTRAL POINT Software, Inc.**

ONLY

**\$39.95**

PLUS \$3.00 SHIPPING/HANDLING

9700 SW Capitol Hwy., #100 / Portland, OR 97219

**(503) 244-5782**

M-F 8-5:30 (W. Coast Time)



CHECK, COD WELCOME

(Prepayment Required)

Versions also available for IBM, Apple and Commodore 64!

*These products are provided for the purpose of enabling you to make archival copies only.*

CIRCLE 184 ON READER SERVICE CARD

## Brainy Buffer.

Do you press "print," and wait? And wait? And wait?

HanZon's 64K Universal Data Buffer is the only self-configuring intelligent device that gives you uninterrupted use of your personal computer.

With four standard interface ports, now you can share output devices with two micro systems. Just plug them in and you're ready to go. And it's expandable up to 256K.

Call HanZon today for more information and the name of your nearest dealer: 206-487-1717.



**HANZON**  
Computer Enhancements

18732 142nd Ave. N.E., Woodinville, WA 98072

**PRESENTING  
THE  
MEGAMAX C COMPILER**

**FOR THE  
NEW  
MACINTOSH**

FEATURING:  
• IN-LINE ASSEMBLY • ONE PASS  
COMPILE • SUPPORT OF DYNAMIC  
OVERLAYS • FULL ACCESS OF MACINTOSH  
TOOLBOX ROUTINES • AND MUCH MORE  
DEVELOPMENT SYSTEM PACKAGE INCLUDES:  
• FULL-SCALE IMPLEMENTATION (K&R) C  
ROUTINES LIBRARY • LINKER • LIBRARIAN AND  
DOCUMENTATION  
DEALER AND USER GROUP  
INQUIRIES INVITED

**\$299.95**  
FOR MORE INFORMATION OR TO ORDER CALL OR WRITE:  
**Macmax Inc.**  
(214) 987-4931  
BOX 851521, DEPT. 2  
RICHARDSON, TX 75085-1521

MACINTOSH IS A  
REGISTERED TRADEMARK  
OF APPLE COMPUTER INC.

CIRCLE 242 ON READER SERVICE CARD

## HIPPO-C™

The C compilers for the Macintosh™

### Level 1:

#### Powerful, expandable, yet affordable:

- A friendly, integrated environment complete with an editor, full compiler, linker, source-level debugger, tutorial, standard C library, and structure definition files.
- Convenient access to serial ports and sound channels.
- Access to over 400 Toolbox routines.
- Over 200 pages of documentation and many sample programs.
- Upgradable to Hippo-C level 2 for \$250.00
- New version 1.2
- \$149.95

### Level 2:

#### Professional C development system. Here's what you've been waiting for:

- Allows for the creation of large, stand-alone Macintosh applications.
- Comes with an editor, optimizing C compiler, 68000 assembler, linker, C library, stdio package, full floating-point support (including math and trig functions), and structure definition files.
- Convenient access to over 500 Macintosh Toolbox routines.
- Documentation, many sample programs, and sources to useful programs.
- No royalties or licensing fees.
- You may obtain a non-copy protected disk by signing and returning a form along with a nominal fee to Hippopotamus.
- \$399.95

Available from your local dealer or directly from Hippopotamus Software:

**HIPPOPOTAMUS**  
SOFTWARE, INC.

1250 Oakmead Parkway, Suite 210, Sunnyvale, CA 94086 408/738-1200

Dealer inquiries welcome. We accept credit cards, checks, and money orders. California residents add local sales tax. Please include \$10 for shipping and handling. Macintosh is a trademark of Apple Computer, Inc. Hippo-C is a trademark of Hippopotamus Software, Inc. Please allow 1-2 weeks for delivery. Price, availability, and specifications subject to change without notice.

CIRCLE 197 ON READER SERVICE CARD

Rob Auster, marketing manager at Adobe, refers to the page-layout systems currently on the market as "first-generation" products. Ideally, Auster says, quality self-publishing requires "the guts of TeX (see "TeX on the Mac," page 128) with the interface of MacPaint."

Typesetting will soon no longer be an esoteric trade practiced only by a privileged and knowledgeable few. Computerized typesetting as specified by the page-description commands of the PostScript language, with its almost infinite flexibility, lets individuals set their own copy.

No longer need one person produce copy on a word processor, print that copy out on a daisy-wheel printer, and then give it to someone else to reenter all that text on the front end of a phototypesetter. That multilevel process often means the introduction of new mistakes by the person doing the typesetting, an individual often untrained in the original author's subject matter and thus unlikely to recognize many typographical errors.

Also, typesetting equipment, even if computerized, does not have error-checking facilities analogous to the spelling and grammar checkers that are available on microcomputers. Sometimes the only interface between the supposedly computerized phototypesetting front end and the phototypesetter itself is not even a direct link, but an antiquated paper tape. A completely new tape has to be punched each time a particular document needs an update.

With the release of the LaserWriter and its built-in PostScript, and with the advent of phototypesetters that are also PostScript engines, some people predict the death of the typesetting industry, or at least trouble for the members of typesetting unions. What we feel will happen, however, is that typesetting will become more accessible, creating more jobs. When word processing was introduced, it did not—as some doomsayers had

*John Barry, a free-lance writer and editor, is coauthor of The Unofficial I Hate Computers Book. Fred Davis is a senior editor of A+ and a specialist in computer typography. Michael Wiesenberg, a technical writer, is a contributing editor of Dr. Dobb's Journal. He also writes for various computer and gaming publications and is the author of Free Money: How to Win in the Cardrooms of California.*

predicted—make secretaries obsolete; it just moved some of them from a typewriter to a terminal. What *did* happen was that more documents were produced. With the proliferation of PostScript and computerized type-

setting software, we'll see more good-looking documents.

Since this aspect of the Macintosh Office System promises ongoing innovations, we'll keep you apprised of further developments.

+

## PRODUCT INFORMATION

### Jazz

Lotus Development Corporation  
55 Wheeler Street  
Cambridge, MA 02138  
(617) 492-7171

**List Price:** \$595

CIRCLE 366 ON READER SERVICE CARD

### Lasergrafix 1200

QMS  
P.O. Box 81250  
Mobile, AL 36689  
(205) 633-4300

**List Price:** \$24,095; PostScript controller, \$5000

CIRCLE 367 ON READER SERVICE CARD

### LaserWriter, Imagewriter

Apple Computer, Inc.  
20525 Mariani Avenue  
Cupertino, CA 95014  
(408) 996-1010

**List Price:** LaserWriter, \$6995; Image writer, \$595

CIRCLE 368 ON READER SERVICE CARD

### Linotron 101S, Linotronic 300

Allied/Mergenthaler Linotype  
201 Old Country Road  
Melville, NY 11747  
(516) 673-4197

**List Price:** Linotron 101S, \$19,950 without PostScript; Linotronic 300, \$38,950 without PostScript (PostScript will add about 20% to the price)

CIRCLE 369 ON READER SERVICE CARD

### MacPublisher

Boston Software Publishers  
19 Ledge Hill Road  
Boston, MA 02132  
(617) 327-5775

**List Price:** \$99.95

CIRCLE 370 ON READER SERVICE CARD

### MacWrite, MacPaint, MacDraw

Apple Computer, Inc.  
20525 Mariani Avenue  
Cupertino, CA 95014  
(408) 996-1010

**List Price:** MacWrite and MacPaint, bundled with Macintosh; MacDraw, \$125

CIRCLE 371 ON READER SERVICE CARD

### Microsoft Word, Microsoft Chart

Microsoft, Inc.  
10700 Northup Way  
Bellevue, WA 98004  
(206) 828-8080

**List Price:** Word, \$195; Chart, \$125

CIRCLE 372 ON READER SERVICE CARD

### PageMaker

Aldus Corporation  
616 First Avenue, Suite 400  
Seattle, WA 98104  
(206) 467-8165

**List Price:** \$495

CIRCLE 373 ON READER SERVICE CARD

### PostScript Language Manual

Adobe Systems, Inc.  
1870 Embarcadero Road, Suite 100  
Palo Alto, CA 94303  
(415) 852-0271

**List Price:** \$30

CIRCLE 374 ON READER SERVICE CARD

### ReadySetGo

Manhattan Graphics  
163 Varick Street  
New York, NY 10013  
(212) 924-2778

**List Price:** \$125

CIRCLE 375 ON READER SERVICE CARD

### TeX-to-PostScript device driver

TextSet  
416 4th Street  
P.O. Box 7993  
Ann Arbor, MI 48107  
(313) 996-3566

**List Price:** to be announced

CIRCLE 376 ON READER SERVICE CARD

### Macintosh TeX

Kellerman & Smith  
2343 45th Avenue  
Portland, OR 97215  
(503) 232-4799

**List Price:** to be announced

CIRCLE 377 ON READER SERVICE CARD

### ThunderScan

Thunderware, Inc.  
19 G Orinda Way  
Orinda, CA 94563  
(415) 254-6581

**List Price:** \$229

CIRCLE 378 ON READER SERVICE CARD

YOUR  
SOURCE  
For

# Macintosh™ SOFTWARE AND ACCESSORIES

BRAND NAME  
MAC products at  
DISCOUNTED  
PRICES.



SOFTWARE  
HARD DRIVES  
MODEMS  
DISKETTES  
DISKETTE CASES  
PRINTERS  
CARRYING BAGS  
...AND MORE!

New products are being added to  
our inventory weekly. Call today  
for our latest list and prices.

**(404) 446-2295**

or

MAIL THE COUPON BELOW

Please send me your latest list of products for the "MAC", along with your discounted prices.

NAME \_\_\_\_\_

STREET \_\_\_\_\_

CITY \_\_\_\_\_

STATE \_\_\_\_\_ ZIP \_\_\_\_\_

PHONE \_\_\_\_\_

# DESKTOP

## software center

DESKTOP SOFTWARE CENTER  
4115 FRANK NEELY RD., NW  
NORCROSS, GA. 30071

Macintosh is a trademark of Apple Computer, Inc.

CIRCLE 139 ON READER SERVICE CARD

A+ MAGAZINE/MAY 1985 ▶131



# Feed your Mac.

## Introducing ThunderScan.™

*Now you can turn any printed image into a detailed, high-resolution Macintosh graphic.*



Just roll your original into your Imagewriter.



ThunderScan scans and digitizes the image.



Presto! A high-resolution MacPaint document.

No doubt about it, Macintosh is one great graphics machine. But until now, Mac graphics have been limited to what you can draw with a mouse and what someone else has put on a disk. Consequently, taking full advantage of Mac's graphics capabilities has been tough. But now there's ThunderScan. The new optical scanning device that lets you feed your Mac a steady diet of graphics that are useful to you.

ThunderScan turns Mac's Imagewriter printer into an image reader. So you can digitize any printed image and turn it into a detailed, high-resolution MacPaint document. Anything, including forms, half-tones, photos, mechanical drawings, maps, floorplans, logos, signatures and more. From black and white and color originals. ThunderScan reproduces them at over 200 dots per inch and in 32 shades of gray.

ThunderScan's application software, written by Mac-team-member, Andy Hertzfeld, makes it an extremely versatile and useful tool. You can gen-

erate full-page images or selected parts of them. Enlarge and reduce them. Manipulate them. Control the contrast and brightness.

Create your own personal image disk. "Cut" and "paste" images together, creating new documents. And print them out on your Imagewriter. Or send them by modem to another Mac. The possibilities are nearly endless.

## No lights, no camera, just action.

What you see here is the complete ThunderScan system. You don't have to buy an expensive video camera. Just pop out your Imagewriter's ribbon cartridge, snap in ThunderScan and you're set.

It can even work in the dark (maybe you can think of an application for that).

If you bought a Mac at least partly for its graphics, only to find you couldn't take full advantage of them, now you can. With ThunderScan.

At an introductory price of just \$229, it's a small price to pay for a whole new graphics capability.

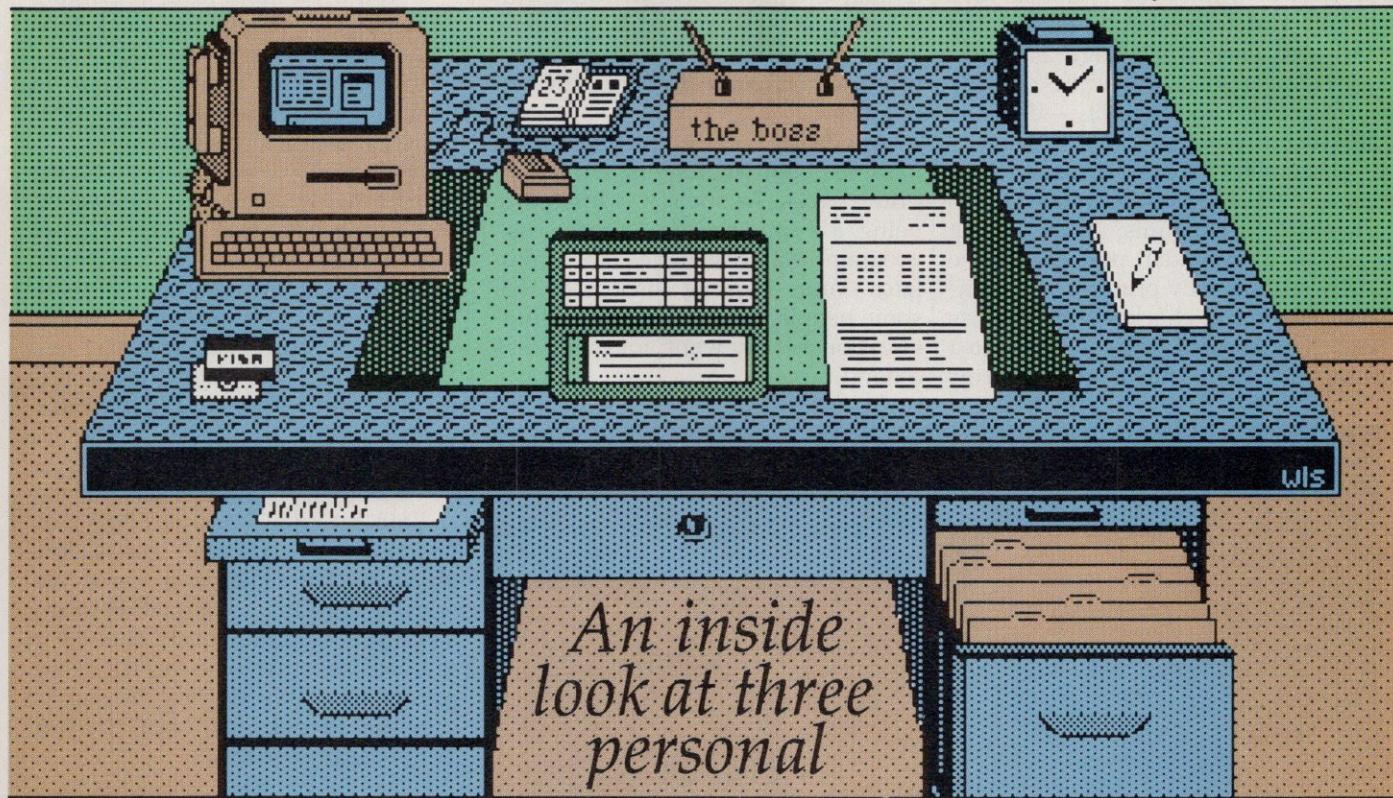
For more information or a ThunderScan of your own, see your dealer or call us today.

(415) 254-6581



## ThunderScan

Thunderware Inc., 19 G Orinda Way, Orinda, CA 94563



# Money-Management Programs

**D**id you go out and spend thousands of dollars on your home-computer system with the notion that you could actually use it, someday, to bring your personal finances under control?

You are not alone. Have you found a way yet to leverage your finances with your Mac, or are you still waiting for the right program to come along?

Relax. A growing variety of money-management software for the Macintosh is now reaching the marketplace.

The simplest approach to money management comes from ChequeBook by InterMatrix; a more powerful yet still easy-to-learn program is Electric Checkbook from State of the Art; and for those who can tolerate complexity in the pursuit of extra features, Dollars and \$ense by Monogram may fill the bill.

Although these programs are similar in intention, they differ greatly in features and execution. Whatever

your requirements—and your talent with numbers—one of these will be the program for you.

#### One Step at a Time

What each of us is looking for is a program that tracks our income and expenses; reconciles our bank activity; produces useful reports; is bug-free; and is pleasant to use.

These criteria mean different things to different people. Do you write 5 checks a month or 100? Do you have one bank account or several? Do you want a program to track your portfolio of common stocks and produce a complete financial statement and balance sheet? Do you require income forecasting and tax planning? Some programs offer more features than others, take longer to learn, and can justify their higher price tags.

#### ChequeBook

The easiest to set up and use of the three programs is ChequeBook from InterMatrix (the folks who make the

MacPhone). This program starts with a main display designed to make you feel right at home—or, more specifically, like you're sitting comfortably at your desk (see introductory screen, above).

**F**rom this vantage point, you can access any of ChequeBook's operations, either by clicking on one of the desktop icons or by selecting from pull-down menus at the top of the screen. You click on the open drawer to activate the general ledger, click on the notepad to generate a trial balance, and so on.

ChequeBook has 100 general-ledger accounts, including ten deposit accounts. The program suggests ten account names (mortgage, utilities, groceries, and the like), but you can easily reconfigure them. After setting

up your accounts, you establish your period end (calendar or fiscal year) and then enter a starting balance in your check register. Now you're ready to enter checkbook activity—deposits and disbursements.

ChequeBook can manage your credit-card expenses, as well as multiple checking accounts. At the end of your fiscal/calendar year, you close out your books by printing your general-ledger and check-history reports and then transfer your categories to a new data disk. The manual informs

us that ChequeBook also works with a hard disk; if you used it with one, you would have to keep your copy-protected program disk in the internal drive.

Appealing as ChequeBook is, it has one potential problem: It does not print checks. As such, it is limited to being a computerized "check-stub" program that distributes and tabulates your running expenses. For some people, that's as much computerization as they want; for others, it's a handicap.

If you need more from your money-management software, read on.

### The Bigger Battle Shapes Up

If ChequeBook is a lightweight financial manager, Dollars and \$ense is undeniably a heavyweight.

Dollars and \$ense has been on the market nearly as long as the Mac itself, and its head start has established it as a best-seller and unchallenged champion of Macintosh money-management software. Today, however, you have a choice, and you may find a different program that has all the features you want—at a lower price. You might, in fact, prefer a "middleweight" program, Electric Checkbook from State of the Art, Inc.

Both Electric Checkbook and Dollars and \$ense are cash-based, double-entry bookkeeping systems, which means that a transaction in any account is simultaneously entered in at least one other account. If two accounts are involved, then the sum of the debit entries must equal the sum of the credit entries.

F

or example, suppose you sell your car and deposit the funds in your savings account. You simultaneously debit (decrease) your Assets account by the amount of the sale and credit (increase) the balance in your savings account by the same amount.

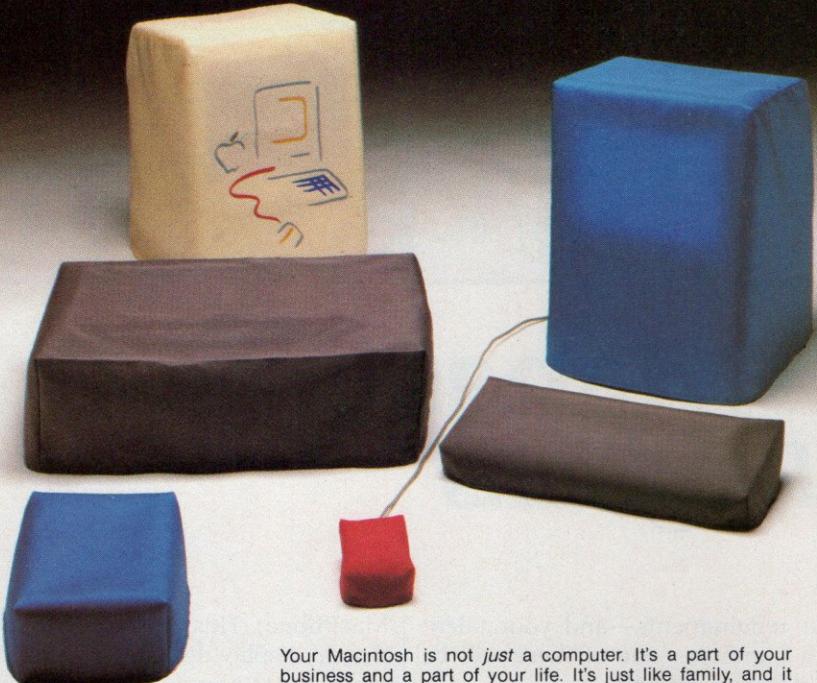
Double-entry bookkeeping allows for a relatively detailed and accurate set of financial reports. To take advantage of these programs' features, you must set up a "chart of accounts" identifying your various assets, liabilities, types of income, and types of expenses. All your financial transactions are debited or credited against these account categories.

### Electric Checkbook

Electric Checkbook offers you a single set of "standard household" categories, as well as the option of creating your own. The program can manage up to five bank accounts on a 128K Mac, with up to 100 financial categories, 100 outstanding bills, and 400 checks. (You can obtain additional file space by using an external disk drive.) It can manage up to ten bank accounts on a 512K machine, with room for many more bills and checks.

Electric Checkbook generates several kinds of reports and prints form-

## Mac COVER UP



Your Macintosh is not *just* a computer. It's a part of your business and a part of your life. It's just like family, and it deserves the *best* of care. So put on a 'COVER UP' and see how great your Mac will look while being protected from dust and spilled liquids. 'COVER UPS' are custom designed to fit like a glove, and yet allow very easy access to your Mac. With our 'COVER UPS', you can arrange your hardware any way you like. An individual 'COVER UP' is available for each component in your system. So after a long day with Mac, you won't have to rearrange your hardware when you shut down. Just 'COVER UP'. Save time, and save your Mac, in one of seven beautiful colors, from tan to blue to bone (same as the color of the Macintosh).

| Set #                    | Contents  | Sug. Retail* | Set # | Contents                                     | Sug. Retail* |
|--------------------------|---|--------------|-------|--|--------------|
| <b>MACINTOSH SETS</b>    |   |              |       |  |              |
| #M1                      | Macintosh, KYBD, Mouse, Imagewriter                                       | \$29.95      | #C1   | Apple IIC KYBD and Monitor                   | \$18.95      |
| #M2                      | Macintosh, KYBD, Mouse, Imagewriter, and Ext. Disk Drive                  | \$31.95      | #C2   | Apple IIC KYBD, Monitor, and Ext. Disk Drive | \$24.95      |
| #M4                      | Macintosh, KYBD, Mouse, Imagewriter, Ext. Disk Drive, and Numeric Ten Key | \$32.95      |       |  |              |
| <b>MACINTOSH XL SETS</b> |   |              |       |  |              |
| #L1                      | Macintosh XL with Profile Piggyback                                       | \$25.95      | #E1   | Apple IIE KYBD, Monitor, and Ext. Disk Drive | \$25.95      |
| #L2                      | Macintosh XL 2/5, 2/10  | \$23.95      | #E2   | Pro Model with Duodisk                       | \$25.95      |

These are just a few of the 'COVER UPS' available. For a complete product list circle reader number below, or call in order and receive special A+ readers discount.



### Computer Cover Co.

P.O. Box 3080, Laguna Hills, CA 92654  
CA (714) 380-0085 Others (800) 235-5330

Macintosh, Apple IIE, IIC, Mac XL are all registered trademarks of Apple computer.

Dealer Inquiries  
Invited

**NEW PRODUCT** Now you can take it with you, your diskettes that is. New 'SOFT PAK' makes it possible. Attractive pocket size (3 1/2") diskette carriers. Two sizes available now. 4 or 6 Pak.

CIRCLE 163 ON READER SERVICE CARD

# A PRINTER SO FAST YOUR APPLE WON'T KNOW WHAT HIT IT.

If you're hunting for the perfect printer for your Apple® II, IIc, IIe or Macintosh™, there's one way you can't miss. Set your sights on the ProWriter™ 8510SR or 1550SR, from C.Itoh.

Because no matter what your application, this dot matrix printer does the job faster than any other in its price class. At only \$629.

If it's data processing you need, the 8510SR zips out 180 cps, with 100 lines per minute throughput. You can also get draft quality at 120 cps and, as an added feature, beautifully sharp near letter quality printing as well.

For graphics work, the 8510SR prints a full 40% faster than others in its league.

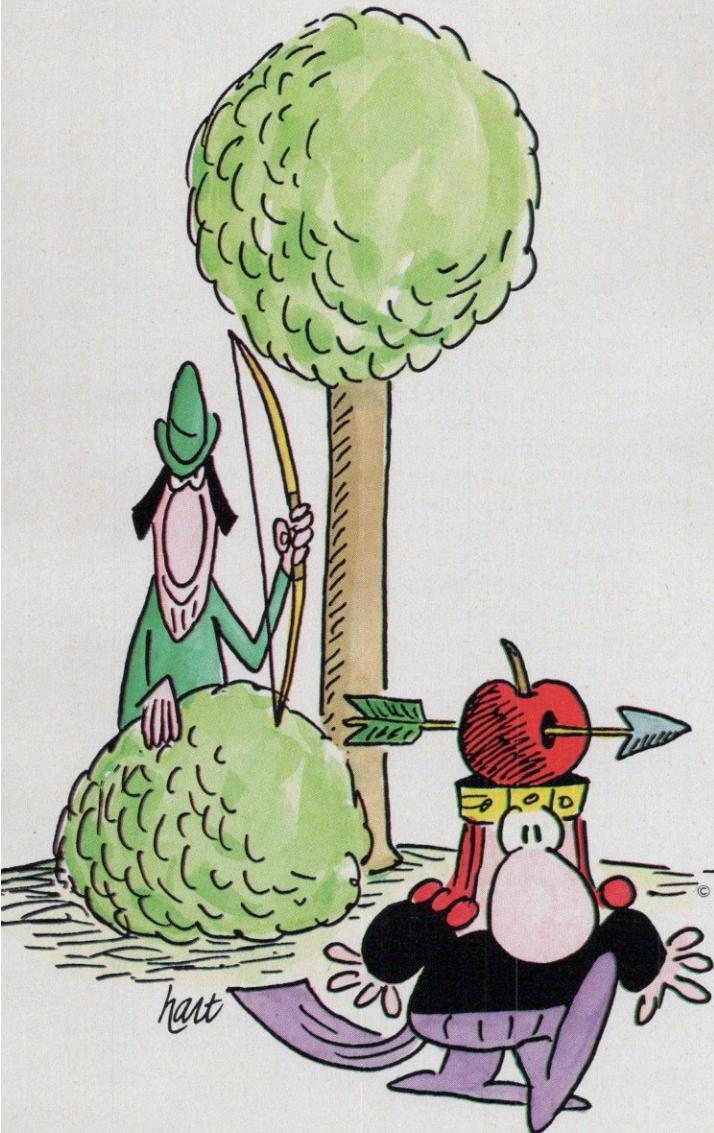
And when it comes to reliability, the ProWriter never falls short of the mark. Because like every C.Itoh printer, the 8510SR has been rigorously tested and proven on the job. And it comes with a full year's warranty, backed by 350 service centers coast-to-coast.

With over a decade of experience, and the strong backing of its 126-year-old, \$60 billion parent company, it's little wonder C.Itoh printers outsell the others by a long shot.

For more information on the ProWriter 8510SR or the wider carriage version 1550SR, see your C.Itoh dealer or call toll free 1-800-423-0300.

Or write C.Itoh Digital Products, Inc., 19750 South Vermont Avenue, Suite 220, Torrance, CA 90502.

™ Macintosh is a Trademark of Apple Computer Corp.  
ProWriter is a Trademark of C.Itoh Digital Products.  
® Apple is a Registered Trademark of Apple Computer Corp.  
© 1985 C.ITOH DIGITAL PRODUCTS, INC.



© 1984 News Group Chicago, Inc.



**C.ITOH**  
Printers



# How to Keep Your Macintosh™ from Frying to a Crisp

## Protecting Your Hardware From The 6,000 Volt Destroyer

Over 50% of all hardware and software complaints received by manufacturers have nothing at all to do with product quality. To the contrary, most damage reported is caused by surges in household or business current.

These surges continually degrade sensitive microcircuitry resulting in lost data and, even worse, computer repairs that are often mistakenly blamed on original equipment failure.

## 30,000 Volts At The Tip Of Your Finger

Another common danger to the computer, its peripherals and software, is static electricity. Few people realize that their bodies can carry as much as 30,000 volts of static.

The discharge of static electricity through the operator's fingertips can pose just as great a threat to your system as power line surges.

## The Faulty Ground

In addition to operator safety, a properly grounded computer is better able to drain off charges that would otherwise create dangerous voltage levels between the computer's chassis and microcircuitry. Again, the operator is typically not aware of whether the outlet is properly grounded and therefore risks both the operator's safety and hardware damage.

## RFI Can Play Havoc With Your Image

While RFI (Radio Frequency Interference) is not a source of damage to computer or operator, it can play havoc with the monitor image and to software. RFI is caused by nearby radio stations, the operator's own radio or television, as well as other electrical devices. RFI shows up on the monitor as a scrambled image and may also appear as data that has been garbled while in memory. If for no other reason, the computer operator should guard against RFI simply because its effect can nullify the time saving benefits provided by the computer.

MacGard looks and works equally well with the  
APPLE II, APPLE II+, APPLE IIe, APPLE III, and  
the APPLE LISA.

## MacGard: Real Protection For The Serious User

MacGard from Systems Control is the single most complete computer protection device available today. From its inception, MacGard was designed with Macintosh in mind. From its quality injection molded plastic casing which complements your Macintosh's appearance, its at your fingertips convenient placement on the side of your unit, and its combination of superior protection features, the MacGard is the ultimate system accessory for your Macintosh.

MacGard provides the serious user with a complete series of protection benefits.

- It clamps off all line to line and line to ground surges *before* they can enter your system.
- It provides an anti-static pad you need only touch to safely drain off harmful static.
- It provides an LED light to indicate proper ground of your electrical outlet.
- It provides RFI attenuation to assure a clean monitor image and software safety.
- A master on-off switch provides convenient control to power up your computer and two other peripherals.
- MacGard has a one year limited warranty.
- If you're not satisfied within 30 days, return MacGard for a full refund.

If you're a serious user, you owe it to yourself to own a MacGard. Your MacGard can only be purchased directly from Systems Control. Cost of the MacGard is \$89.95 plus \$3.50 for shipping and handling. To order or request more information, call toll free, 1-800-558-2001 Ext. 115, in Wisconsin, 1-800-242-3102 Ext. 115. We accept both Visa and MasterCard. No. C.O.D.

Systems Control PO. Box 788 M Iron Mountain, MI 49801

# MacGard™

A product of Systems Control. A division of M.J. Electric, Inc. Macintosh is a trademark licensed to Apple Computer, Inc. MacGard is designed to surpass operating requirements for category A as outlined in IEEE Standard 587-1980, "Guide for Surge Voltages in Low-Voltage AC Power Circuits."

fed checks. One type of report is an income statement (profit/loss) that shows the difference between all your income categories and expense categories. It shows whether you're making or losing money. Another report, a balance sheet, compares all your assets and liabilities to give you an indication of your net worth and also produces a record of checks, deposits, and adjustments.

**A**

unique feature of Electric Checkbook is a routine that allows you to record your bills before you pay them, which gives you a sort of cash-requirements report at any time. You can either write checks by hand or pay selected bills from this list, sending the data to your printer, where your continuous-feed checks are waiting. Regrettably, the program does not print the payee's address on the check.

Electric Checkbook can post an expense to as many as 5 accounts—compared to 3 in ChequeBook and 12 in Dollars and \$ense. Thus, you can

distribute the expenses represented in a single check—to a credit-card company, for example—to a variety of expense categories.

Electric Checkbook is very "Mac-ish" in execution, which makes it a pleasure to use. You use the mouse for the Cut, Paste, and Copy functions. Undo Entry is available, and you can bring up a Help screen for any task from within the program. To move between windows, you don't have to close the active window first.

#### Dollars and \$ense

Is your yen for high-powered financial management satisfied yet? If not, this next program will do the job.

It's Dollars and \$ense, and a list of its features and suggested applications makes the program sound like an office full of high-priced accounting talent.

For example, not only can you budget your cash flow with Dollars and \$ense, but you can also produce a graph that shows how your actual and projected cash flows compare.

"What if" routines that you can apply to your income and expenses let you test different financial approaches. Furthermore, the publisher, Monogram, offers a companion pro-

gram called Forecast that reads Dollars and \$ense data files to produce tax-planning strategies. With this tool, you can examine in advance the tax consequences of various income/expense scenarios.

**D**

ollars and \$ense offers three predefined sets of "standard financial categories": household, business, and tax preparation. You can modify any such category or design your own. It has room for up to 120 accounts and can manage as many as 12 checking accounts.

The 140-page manual describes applications for the program beyond simple checkbook management. It suggests, for example, that small, service-oriented businesses can use the program professionally for client billing, record keeping, or expense-account management. It also says you can use the program to manage an investment portfolio of stocks and bonds, and it shows how to maintain a complete household inventory for assessing your true net worth.

**Filevision**™

**Turn your Macintosh™ into a visual filing system.**

Words. Numbers. Pictures.

Now you can integrate all three.

With Filevision you have the power to:

- Put pictures and information together in a filing system
- Draw lines, rectangles, squares, ovals, circles, and free-form shapes
- Stretch, shrink, reshape, cut, paste, move and copy
- Overlap, hide and highlight
- Change and create symbols
- Print lists, labels and pictures
- Change print styles and sizes
- Record, edit and interrogate visual and numeric information



**TELOS**™  
SOFTWARE PRODUCTS  
Software for the real world

Inside California, call 1-800-368-3813; From anywhere in the U.S., call 1-800-554-2469

Filevision is a trademark of Telos Software Products. Macintosh is a trademark licensed to Apple Computer, Inc. Telos is a trademark of Telos Corporation

# The first library

We've written more Macintosh programs than any other software company:

Microsoft® Multiplan®, Microsoft File, Microsoft Word, Microsoft BASIC and Microsoft Chart.

But we can't write everything.

So when we find something really excellent out there, we publish it.

**Every program has to sweat out an interview.**

Because we've begun to build up an impressive body of Macintosh work, we founded Microsoft MacLibrary™ programs to house them.

Programs for business, for learning, for fun.

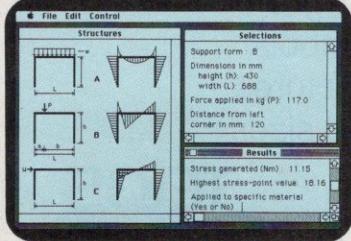
And these disks can't just roll in off the street. Each program has been exhaustively reviewed, previewed, and scrutinized.

We look for highly original, highly useful programs that are easy to learn and use.

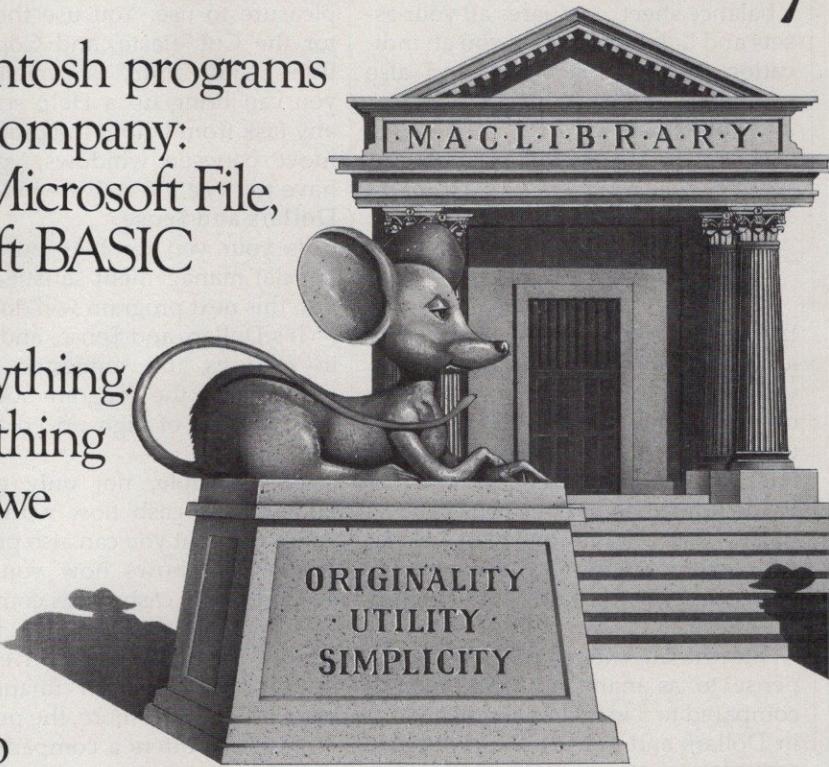
## Our first releases.

The renowned programming language, Logo, has now come to Macintosh. A mainstay of university curriculums,

Logo teaches programming concepts, techniques, and problem solving strategies. And it makes it all fun to boot. Intriguing enough to challenge even an advanced programmer—or motivate a child—this is Logo's latest

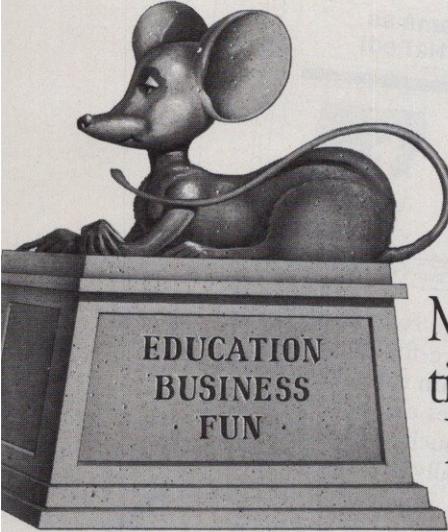


Logo by Logo  
Computer Systems Inc.



# dedicated to Macintosh.™

generation. And it takes full advantage of all of Mac's easy to use features.



Learning Microsoft Multiplan®  
and Microsoft Chart by Micro Courseware Corp.

Learning Microsoft Multiplan and Microsoft Chart is a superb interactive instructional program by Micro Courseware Corp. It walks you through the basics and into the intricacies of these sophisticated business tools. Teach yourself quickly and simply how to produce presentation quality graphics. As well as what-if projections, portfolio managers, and financial models.

Finally, there's Entrepreneur™ by Harvard Associates. You're in the software business, competing against one to eight other capitalists of either the human or computer persuasion. With 36 months to boom or bust, prosper or squeak through.

## Check out a few programs.

For a list of your nearest dealer stocking MacLibrary software, just call (800) 426-9400. Or in Washington State, Alaska, Hawaii and Canada, call (206) 828-8088. We think you'll be impressed. Because making it into MacLibrary speaks volumes.

Microsoft and Multiplan are registered trademarks and MacLibrary and The High Performance Software are trademarks of Microsoft Corporation. Macintosh is a trademark licensed to Apple Computer, Inc. Entrepreneur is a trademark of Harvard Associates.

# MICROSOFT

# ReadySetGo™ ReadySetGo™ ReadySetGo™



## Interactive page makeup for the Macintosh™

**ReadySetGo™** automates the page design and pasteup process, turning the Mac environment into a professional graphic arts publishing system. The system overcomes limitations of current Mac programs (such as MacWrite™, MacPaint™ and MacDraw™) encountered when trying to use those packages for sophisticated page makeup. ReadySetGo is ideal for projects requiring a considerable artistic design component on a page-by-page basis, such as newsletters, reports, forms, flyers, brochures, ads, resumes, letters, papers, presentations and all page proofing and layout design work.

Pages are built dynamically from component blocks which may contain **text** or **graphics**. The blocks can be dragged around the page and/or re-sized using the mouse. A ruler shows page dimensions for visual positioning of the blocks but a unique **specification sheet** gives each block's exact design parameters and allows very accurate positioning not possible with the mouse alone.

Text may be keyboarded from scratch or brought in from other Mac programs (such as MacWrite). Either way, the system provides full text editing features with the ability to change font, style and size at any point in the copy. All regular Mac fonts are supported in addition to **real typefaces** such as **Times™** and **Helvetica®**. **Sizes 1 thru 99 are available for any font!** When text is edited or a text block re-sized, the



display instantly updates to reflect changes and text automatically re-fits the block. Graphics blocks can contain rules, borders, solids or pictures. **Pictures** can be brought in from other programs (such as MacPaint). All graphics automatically scale as their block is re-sized.

Most standard page sizes are supported and a powerful **show page** facility provides a scaled view of the entire page. The show page display can be kept active concurrently with the actual page and is continually updated as work on the page progresses.

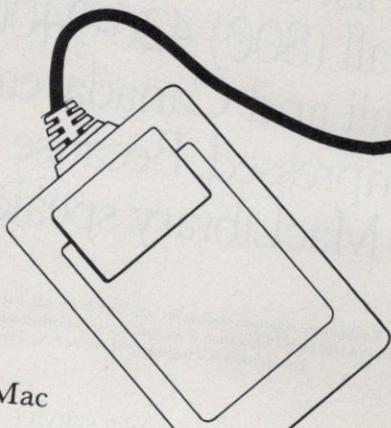
Pages may be stored on disk as full documents (layout plus contents) or as "shells" (layout only). The latter facility allows the reuse of page designs or the building of an inventory of layouts for future projects.

ReadySetGo pages can be printed on the **Imagewriter** or on the **Laser Printer** for superb publication quality output.

Macintosh, MacWrite, MacPaint and MacDraw are trademarks of Apple Computer. ReadySetGo is a trademark of Manhattan Graphics. Times and Helvetica are trademarks of Allied Corporation.

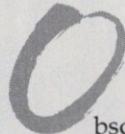
**Available Now! \$125** from your local dealer or order direct from  
**Manhattan Graphics**  
163 Varick Street, New York, NY 10013  
**212-924-2778**  
*MasterCard & Visa Accepted*

Requires 512K Mac  
CIRCLE 288 ON READER SERVICE CARD



To use Dollars and \$ense effectively, you must understand debits and credits and some basic principles of accounting theory. With this program, you do not manage just a checking account—you manage many. You have an account for each of your credit cards; an account for each asset, liability, and personal checking account; and an individual account for your stock portfolio, your mortgage, and your payroll taxes. If you hesitate to confront your personal finances in such detail, then you may find Dollars and \$ense a bit overwhelming.

The manual claims that "Dollars and \$ense can produce seven different kinds of reports of every aspect of your financial life." That may be so, but I never got far enough with the program to find out. The fact is, I found many of the explanations and routines obscure and complex. Besides, I'm not sure I want "seven different kinds of reports of every aspect of [my] financial life."



obscure? In entering checks and deposits into your check ledger in Dollars and \$ense, you can indicate whether your entry is "tax-related." I was unable to learn whether this designation meant tax-deductible, as an expense item, or taxable, as an income item.

#### At Last, the Bottom Line

Each of us has a different point of view, and Dollars and \$ense may suit you just fine. It's been the best-selling business program for the Macintosh for many months, and it certainly is packed with features. If you are less than aggressive about experiencing the thrills of personal financial management, however, another program may suit you better.

ChequeBook will suit armchair analysts just fine, as long as they are content to continue writing checks by hand. At its newly reduced price of \$54.95, it's definitely attractive.

My personal favorite among these three is Electric Checkbook. You really can learn to use it in less than two hours. The breadth of information it produces will surprise you, and it does print checks.

Like all the best Macintosh programs, Electric Checkbook gently guides you through a logical suc-

sion of steps toward a satisfying resolution. For me, it provides the satisfaction that comes from understanding not only the condition of my personal finances, but also how this condition occurred and what it means. Electric Checkbook has earned a place on my desktop. +

*Editor's Note: One important new program, The Home Accountant and Financial Planner from Arrays, Inc., did not arrive at our offices until after this article was written and therefore could not be included in the review. The Home Accountant is a solid program with many excellent features that make it useful for certain small-business applications, as well as home finances. When you are shopping for a financial-planning program for your Macintosh, be sure to compare The Home Accountant to the other three programs this article covers.*

*John Lincoln is a Macaholic who lives in Santa Barbara, California, with his wife, two children, and Macintosh.*

## PRODUCT INFORMATION

### ChequeBook

InterMatrix

5543 Satsuma Avenue  
North Hollywood, CA 91601  
(818) 509-0475

**List Price:** \$54.95

**CIRCLE 385 ON READER SERVICE CARD**

### Electric Checkbook

State of the Art, Inc.  
3191-C Airport Loop  
Costa Mesa, CA 92626-4618  
(714) 850-0111

**List Price:** \$79.95

**CIRCLE 386 ON READER SERVICE CARD**

### Dollars and \$ense

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

**List Price:** \$149.95

**CIRCLE 387 ON READER SERVICE CARD**

### The Home Accountant and Financial Planner

Arrays, Inc./Continental Software  
11223 South Hindry Avenue  
Los Angeles, CA 90045  
(213) 410-3977

**List Price:** \$150

**Requires:** Macintosh, 128K RAM, external disk drive; or Macintosh with 512K RAM

**CIRCLE 388 ON READER SERVICE CARD**

## The MacSOURCE

**Infotek, Inc. (516) 289-9682**

**56 Camilla Ln. E. Patchogue, NY 11772**

**512K Macintosh w/ 10 MB internal harddisk, special software.....\$3999.**

**Internal 10 MByte harddisk.....\$2100.**

**Piggyback 10 MB 5.25" harddisk.....\$1695.**

**Upgrade 128K to 512K board swap.....\$599.**

**when ordered with a harddisk.....\$499.**

**Upgrade to 1.5 or 2.5 MBytes RAM.....CALL**

**MacNetwork File Server+hd.....\$1800 up**

**PortableMac: Battery operate anywhere, recharge w/ car cigar lighter or AC.**

**..Add-on kit: \$299; complete: \$2295.**

**MacUPS+AC despiker-runs your Mac for 1.5 hours w/o AC power.....\$199.**

**Public Domain Software-27 disk library.**

**SW:\$6/disk; SW+media:\$9.50/disk.**

**MacTools.....casual: \$19.95; prof.: \$40.**

**MacTest-be sure your Mac works.....\$39.**

**Imagewriter ribbons: bl \$5.50, col. \$7.50**

**3.5" SSDD Sony micro diskette.....\$3.50**

**MacSpeaker-big 3 Watt external.....\$19.95**

**Composite Video adapter-use with a projection/large screen display.....\$189.**

**MacKeyBase-an antistatic and slide resistant keyboard & mouse base.....\$14.95**

**MacFan-Kit to keep your Mac cool.....\$49.**

**CAD software&plotter support.....\$190.**

**DBMS: Mainframe class application generator and post-relational database for Mac. Not just a file mgr!!!!.....\$349.**

**Laser Printer-300 Pixels / inch, stand-alone.....\$3300.; networked.....\$6800.....**

**We can turn Macs into very serious, yet easy to use business systems.....CALL**

**Networked Macs & Unix & DBMS.....CALL**

**MacProtect-6' extension cord with six transient-protected outlets.....\$49.**

**Desktop Work Station stand-set printer on top, Mac & external drive inside, and printer paper in builtin tray.....\$49.**

**High-Res electronic composition & publishing system.....\$6495.**

**Mac XL, Lisa 2, 2/10 items**

**2 MByte Ram Card ready to hold 256K chips, with 512 KB installed: \$1350; 1 MB: \$1690; 2 MB: \$2290.**

**4 Serial-Port card.....\$659.**

**2 Parallel-Port card.....\$195.**

**UPS and AC surge despiker.....\$350.**

**CAD software&plotter support.....\$290.**

**Multi-User SW: UNIX-5, UNIFY database, QCALC virt. mem. spreadsheet.....CALL**

**Network File Server + hard disk.....CALL**

**Can't find the software, add-on, or system you want? We'll help.**

**We also do consulting and development of special HW, SW and business systems.**

**CIRCLE 286 ON READER SERVICE CARD**

# IT WAS HER EYES...



... that tipped me off. They looked out through the fancy fur and perfume and told me something was wrong, dead wrong. I'd seen those eyes somewhere, in some long forgotten place, some dingy nightclub on the south side of Chicago. But here she was, strictly East Side Manhattan, if you catch my drift.

She was askin' me to stick my neck out for the long green, but a nasty feeling made me think twice before I made my move. I had to put those eyes to a face, and fast. The solution was on my desk: MAC PRIVATE EYE.™ One quick call to my inside man at headquarters was all it took. Within seconds he copied the mug shot with his MAC PRIVATE EYE video digitizer, modemed it straight to my Macintosh™ and put the I.D. on this dame. The \$595.00 I spent on that MAC PRIVATE EYE probably saved this flatfoot from some serious trouble. One thing WAS clear, my

MAC PRIVATE EYE would never leave me short for important information like maps, graphs, blueprints, photos, security I.D.'s, and a thousand other things I hadn't thought of yet. There was only one question; how did I ever get along without it?

For more information:  
I/O Video Inc., 225 Third St.  
Cambridge, MA 02142 (617) 547-4141  
Dealer and Distributor inquiries welcome.

**Mac  
Private**   
From I/O Video,  
for computer owners with vision.

Macintosh is a trademark of Apple Computer Inc.  
Mac Private Eye is a trademark of I/O Video Inc.

CIRCLE 141 ON READER SERVICE CARD

# C-Worthy Compiler

Last month I presented a look at two early C compilers. This month we'll take a close look at one that, in my opinion, provides the first quality programming environment for the Macintosh. That product is Consulair C.

Consulair is a company whose guiding light is William Duvall, the man behind the Macintosh assembler (now called the Macintosh Development System). Indeed, Duvall used early versions of Consulair C to develop the assembler, and the assembler is integrally linked to the process of using the C compiler.

Creating a program with Consulair C is somewhat like the process of using the assembler (see figure 1). You use the Edit program from the Macintosh Development System (included with Consulair C) to create your source code. I really haven't written much about this editor, so let me remedy that now.

Edit allows you to edit multiple files at the same time. Normally you enter text in nine-point type, which allows 120+ columns across the screen—something that most programmers will find handy. You can scroll horizontally, which you'll need to do if your lines are longer than what can fit across the screen (see figure 2 for a typical Edit screen). The multiple-file ability is probably the best feature for programmers. I find it quite easy to copy pieces of text from one file into the source code I'm working with. That's a nice touch for Mac programmers, since you can reuse much of the Macintosh code you'll develop in other programs (with only minor changes). The initialization routines, for example, are easy to copy from one program to

## *Smooth sailing for programmers with Consulair C*

another, getting you right to the meat of your program.

In other respects, the Edit program works much like MacWrite does. The Cut, Copy, and Paste functions work

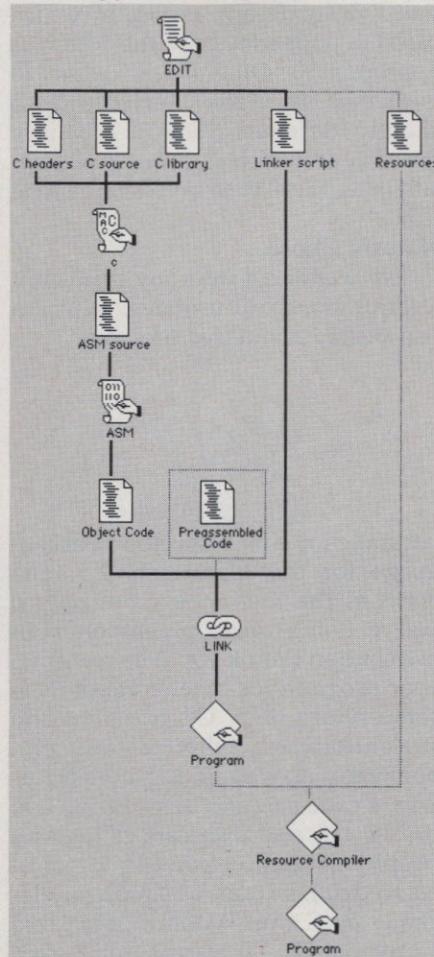


Figure 1: Creating a program is somewhat like the process of using the assembler.

just like they do in MacPaint and MacWrite, and the scroll bars work as you'd expect. The best part about Edit is the way it becomes your central focus during the development process. The Macintosh Development System includes an elaborate "job executive" function that allows you to invoke the assembler or linker directly from the editor. If an error shows up when you call the assembler, for example, you'll get the usual error messages, and then you'll end up back at the editor, with the error-message and source-code files both open and the latter ready to rework. On a Lisa—whoops, excuse me, Macintosh XL—the editor and executive make for a quick, convenient development environment, as good as any I've used on other microcomputers.

Consulair C includes a job-executive function similar to, but not quite as capable as, the one with the Macintosh Development System. You can, however, create a .JOB file and load it as the first file in the editor, which will allow you to transfer control to the compiler or assembler and then return to the editor when you're done.

# B

ecause the job executive is so integral to convenient program development with both the Macintosh Development System and Consulair C, I strongly encourage all you amateur programmers out there to spend a good portion of your initial time with either product developing a usable .JOB file that works for you. The way I work with the assembler, I

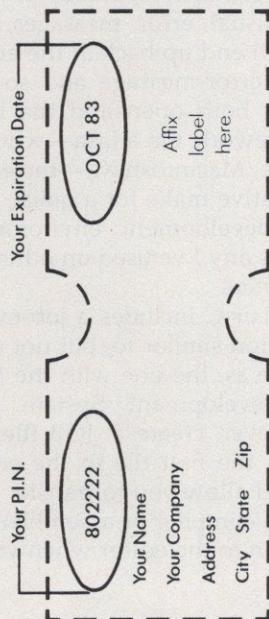
# IF YOU SUBSCRIBE TO



## PLEASE READ THIS

... Take a moment now and remove your mailing label and save it with this message. Your label is very important and helps us to help you quickly!

- When moving, send us your label with your new address 8 weeks before you move to A+, P.O. Box 2965, Boulder, Colorado 80322.
- If you have a question about your subscription, simply send us a note with your label, or a note with your name, address and Personal Identification Number to P.O. Box 2965, Boulder, Colorado 80322.



Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

If you have just subscribed, you'll receive  
your first issue in 30 to 60 days.

```

File Edit Search Format Font Size Transfer
Return to Thom Hogan:Consulair Example
*****
/*
*      Some Miscellaneous Consulair C code
*      shown in the development editor
*/
*****
/* some declarations */

#include "MacCDefs.h"
#include "Stdio.h"
#include "Window.h"
#include "Events.h"
#include "TextEdit.h"
#include "Menu.h"

MenuHandle DeskMenu;
MenuHandle EditMenu;
MenuHandle Menu;

/*
*      some global data definitions */
Clipboard
Init()
{
    InitDialogs();
    TEInit();
    InitMenus();
}

```

Figure 2: A typical Consulair C Edit screen

know that I will have finished all my source files (assembly code, link file, and resource file) before I invoke the assembler, linker, or resource compiler. Thus, I've created a .JOB file that whips through all the source code and creates the finished program (unless I've made any errors, in which case I'm popped back to the editor, as appropriate). Others will want to work piece by piece, which dictates a slightly different .JOB file. Believe me, a few minutes' thought will result in far more time saved in the long run.

### Natural Choice

I've wandered from my main subject this month: Consulair C. Why am I so excited about this program?

**W**ell, first, C is a natural choice as a development language for the Macintosh. I'd rank Forth as the first choice, but only if you're doing development on your own or don't think you'll be rewriting your program for other computers at some future time. C's excellent and straightforward ability to deal with pointers makes handling the relocation of code and data easy. Pascal and BASIC can also take care of handles (Apple's jargon for pointers to pointers to data), but not as simply or elegantly as C can. Without going into all the details, I'll just say that C is a good language for making use of the advanced programming features in-

side the Mac without a lot of memory overhead.

Consulair's version of C is the best C compiler I've seen so far for the Macintosh. I make this assertion for several reasons. First, Consulair C follows fairly closely the Kernighan and Ritchie standard for C. Most of the differences are extensions of what is considered standard C, and many of the others are simply Consulair's interpretations of what Kernighan and Ritchie describe in their book *The C Programming Language* (Prentice-Hall, 1979). The only two major problems most programmers will find in Consulair C are the lack of floating-point variable types and the lack of bit fields within structure definitions. If you don't know what those things are, you probably won't miss them (you can compensate for the lack of floating-point types by using one of the floating-point libraries available commercially or in the public domain, although doing so will mean typing a lot of code and doing some debugging).

On the plus side, Consulair C makes all characters in a name ("identifier" in C jargon) significant. For instance, Consulair C, unlike some other C compilers, correctly interprets names such as SetHandleSize and SetHandleRegion as being different. Consulair C allows "inline" assembly-language code, meaning that you can switch between assembly language and C pretty much at will in your C source code. It differs from some other C compilers in that it lets you use unsigned data

# Consulair C is the first programming tool that has brought me further than just playing.

types (char, short, int, and long). If you are interested in program portability, you will want to know that you can define integers as either 16 or 32 bits in length. In sum, the differences between the hypothetical "standard" C and Consulair C are mostly minor and are nicely documented in the manual.

Yes, but what about Mac-specific concerns, you ask? No problem there, either. Consulair includes several libraries of code, one of which is the Macintosh traps. All the libraries are provided in source code, meaning that you can modify them to suit your needs, if necessary. I found more of the ROM routines predefined here than in any other compiler I've worked with so far. Better yet, the other library files that come with the compiler have some nicely written extensions to C that I've had to write myself when I used other Cs. Many of these extensions are related to string handling, although you'll find some other routines here, too, such as ClearBytes (clear memory to zeroes), FillBytes (fill memory with a character), and MoveBytes (move memory around). The amount of library source code here will keep you busy for a few days just examining it and learning how to use it.

## A Manual for Initiates

The manual that comes with Consulair C is going to be a problem for programming beginners—it definitely will not teach you how to program in C. Indeed, if you're not pretty well on your way to C-manship, you'll find it confusing and disorganized. For those of us who are comfortable with C, on the other hand, the manual is fine. It tells you everything you need to know about this specific implementation of C, which means that most of the manual is devoted to essential background information such as which registers the compiler uses to pass arguments, how data is stored and where, and how the C control statements reduce to assembly-language code. All of this information, by the way, is something you'd nor-

mally have to dig up for yourself by doing some program debugging; I applaud Consulair for including it in its manual. Fewer than a dozen pages tell you how to actually use the compiler, but that's OK, since there isn't a lot to learn.

## Good Code

What about the code Consulair C produces?

Well, I'm no whiz at optimizing 68000 assembly-language code, but what I have looked at seems to be reasonably good. Others I've talked to have had positive things to say about Consulair C's code, as well. The compiler reduces your C code into assembly language, which you then run through the Macintosh Development System assembler.

**C**onsulair C works just fine on a 128K Mac, although if you're developing serious applications, you'll want to look into getting a hard disk or a Mac XL; source code has a way of growing to more than fill a single Mac disk. The copy of C you get with the package is copy-protected, but Consulair will send you an unprotected version for a signed license agreement and a few dollars (to cover the company's costs).

I've been playing at programming the Macintosh for over a year now, and Consulair C is the first programming tool (other than the assembler) that has brought me further than just playing. With a good tutorial, some better Macintosh-specific programming examples, and a floating-point library, Consulair C would be at the top of my programming chart. As it is, it warrants the attention of any serious Mac programmer. +

*Thom Hogan is editor-in-chief of Business Software and is the author of numerous computer books, including InfoWorld's Essential Guide to the Apple II.*

## PRODUCT INFORMATION

### Consulair C

Consulair  
140 Campo Drive  
Portola Valley, CA 94025  
(415) 851-3849

**List Price:** \$295, plus \$175 for Mac Toolkit

**CIRCLE 353 ON READER SERVICE CARD**

Fits: Mac, IIc,  
II, II+, & IIe

FEELS GOOD!

oooh

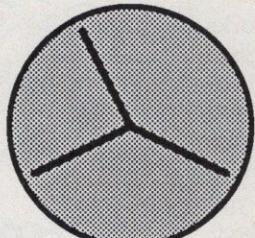
TM

# GraphWorks

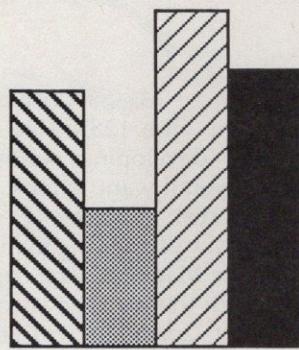
Main Menu

Get AppleWorks File

Graphing AppleWorks



Pie



Bar



Line

Put AppleWorks<sup>TM</sup> to Work!!!

GraphWorks<sup>TM</sup> adds graphics to AppleWorks  
Visualize data. Print it. Present it.

GraphWorks

List Price

\$79.95

To Order



# Five stars for your Apple.

Introducing a selection of new product stars for your Apple Computer from PBI Software.

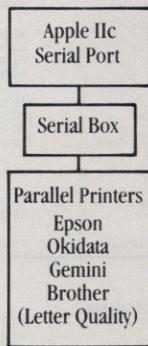
Add a star and watch your Apple shine!

## for the IIe/IIc™

### Add a parallel printer to your IIc

Here's a low cost serial to parallel adapter that comes complete with everything you need to connect your Apple's serial printer port to a standard parallel printer. This unit also allows you to print Epson Graphics. Please specify printer type. A Serial Box for the Macintosh™ will soon be available. Call for details.

**Serial Box for the IIc \$89.95**



## for the Macintosh™



### Personalize Your Macintosh™ icons!

Icon Switcher allows you to design your own icons with MacPaint™ and replace your program icon with one of your own creations, all in a few simple steps. Identify your special files quickly!

**Icon Switcher for Macintosh \$19.99**

## ★Icon Switcher

# PBI Software

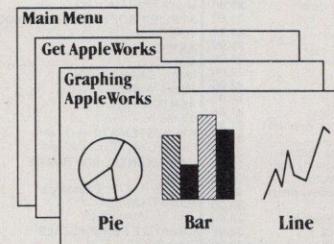
A SUBSIDIARY OF ITAT, INC.

1155B-H Chess Drive • Foster City, CA 94404  
CIRCLE 140 ON READER SERVICE CARD

## To Order:

Call Toll Free: **800-843-5722**  
In California: **800-572-2746**  
VISA, MasterCard and American Express accepted.  
Monday thru Friday 9AM-5PM PST  
Information & Dealer inquiries, call: 415-349-8765

Apple IIc, IIe, AppleWorks and MacPaint are trademarks of Apple Computer, Inc. Macintosh is a trademark licensed to Apple Computer, Inc. GraphWorks and Feathers & Space are trademarks of PBI Software.



### GraphWorks adds graphics to AppleWorks™

Visualize data. Print it. Present it. Now you can plot spreadsheet data files as line, bar, stack-bar or pie charts. The program is menu-driven and folder-oriented, so it's as easy to use as AppleWorks!

**GraphWorks for the IIe/IIc \$79.95**

## ★GraphWorks™



### The game for the Macintosh™

Feathers & Space is an arcade-like game that takes full advantage of the graphics and sounds of the Macintosh. Attacking birds stress the defense capabilities of your mother ship and the space outpost. Protect the space outpost or get eaten alive. Mouse ship movements, click activated firing power and keyboard smart bombs. This game also offers defense from discovery; one click and your boss can't walk in and smart bomb you if you're defending your outpost at work.

**Feathers & Space for Macintosh \$34.95**

## ★Feathers & Space™

**Back Up Your Software**

|                                  | Our Price |
|----------------------------------|-----------|
| E.D.D. III (Best Nibble Copier)  | 46.00     |
| CIA Files (Best Disk Utilities!) | 48.00     |
| Copy II Plus - Central Point     | 22.00     |
| Locksmith 5.0 - Omega            | 68.00     |
| Nibbles Away III                 | 49.00     |
| Copy Master II 128K w/Grump      | 99.00     |
| Wildcard II - Central Point      | 99.00     |
| Replay II - MicroAnalyst         | 80.00     |

**Macintosh**

|                        | Our Price |
|------------------------|-----------|
| Back To Basics (MAC)   | 225.00    |
| Copy II Mac            | 24.00     |
| DB Master Mac          | 117.00    |
| Dollars & Sense        | 89.00     |
| Filevision             | 117.00    |
| Hayden Ensemble        | 179.00    |
| Home                   | 248.00    |
| Home Accountant        | 61.00     |
| MacLion Database       | 275.00    |
| MacPublisher           | 78.00     |
| Mastery                | 31.00     |
| Microsoft Basic        | 90.00     |
| Microsoft Chart        | 78.00     |
| Microsoft Multiplan    | 119.00    |
| Microsoft Word         | 119.00    |
| PFS: File Report Combo | 117.00    |
| Ready Set-Go           | 89.00     |
| Sargon III             | 31.00     |
| TKI Solver             | 149.00    |
| Think Tank             | 81.00     |
| Typing Tutor III       | 37.00     |

**Entertainment**

|                                  | Our Price |
|----------------------------------|-----------|
| Seven Cities of Gold             | 28.00     |
| Murder on the Zinderneuf         | 28.00     |
| Archon                           | 28.00     |
| Pinball Construction Set         | 28.00     |
| One-On-One                       | 28.00     |
| Skyfox                           | 28.00     |
| Miner 2049er or The Heist        | 25.00     |
| Wizardry                         | 31.00     |
| Knight of Diamonds               | 21.50     |
| Legacy of Lyngamy                | 25.00     |
| Return of Werndra                | 25.00     |
| Rescue Raiders                   | 22.00     |
| Crypt of Menea                   | 22.00     |
| Wizprint                         | 16.00     |
| The Quest or Ring Quest          | 21.80     |
| Expedition Amazon, or Xyphus     | 21.80     |
| Sword of Kadash                  | 21.80     |
| Millionaire, Squire, or Barron   | 31.00     |
| Solo Flight or Nato Commander    | 23.00     |
| Amazon or Dragon World           | 26.00     |
| Fahrenheit 451 or Shadow Keep    | 26.00     |
| Flight Simulator II              | 33.00     |
| Championship Lode Runner         | 22.00     |
| Choplifter! or Karateka          | 22.00     |
| Pole Position or Zaxxon          | 20.00     |
| Bruce Lee                        | 25.00     |
| Spy Hunter, Star Trek, or Tapper | 28.00     |
| Buck Rogers or Up 'n' Down       | 28.00     |
| Kings Quest                      | 31.00     |
| Beyond Castle Wolfenstein        | 22.00     |
| Ultimate III: Exodus             | 22.00     |
| Sargon III                       | 31.00     |
| Cuthbert, or Seastalker          | 25.00     |
| Hitchhiker's Guide to the Galaxy | 25.00     |
| Deadline or Starcross            | 25.00     |
| Witness, Planefall, or Enchanter | 28.00     |
| Infidel or Sorceror              | 28.00     |
| Zork II, Zork III, or Suspect    | 28.00     |
| Zork I                           | 25.00     |
| Objective Kurk                   | 25.00     |
| 50 Mission Crush                 | 25.00     |
| War in Russia                    | 49.00     |
| Imperium Galactum                | 25.00     |
| Reforger 88                      | 37.00     |
| Baltic 85                        | 22.00     |
| Question                         | 31.00     |
| Broadsides                       | 25.00     |
| Geopolitique 1990                | 25.00     |
| North Atlantic '86               | 37.00     |
| Battle For Normandy              | 25.00     |
| Carrier Force                    | 37.00     |
| Germany 1985                     | 37.00     |
| Gulliver's Travels by Windham    | 20.00     |
| Wizard Of Oz by Windham          | 20.00     |

**Hobby**

|                                | Our Price |
|--------------------------------|-----------|
| Apple Mechanic                 | 18.50     |
| Beagle Basic                   | 22.00     |
| Beagle G.P.L.E                 | 31.00     |
| Beagle Graphics                | 37.00     |
| D-Code                         | 25.00     |
| Disk Quick                     | 18.50     |
| Dos Box                        | 15.00     |
| Double Take                    | 22.00     |
| Fat Cat                        | 22.00     |
| Flex Text                      | 18.50     |
| Frame Up                       | 18.50     |
| I.O. Silver                    | 18.50     |
| Pronto Dos                     | 18.50     |
| Silicon Salad                  | 15.50     |
| Triple Dump                    | 25.00     |
| Typefaces                      | 12.50     |
| Utility City                   | 18.50     |
| Bag of Tricks                  | 25.00     |
| Applesoft Compiler (Microsoft) | 109.00    |
| Einstein Compiler              | 85.00     |
| Compiler Plus (Hayden)         | 37.00     |
| Lisa V.2                       | 55.00     |
| Merlin Pro                     | 62.00     |
| Merlin Assembler               | 38.00     |
| Merlin Combo Pack              | 68.00     |
| Ultimate Computer 6502         | 32.00     |
| The Graphics Magician          | 48.00     |
| New Complete Graphics Sys.     | 48.00     |
| Dazzle Draw                    | 37.00     |
| Pix-1                          | 31.00     |
| Take I                         | 37.00     |
| Blazing Paddles                | 31.00     |
| Zoom Graphics                  | 31.00     |
| Sideways                       | 37.00     |
| Fontrix                        | 42.00     |
| Font Paks 1-9 ea               | 12.00     |
| Printographer                  | 24.00     |

**Blank Media**

|                     | Our Price |
|---------------------|-----------|
| Elephant SS/DD (10) | 13.00     |
| BASF SS/DD (10)     | 17.00     |
| Maxell SS/DD (10)   | 18.00     |
| Verbatim SS/DD (10) | 18.00     |
| 3M SS/DD (10)       | 18.00     |
| Memorex SS/DD (10)  | 18.00     |
| Dysan SS/DD (10)    | 23.00     |
| Generic SS/DD (100) | 145.00    |

**PROGRAMS Plus**

Visit Our New Showroom: Exit 32 off I-95

Stationhouse Square, 2505 Main Street • 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 &amp; Conn. residents call (203) 378-3662 or 378-8293

**Up to 50% off retail****MACINTOSH COMPUTERS****APPLE //c, //e COMPUTERS****LOWEST PRICES ON EPSON PRINTERS****Business****ADVANCED LOGIC SYSTEMS****T-Maker**

Our Price

189.00

**APPLE****Access // (//e, //c)****Apple Works****Apple Writer // (//e, //c)****Quick File // (//e, //c)**

65.00

215.00

125.00

79.00

**APPLIED SOFTWARE TECHNOLOGY****Versaform**

64.00

**ARTS/C****MagiCalc**

94.00

**Magic Office System**

185.00

**Magic Window II**

94.00

**ASHTON TATE****dBase II**

279.00

**BPI SYSTEMS (II+or //e)****GA, AR, AP, PR or INV, ea.**

235.00

**CONTINENTAL SOFTWARE****F.C.M./FL**

61.00

**G/L, A/R, A/P, Payroll ea.**

145.00

**Home Cataloger**

31.00

**The Tax Advantage**

42.00

**CREATIVE PERIPHERALS****Time Trax**

65.00

**DECISION SUPPORT****The Business Accountant**

152.00

**DOW JONES SOFTWARE****The Market Analyzer**

209.00

**The Market Manager**

149.00

**The Market Microscope**

209.00

**EDUCATIONAL SOFTWARE****Apple Logo // (//e, //c)**

84.00

**BARON'S****Computer SAT**

54.00

**CB'S****Career Planning**

55.00

**Coast To Coast**

34.00

**Goren's Bridge**

49.00

**Mastering the SAT**

93.00

**Micro Speed Reading**

78.00

**Success w/ Math (ea)**

15.50

**DAVIDSON & ASSOCIATES****Classmate**

30.00

**Math Blaster**

30.00

**Speed Reader II**

42.00

**Speed Reader Data A.B.C. or D**

50.00

**Spell-It**

30.00

**Word Attack!**

30.00

**DESIGNWARE****Grammer Examiner**

28.00

**Math Maze**

24.00

**Mission Algebra**

28.00

**Spellingraph**

24.00

**Spellakazam**

19.00

**States & Traits**

28.00

**DLM**

21.00

**Alligator Mix**

21.00

**Alphabet Circus**

19.00

**Demolition Division**

21.00

**Number Farm**

19.00

**Spelling Wiz**

21.00

**Accessories****ALS Cards**

Call

**Applied Engineering Cards**

Call

**Kensington System Saver**

64.00

**Merlin Pro**

55.00

**Merlin Assembler**

62.00

**Merlin Combo Pack**

68.00

**Ultimate Computer 6502**

37.00

**The Graphics Magician**

48.00

**New Complete Graphics Sys.**

48.00

**Dazzle Draw**

37.00

**Pix-1**

31.00

**Take I**

37.00

**Blazing Paddles**

31.00

**Zoom Graphics**

31.00

**Sideways**

37.00

**Fontrix**

42.00

**Font Paks 1-9 ea**

12.00

**Printographer**

24.00

**Blank Media****Our Price**

13.00

17.00

18.00

18.00

18.00

18.00

18.00

18.00

18.00

18.00

18.00

18.00

18.00

18.00

18.00

18.00

18.00

18.00

18.00

18.00

18.00

18.00

18.00

18.00

18.00

18.00

18.00

18.00

18.00

18.00

18.00

18.00

18.00

18.00

18

# MacTips

Suggestions from our readers

## A SLICK MOUSEPAD

If you have admired some of the special pads and surfaces that you can buy to run your Mac mouse around on, consider saving yourself some money by making your own.

Go to a cooking-equipment store (or to the housewares section of a department store) and purchase one of the clear, thin-plastic chopping boards you will find there. You will probably find ones that have a rough cutting side and a smooth underside. Next, go to your local electronics or hardware store and purchase a set of Jumbo Rubber Pads or feet for protecting furniture from scratches. (Put them on the rough side of the cutting board.) Remove any decals, and you have yourself a super solid mouse board that reserves running room for your mouse on a messy desk, as well as providing it with a smooth, easy-to-clean surface to cavort upon.

If you leave the original rubber feet on the board, they will act as bumpers to remind you when your mouse is close to the edge. For the ultimate in smooth-running mice, wax the smooth surface of the cutting board with a hard car wax and polish well.

George A. R. Silver  
Richmond, IN

## PROGRAMMABLE CALCULATOR

The Mac's ability to copy and paste among various applications and desktop accessories allows you to simulate the operation of a programmable calculator. To "program" the calculator, open either the Notepad or a MacWrite document and type the calculator numbers and symbols you need to perform the calculation. Then select the text for editing by dragging the insertion pointer over it to make it appear white on black. Choose Copy from the Edit menu to copy the selected text onto the clipboard.

To execute the "program," get the

calculator out of the desktop accessories. After you choose Paste from the Edit menu, the computer will tap in the text, just as if you had clicked it in yourself. The answer to the calculation will appear on the calculator display.

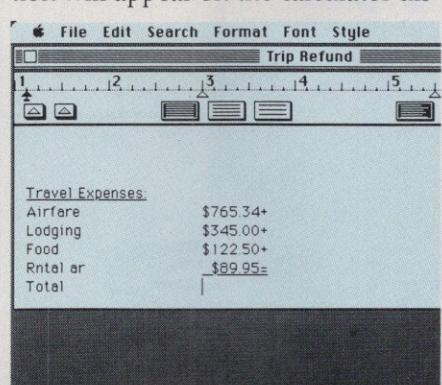


Figure 1: To total a list of numbers in a MacWrite document, first type in the numbers.

play, where you can copy it onto the clipboard and paste it back into the notepad or MacWrite document (see figures 1-4.)

Steve Wille  
LaGrange Park, IL

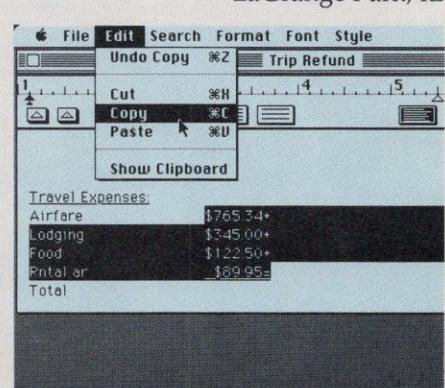


Figure 2: Select the entire area of text and choose Copy from the Edit menu.

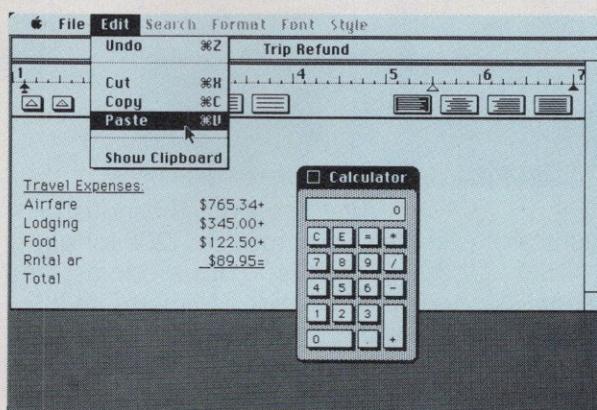


Figure 3: Get out the calculator and select Paste from the Edit menu. The total will appear on the calculator display. The calculator will beep as it encounters keystrokes such as letters of the alphabet, dollar signs, tabs, and returns, which don't mean anything to the calculator—it will ignore them. (Caution: The letters C and E do mean something to the calculator.)

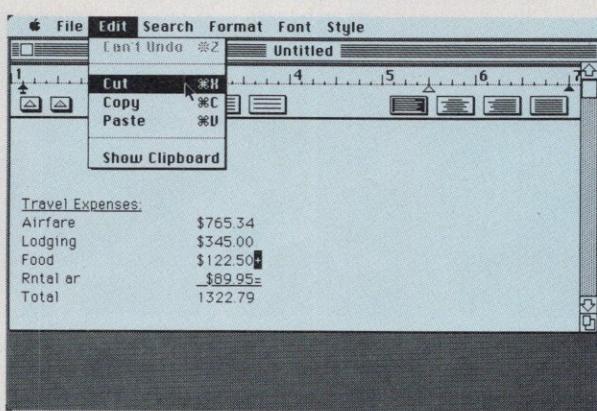
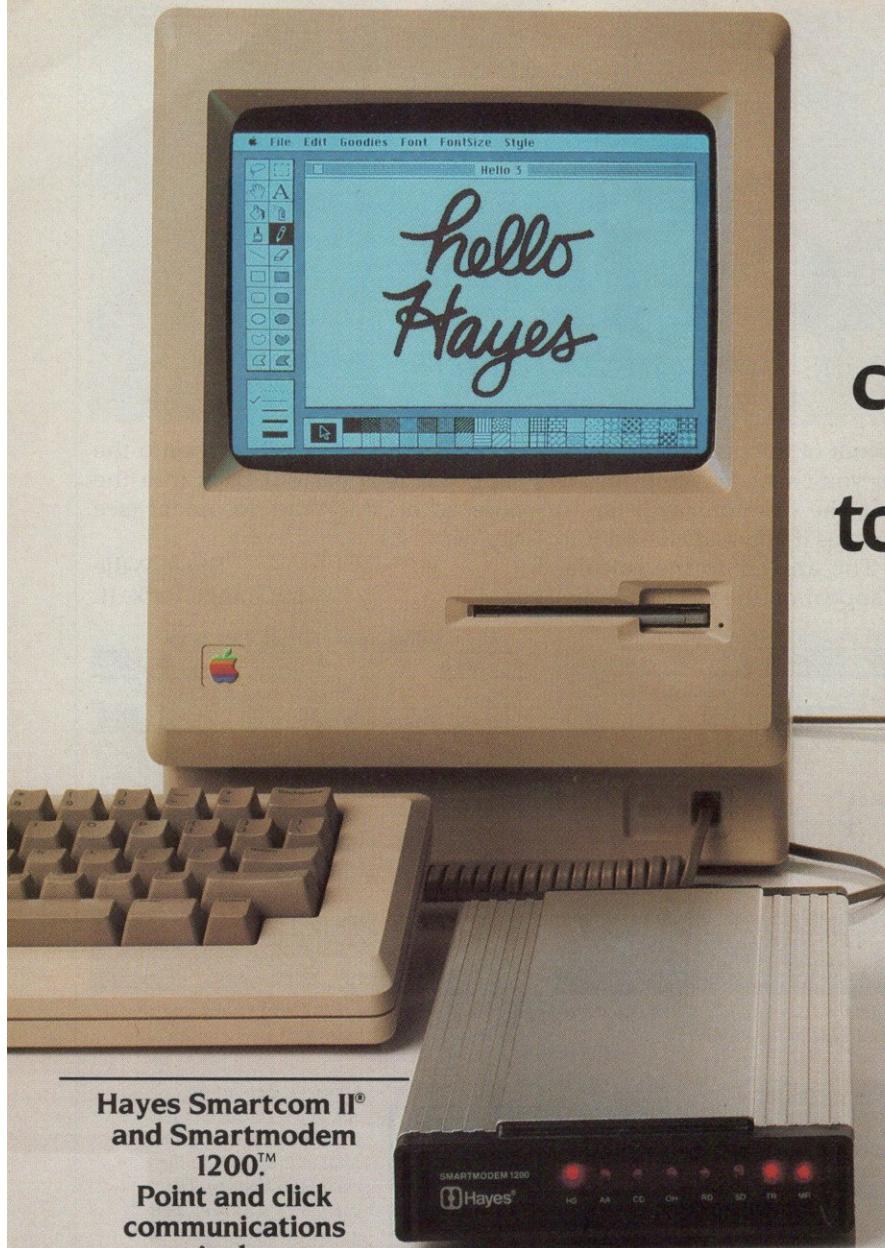


Figure 4: To put the answer back in the MacWrite document, choose Copy from the Edit menu, select your MacWrite document window by clicking on the title bar, and select an insertion point for the answer. Choose Paste from the Edit menu to insert the answer. You can clean up the text and delete the plus signs and equal sign by using the Change option from the Search menu and changing all the plus signs and the equal sign to blanks.



**Hayes Smartcom II®  
and Smartmodem  
1200™**  
**Point and click  
communications  
at its best.**

Now Macintosh\* can communicate with the best: Hayes.

When it comes to personal computer communications, Hayes set the standards. For the IBM\* PC and compatibles. And now for Macintosh, too.

All you need is the industry leader, Smartmodem 1200 (or our 300 or new 2400 bps modems), and a special version of Smartcom II software. For sophisticated, computer to computer communications—a la Macintosh.

Using your mouse, icons and



**Atlanta, 3 P.M.** "Here's the plan for the new space. What do you think?"

**Boston, 3:04 P.M.** "Looks good. But can you move the lounge over here, and add a second exit, like this?"

**Atlanta, 3:05 P.M.** "Brilliant! I'll incorporate these changes for tomorrow's meeting."

# Introducing the most ingenious communications system known to man. Or mouse

pull-down windows. Smartcom II makes communications as easy as pointing. And clicking.

## Mac to Mac graphics. Picture perfect!

Now your Mac can send and receive pictures and drawings long distance with other Macintoshes. And if you have a powerful 512K Mac, you can also take advantage of the unique interactive graphics capabilities of Smartcom II. So that pictures or text sent to other 512K Macs can be simultaneously reviewed, perfected and updated from both locations! For the fun of it, you can even try interactive games on the graphic gameboards

## Mac to personal computers and data bases everywhere.

Want to communicate with an IBM PC? Or dozens of other personal computers? Your Smartmodem 1200 and Smartcom II communications system makes it easy to send and receive text over ordinary phone lines. Quickly. Accurately. Economically.

And a wealth of business, personal and financial information awaits you from on-line data bases. Smartcom II even comes with automatic log-on for many of these services (and introductory bonus subscription and access time discounts valued at over \$300!).

## BOLDER THAN BOLD

I have derived much enjoyment from my MacPaint application, but sometimes I want to use MacPaint to print text that is bolder than what the Bold command allows in MacPaint. You can create megabold letters by selecting the Bold option and then Outline. By using the paint bucket, you can fill these letters easily to achieve a much bolder look. You may have to use fat-bits when you don't have enough room for the paint bucket to fill up the entire letter.

Louis Trotta

## LACK OF MEMORY WITH TWO DRIVES

I had been using MacWrite on a startup disk in the internal drive and a disk with the MacWrite files in the external drive. I worked in this fashion for some time, saving and trashing files repeatedly from the file disk.

I suddenly started getting a message that there was not enough memory to work with a second disk.

In order to solve the problem, I examined the contents of the file disk with Mac Tools, discovering that the size of the invisible desktop file was 13K. I erased the desktop file and, after rebooting the disk and replacing the lost file folders, found that the desktop file had shrunk to 5K. Thereafter, I no longer received any lack-of-

memory messages.

It seems that the Finder, in updating the desktop file, does not compress the desktop file by eliminating information that is no longer valid, causing the desktop file's size to continually expand.

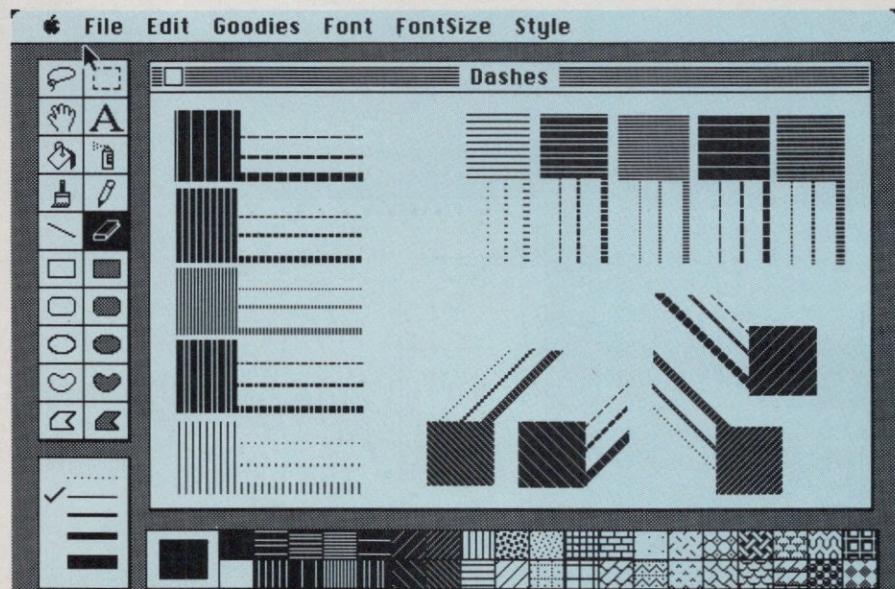
Anyone with a similar problem can cure it by using the same technique. If you do not have a utility program, you can boot the questionable disk while holding down the Option and  $\#$  keys simultaneously. This procedure forces the Finder to reconstruct the invisible desktop file, thereby compressing it.

Norman Greenberg  
Philadelphia, PA

## DASHING PATTERNS

I was using MacPaint the other day to draw some flowcharts and had a need for dashed lines. I used the pattern-editing feature to create bars of various widths at  $90^\circ$  to the direction of the line I wanted to draw. Then I selected the pattern I wanted and held the Option key down while drawing the line. MacPaint draws dashed lines as easily as it does everything else. I ended up creating a whole pallet of these patterns to use in future flowcharts (see below). Once again, the Mac comes through.

Janet Hinner  
Cedar Falls, IA



You can use MacPaint to create a whole pallet of dashing patterns.

nd Please™ Mac-organize  
our data. Mac-nificently!

ayes offers more than communications. *Please*, the easy-to-use yet powerful file management software, will be available for Macintosh soon. To manage mailing lists, print forms or handle dozens of other tasks.



Hayes for Macintosh.  
The smartest move you  
and your mouse can make.

See your authorized Hayes  
dealer for a hands-on-mouse  
demonstration of our products  
for Macintosh. Today!

**Hayes**  
innovative products  
for enterprising people

ayes Microcomputer Products, Inc.  
923 Peachtree Industrial Blvd.  
Norcross, Georgia 30092 404/441-1617  
FAX 166 ON READER SERVICE CARD



## ► TRAVELMASTER APPLE IIc CASE

The TCI 2375 TravelMaster case is designed to transport the Apple IIc terminal, modem, disk drive, and mouse. The case is molded in high-density polyethylene and incorporates a unitary double-wall design, which provides a rigid surface with a cushioning layer of air between the walls for protection. It is padded with high-density foam to protect the computer system. All TravelMaster cases have luggage-style handles and locking latches. (List Price: \$82.50)

**Requires:** Apple IIc  
Southern Case, Inc.  
TravelMaster Division  
2315 Laurelbrook Street  
P.O. Box 28147  
Raleigh, NC 27611-8147  
(919) 821-0877

CIRCLE READER SERVICE NO. 540



## ► DAVONG MAC DISKS

Davong has added to its Mac Disk line of hard-disk drives for the Macintosh by introducing 21-, 32-, and 43-megabyte sizes, in addition to the original 10-megabyte Mac Disk. Average access times are 100 milliseconds for the 10- and 21-megabyte Mac Disks and 40 milliseconds for the 32- and 43-megabyte disks. Mac Disks now also include new Volume Manager software, a utility program that allows you to add, delete, and activate volumes easily. The program also gathers free space on the Mac Disk so that you can create additional volumes and enables you to connect Mac Disk to either the modem or the printer port of the Macintosh.

(List Price: 10-megabytes, \$1950; 21 megabytes, \$2795; 32 megabytes, \$3395; 43 megabytes, \$3995)

**Requires:** Macintosh  
Davong Systems, Inc.  
217 Humboldt Court  
Sunnyvale, CA 94089  
(408) 734-4900

CIRCLE READER SERVICE NO. 541



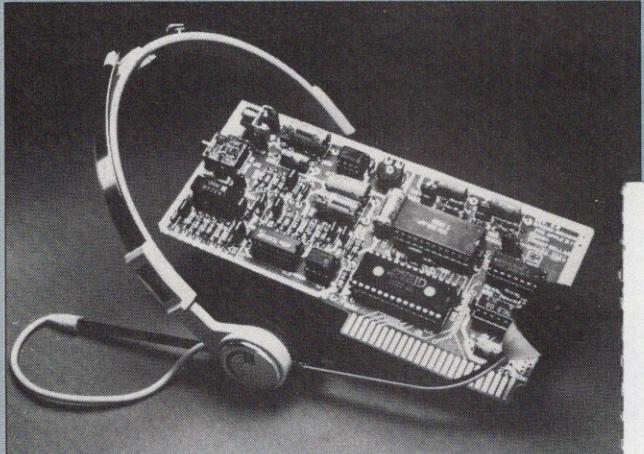
## ► MODEM SPIKE PROTECTOR

Indus-Tool's Modem Spike Protector is a simple plug-in device that you can attach to your modem to prevent transient spikes from distorting data that comes into your computer over phone lines. The device provides a peak transient protection of up to 12,000 volts and has a response time of less than 5 nanoseconds. It can also handle an energy of 70 joules and provides a series resistance of 25 ohms on each line. (List Price: two outlets, \$54.95; four outlets, \$79.95; eight outlets, \$97.95)

Indus-Tool  
325 West Huron  
Chicago, IL 60610  
(312) 642-6871

CIRCLE READER SERVICE NO. 542

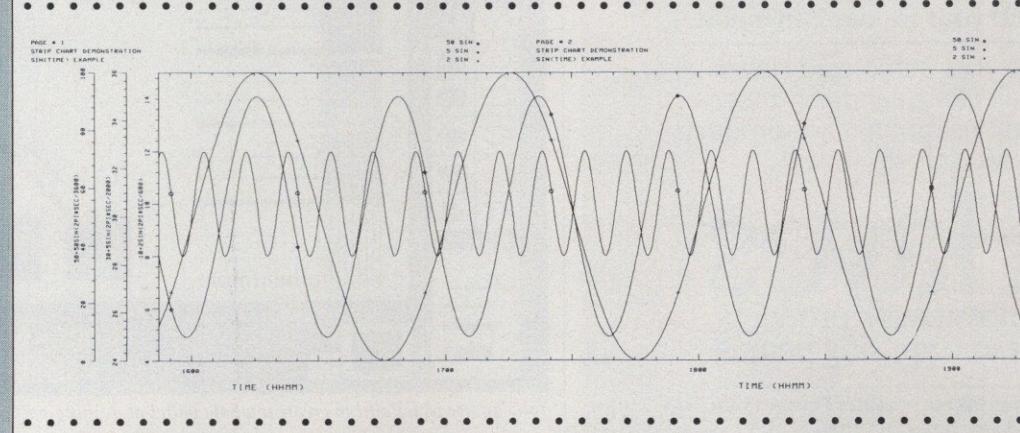
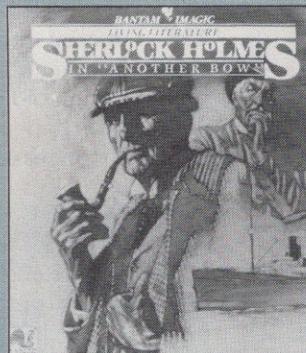
Dotplot allows you to use a dot-matrix printer



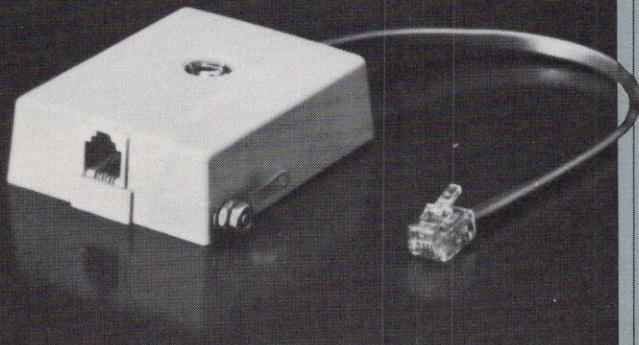
Lis'ner 1000, a voice-recognition and voice-synthesizer board from Micromint

Davong has expanded its Mac Disk line to include 21-, 32-, and 43-megabyte sizes.

Sherlock Holmes in "Another Bow," an interactive-fiction program in Bantam/Imagic's Living Literature series



The Modem Spike Protector protects modems from transient voltage spikes.



keyboard. It also offers LPC (linear predictive coding) speech output from a pre-coded word dictionary and accommodates an optional SSI 263 phonetic speech-synthesizer chip with a text-to-speech algorithm. (List Price: \$189; with SSI 263 chip, \$259)

**Requires:** Apple II, II Plus, or IIe

**Micromint, Inc.**

25 Terrace Drive

Vernon, CT

(800) 635-3355

in CT (203) 871-6170

CIRCLE READER SERVICE NO. 543

Programs include two that enable you to plot x,y data, either as line plots or bar graphs. Menu screens enable you to select and enter linear or logarithmic axes and limits and labels for axes. A third program produces accurately scaled drawings from text files of drafting commands, although you must use a word processor to create and edit drafting-command files. (List Price: \$65)

**Requires:** Apple II Plus, IIe, or IIc; 48K RAM; one disk drive; dot-matrix printer with reverse line feed

**CMI-Cascade, Inc.**

P.O. Box 510

Philomath, OR 97370

(503) 929-2590

CIRCLE READER SERVICE NO. 544



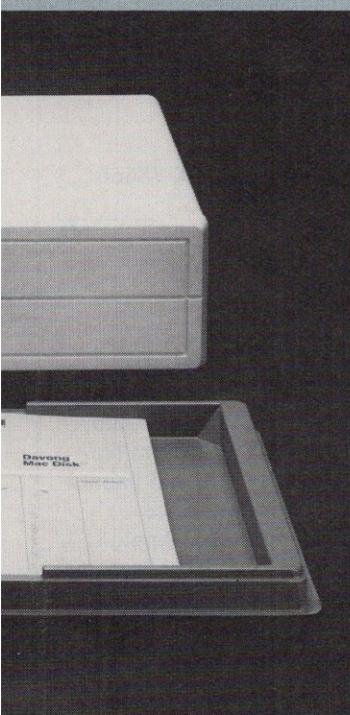
## ► VOICE-RECOGNITION

Micromint's Lis'ner 1000, which contains the SP1000 voice-recognition chip from General Instruments, is both a voice-recognition and a voice-synthesizer board. The system functions as a voice-entry device that is parallel to the keyboard so that you can speak DOS or keyboard commands or numbers instead of entering them from the

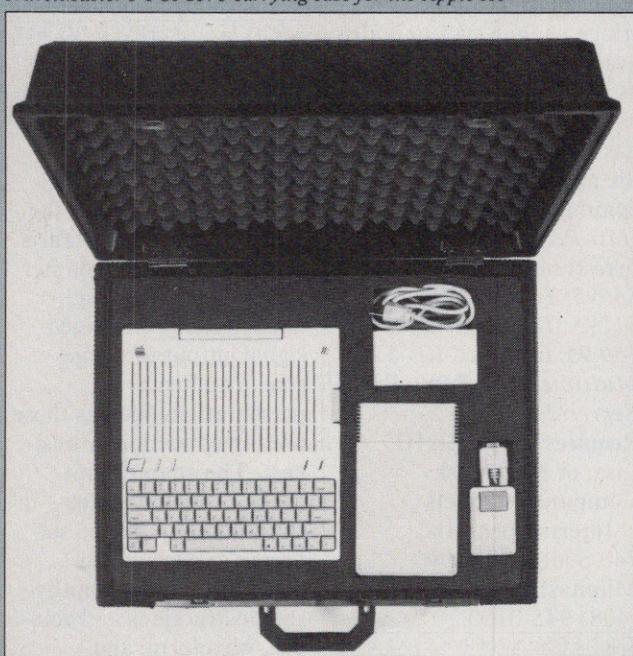
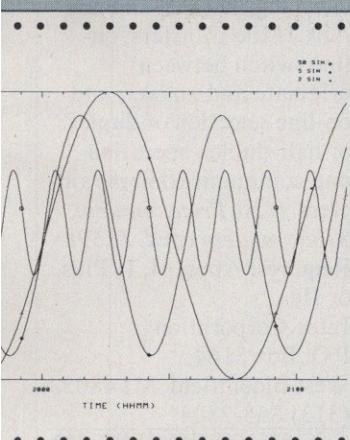


## ► DOTPLOT, FROM CMI-CASCADE

The initial release under the PanSoft trade name from CMI-Cascade, Dotplot is a machine-language extension to Applesoft BASIC. The software enables you to use many types of dot-matrix printers for plotting with a resolution of 72 dots per inch vertically by 160 dots per inch horizontally.



TravelMaster's TCI 2375 carrying case for the Apple IIc



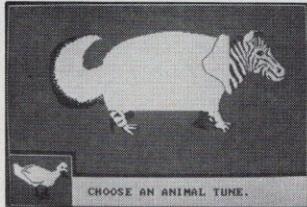
## ► BANTAM SOFTWARE LINE

Bantam Electronic Publishing, a division of Bantam Books, is issuing its first line of home-computer software. Available now are seven titles that belong to three separate series: Selfware, a line of self-improvement software for adults; Microworkshop Series, learning games for children; and Living Literature, interactive fiction for all ages.

The first two titles in the Selfware series are The Complete Scarsdale Medical Diet and Know Your Own I.Q./Know Your Own Personality. Three programs are available in the Microworkshop Series: Fantastic Animals, three learning games that allow children aged 4-9 to create real and imaginary animals and match them to their environments; Creative Contraptions, games that

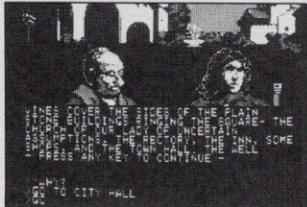
encourage children ages 7 and up to create Rube Goldberg-style machines; and *Road Rally U.S.A.*, a driving game designed for children ages 10 and over that helps teach geography and map-reading skills, as well as problem solving and strategy.

I. Damiano: The Wizard of Partestrada and *Sherlock Holmes* in "Another Bow" are the first two titles in the Living Literature series,



Fantastic Animals, a learning program for children ages 4-9

published jointly with *Imagic*. I. Damiano is based on R.A. MacAvoy's science-fiction and fantasy trilogy; players assume the role of the 14th-century wizard Damiano. In the second program, players become *Sherlock Holmes* and attempt to solve a mystery.



I. Damiano is an interactive-fiction program based on R.A. MacAvoy's trilogy.

(List Price: \$39.95 each)

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

Bantam Electronic

Publishing

Bantam Books, Inc.

666 Fifth Avenue

New York, NY 10103

(212) 765-6500

CIRCLE READER SERVICE NO. 545

## HARDWARE

II SERIES LISA MAC

### ► UNIVERSAL MASS-STORAGE SYSTEM

Computer Products International (CPI) has introduced a Universal Mass Storage System that gives the speed and performance of Winchester technology while allowing multiple users to share a common disk system.

The Mass Storage System comes standard in capacities from 10 to 368 megabytes, and each system supports the Omnitel local-area network. It also supports up to seven different operating systems shared by up to 64 users.

Depending on the drive, a maximum of 306, 480, or 987 tracks are available, with 26 sectors per track and 512 bytes per sector, and up to eight read/write heads. A dynamic status display provides users with important drive-activity information.

An optional 21.5-megabyte removable-tape-cartridge backup system is also available with the system, as is an intelligent print/communications server that has two serial ports to handle multiple printing and communications tasks.

(List Price: 10 to 92-megabyte systems, \$1995-\$6695; *TapeBackup-23*, \$1295; *TapeCartridge*, \$59.95; *Interface-Kit*, \$225; *Multiplexer-4*, \$400; *Print-Server-2*, \$1295)

**Requires:** Apple II, III, Lisa, or Macintosh

Computer Products

International, Inc.

740 South Hillview

Milpitas, CA 95035

(408) 945-0100

CIRCLE READER SERVICE NO. 546

The Intec 300 auto-dial/auto-answer modem



II SERIES

### ► SERIAL BOX ADAPTER

The Serial box is a serial-to-parallel adapter that enables owners of Apple IIc computers to use almost any parallel-interface printer with their computers. Installation of the adapter is easy, and it comes complete with enough cabling to allow a 5-foot distance between the computer and printer. (List Price: \$89.95)

**Requires:** Apple IIc

PBI Software  
1155B-H Chess Drive  
Foster City, CA 94404  
(800) 843-5722

in CA (800) 572-2746

CIRCLE READER SERVICE NO. 547

subminiature-pin-dedication information. (List Price: \$199.95)

**Requires:** Macintosh, video monitor or projector  
Mentaur Technologies  
100 Mecey Lane  
Suite 203  
San Marcos, TX 78666  
(512) 396-1565

CIRCLE READER SERVICE NO. 548

II SERIES

### ► INTEC 300 MODEM

The Intec 300 auto-dial/auto-answer modem features software and phone-computer interface connections for Apple II computers. Other features of the modem include data capture to memory buffer and direct to disk file; on-line display of capture buffer; XMODEM error-checking protocol and non-ASCII file transfers; on-line switch between originate and answer; and on-line selection of duplex or half-duplex operation and communication parameters. (List Price: modem, \$189; modem card, \$169)

**Requires:** Apple II, II Plus, or IIe

Intec Corporation  
P.O. Box 5164  
West Bloomfield, MI 48033  
(313) 855-2804

CIRCLE READER SERVICE NO. 549

MAC

### ► COMPOSITE VIDEO ADAPTER

Designed for use with the Macintosh, the *Mentauris Composite Video Adapter* (C.V.A.) provides high-quality composite-video-signal output for large-screen audience presentations such as those used in education or business. The adapter unit snaps easily into place—installation requires no soldering or wiring. The package includes step-by-step instructions and voltage, waveform, and

II  
SERIES

## ► EXTEND-IT, SUPER SERIAL IMAGER

Apricorn has introduced two new products for Apple II computers. Extend-It is a 64K memory module that clips directly onto Apple Computer's 1K 80-column text card to provide the Apple IIe computer with an additional 64K memory. Users who own a 1K card now need not discard it in favor of Apple Computer's Extended 80-Column Card in order to obtain a 128K memory for their IIe computer.

The second product, Super Serial Imager, is fully compatible with Apple Computer's Super Serial Card and enables users of

any Apple II computer to transfer high-resolution images, including graphics, from the computer screen to any number of serial-interface printers. The product also enables Apple II computers to communicate with modems such as 300/1200-baud intelligent modems from Hayes, Novation, or Anchor Automation, without requiring special communication software—all communication software functions reside in the firmware. (List Price: \$129.95 each)

**Requires:** Extend-It—Apple IIe; Super Serial Imager—Apple II, II Plus, or IIe  
Apricorn  
7050 Convoy Court

San Diego, CA 92111

(619) 569-9483

CIRCLE READER SERVICE NO. 550

II  
SERIES

## ► WRITE GUARD ACCESSORY

Write Guard enables users to write on both sides of a diskette and eliminates the need to cut holes in the disk. The unit plugs into the disk drive and fastens to the side of the drive with Velcro. A three-position locking switch provides full control over the write-protect status of the drive. Any diskette can be write-protected, regardless of whether the side notch is covered. (List Price: \$44.95)

**Requires:** Apple II, II Plus,

IIe, or IIc  
Mark IV Designs  
2315 South Canterbury Lane  
Lincoln, NE 68512  
(402) 423-0363

CIRCLE READER SERVICE NO. 551



Write Guard, an accessory for Apple II disk drives

Presenting . . .

the complete presentation maker . . .

# The Slide Show Magician™

Say goodbye to dull presentations!

Make and run professional quality slide shows on the Mac.

It's easy . . . click-quick, and the results are as exciting as they are impressive. Anything you can put on a Macintosh\* screen can be used with the Slide Show Magician—MacPaint\*\* pictures, MacWrite\*\* text, spreadsheets, graphs, charts, words, screen dumps.

To create extra attention, you can choose from 16 dramatic, **movie-type Special Effects** . . . even have your words pop-on individually or in groups!

Of course, you can run your show manually, automatically or continuously. And, at any time you can advance, back-up, jump, pause/resume, quit.

Naturally, you can edit your show — shift a frame, add or delete special effects or frames, select your timings. And, you can even duplicate your shows and send copies to anyone.

Become an instant impresario! Create fascinating slide shows for business & sales presentations, for training, for classroom or in-store use. The

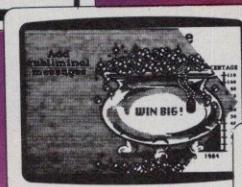
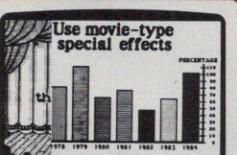
**Slide Show Magician! Only \$59.95**

VISA/MASTERCARD accepted. Add \$2.00 shipping/handling.  
(Cal. residents please add 6 1/2% sales tax.)

**Magnum**  
SOFTWARE

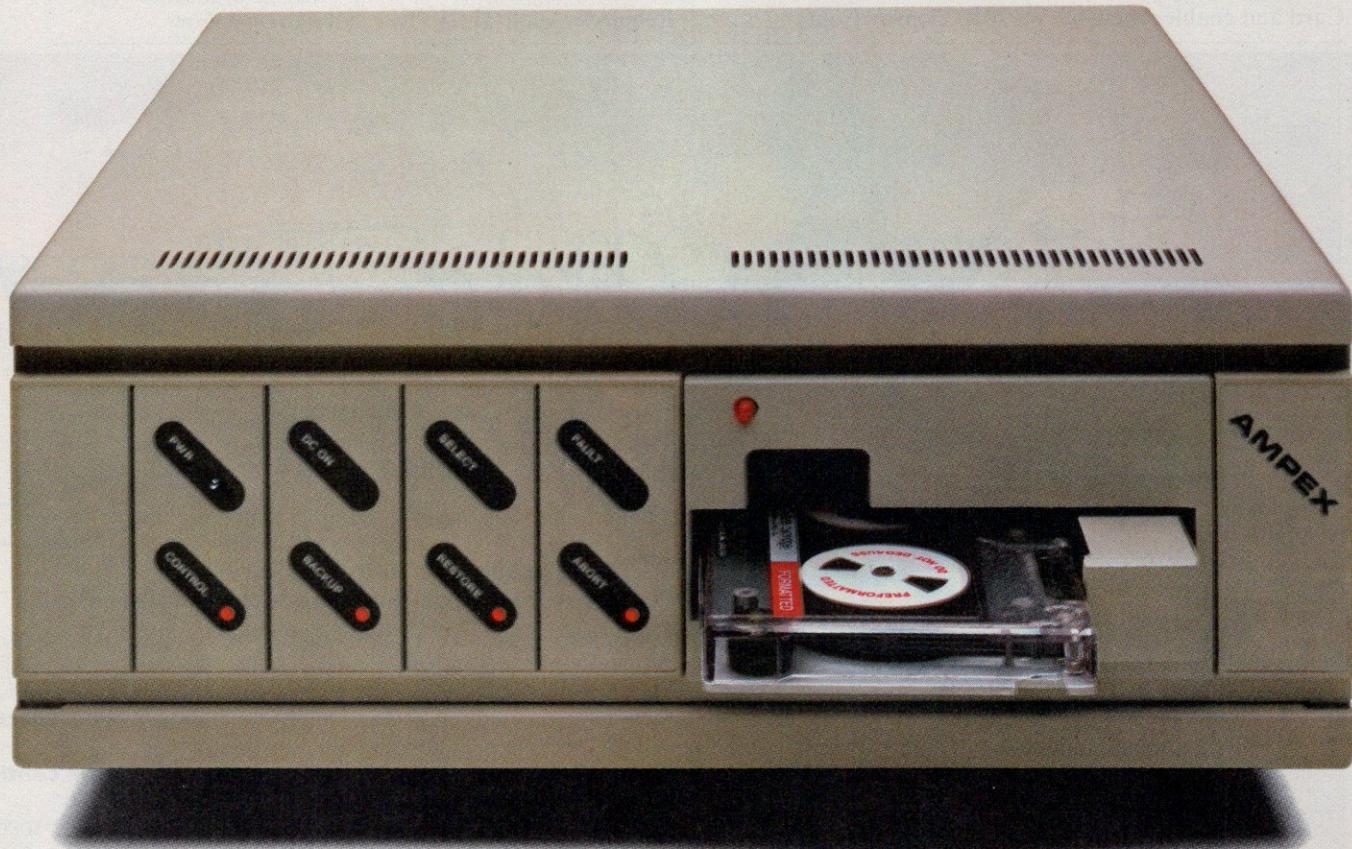
21115 Devonshire St., Ste. 337 • Chatsworth, Ca. 91311 • (818) 700-0510

CIRCLE 213 ON READER SERVICE CARD



Trademark licensed to Apple Computer, Inc.  
Trademarks of Apple Computer, Inc.

# In the 92 seconds it find any file you need



Ampex 20 MB hard disk with 25 MB tape backup.

\*PC Megastore is a trademark of Ampex Corporation. \*IBM-PC is trademark of International Business Machines. †Apple II and IIe are trademarks of Apple Computer.

# takes to read this ad, on our backup streamer.

① In the 1 hour, 4 minutes other streamers take, you could call your broker. Linger over coffee. Wade through the Wall Street Journal. ② And read this PC Megastore™ ad too. ③ So take the time.

You'll more than make it up with a PC Megastore hard disk and tape hooked to your IBM-PC\* or compatible, Apple II or IIe† because all the files you need—both current and archive—will always be right where you need them.

④ Just a keystroke away. ⑤ The secret? Only Ampex backs up a 20 MB hard disk with another 25 megabytes\* of addressable storage—a unique, bootable streamer with cache memory. That not only means you can address a file in 92 seconds, you can backup files offline just by touching a couple of buttons. ⑥ Without tying up your computer. ⑦ Your time. ⑧ Or a small fortune in floppies. (In fact, our 45 megabytes of available storage cost about half the price per MB of other hard disks.) So consider your time, money and convenience. ⑨ And our quality. The PC Megastore system is backed by a full year warranty from Ampex, a company known for manufacturing quality computer peripherals for over 20 years. ⑩ Take a moment. Contact: Ampex Computer Products Division, Marketing Communications, 10435 N. Tantau Ave., Cupertino, CA 95014. 800 421-6863, 213 640-0150 in CA. We'll give you a dealer's name so you can buy a PC Megastore system. ⑪ Then in no time at all, you'll make up for the 92 seconds you spent reading this ad.

**AMPEX**  
Ampex Corporation • One of The Signal Companies

\*PC Megastore is upgradeable and comes in four models: 20 MB with 25 MB tape, 10 or 20 MB disk, or 25 MB tape.

MAC

► **WINTERHALTER'S DATATALKER/MAC**

The DataTalker/Mac is an intelligent data-communications processor that allows the Macintosh to emulate IBM 3270 interactive-terminal systems. The system connects to the Macintosh's modem port and connects to the mainframe with either a modem, modem eliminator, or limited-distance modem. The 3270 emulation program comes on a disk that you download from the Macintosh to DataTalker/Mac. (List Price: \$1095)

**Requires:** Macintosh  
Winterhalter, Inc.  
3853 Research Park Drive  
P.O. Box 2180

Ann Arbor, MI 48106  
(800) 321-7785  
in MI (313) 662-2002  
CIRCLE READER SERVICE NO. 552



► **TEKNIKA MONITORS AND TV PRODUCTS**

Teknika Electronics, a company formed by Japan's General Corporation and C. Itoh to distribute their products in the U.S., has released several new color-display monitors, TVs, and accessories.

The tilt-stand MJ-22 is a high-resolution, 13-inch, 16-color monitor that can switch between RGB and NTSC composite video. It displays 2000 characters on an 80-column by 25-line

screen with a resolution of 506×240 pixels. RGB operates at a bandwidth of 18 MHz and composite video at 3 MHz. The MJ-22 is compatible with Apple II and III computers; an optional MA-RGB7 RGB board that provides additional medium- and high-resolution modes and a choice of amber, green, blue, or white text characters is also available for the Apple IIe. (List Price: MJ-22, \$499.95; MA-RGB7 board, \$199.95)

**Requires:** Apple II, II Plus, IIe, IIc, or III  
Teknika Electronics  
353 Route 46 West  
Fairfield, NJ 07006  
(201) 575-0380

CIRCLE READER SERVICE NO. 553



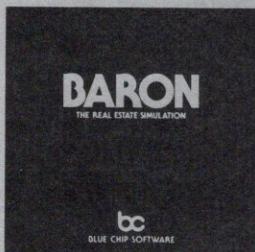
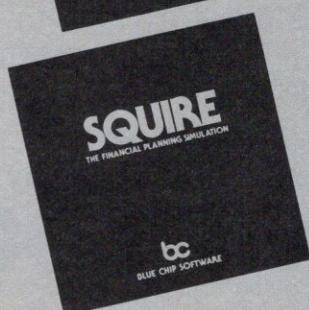
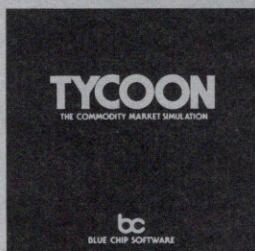
► **CFD-501A FLOPPY-DISK DRIVE**

Video Logic Corporation has introduced the model CFD-501A half-height, 5 1/4-inch, floppy-disk drive. The CFD-501A is equipped with a direct-drive system for trouble-free operation, and it comes complete with power-indicator light, disk-lock level, and cable. The drive has a storage capacity of 143K and has 35 tracks. (List Price: \$129.95)

**Requires:** Apple II, II Plus, or IIe  
Video Logic Corporation  
597 North Mathilda Avenue  
Sunnyvale, CA 94086  
(408) 245-8622

CIRCLE READER SERVICE NO. 554

## IF WE KNEW THE ANSWER, IT WOULDN'T BE A PROBLEM.



**MILLIONAIRE**, The Stock Market Simulation,  
**TYCOON**, The Commodity Market Simulation,  
**SQUIRE**, The Financial Planning Simulation,  
and **BARON**, The Real Estate Simulation.™

Available wherever software is sold.

Blue Chip Software is very good. Teachers, investment counselors, and game players agree. This software teaches a lot about personal investment. It teaches so much about personal investment, it's even used in high schools and universities. But this software is fun too. It's so much fun that it has appeared on every major national software best seller chart as a game.

**So, what's the problem?**

The problem is what do we call a product that is both so educational and so entertaining for so many different types of people. Some people insist on calling it entertainment, others insist on calling it education, and still others insist on calling it a tool.

**So, what's the answer?**

We don't know. We do know that we are having no problem producing the best software for aspiring minds.



BLUE CHIP SOFTWARE™

Blue Chip Software Inc.  
6740 Eton Avenue  
Canoga Park, CA 91303  
(818) 346-0730

CIRCLE 112 ON READER SERVICE CARD



**SINCE 1977**

# Computer Discount Products

Monthly Mail-Order Listing  
For Apple, IBM & Macintosh Users

Retail Showrooms In California:  
San Jose • San Mateo • San Francisco

**WE PAY  
SHIPPING\***  
Get The Details Below!!

## PRINTERS & MONITORS

### SCALL

|                           |        |
|---------------------------|--------|
| OKIDATA 92 w/Plug 'n Play | 459.99 |
| PRINCETON HX-12           | 459.99 |
| Max-12 Amber              | 179.99 |
| TAXAN 12" Amb-IBM         | 169.99 |
| 420 RGB Color             | 399.99 |

## MOCKINGBOARD Inc

|                     |        |
|---------------------|--------|
| With Speech & Sound | 169.99 |
| QUADVUE NEW!        |        |

|                 |        |
|-----------------|--------|
| Monochrome Card | 259.99 |
|-----------------|--------|

## HARDWARE

|                            |        |
|----------------------------|--------|
| CDP 16K Ram Card           | 39.99  |
| Parallel Interface w/Cable | 39.99  |
| DAN PAYMAR Lower Case 1    | 25.99  |
| Lower Case 2, Rev 7        | 19.99  |
| EXTENDED 80 Col. Card-III  | 129.99 |
| KENSINGTON System Saver    | 65.00  |
| MICRO-SCI-A-2 Drive        | 199.99 |
| ORANGE MICRO Grappler +    | 114.99 |
| Buffered Grappler          | 179.99 |
| THUNDERCLOCK               | 109.99 |
| TITAN Accelerator IIe      | 259.99 |
| Neptune 64K                | 199.99 |
| AST Six Pack Plus 64K      | 279.99 |
| KENSINGTON PC Saver        | 29.99  |
| QUADRAM 512+ 64K           | 229.99 |
| Microfazer 8K-All Config.  | 149.99 |
| Boardcard I or II-No K     | 219.99 |
| TEAC 1/2 Height Drive #55B | 159.99 |

## APPLICATION - Home & Business

|                              |         |        |                              |          |
|------------------------------|---------|--------|------------------------------|----------|
| ASCII Express                | 99.99   | IBM    | MICROPRO Telmerge            | 119.99   |
| CONTINENTAL Hm. Acct.        | 44.99   | IBM    | MONGRAM Dollars & Sense      | 109.99   |
| Home Accountant MAC          | 75.99   | IBM    | PFS Rept, File, Graph, Write | ea99.99  |
| Tax Advantage                | 39.99   | Ap/IBM | MICRO COOKBOOK               | 31.99    |
| MONOGRAM Dollars & Sense     | 79.99   | Ap/IBM | MICROSOFT MULTIPLAN          | 169.99   |
| PFS Rept, File, Graph, Write | ea84.99 | MAC    | MULTIPLAN/FILE               | ea149.99 |
| ASCII Express Pro            | 139.99  | MAC    | PFS Rept, File               | ea89.99  |
| ASHTON-TATE dBase II         | 299.99  |        |                              |          |
| dBase III                    | 449.99  |        |                              |          |
| Framework                    | 399.99  | HAYES  | 300 Baud                     | 209.99   |
| CONTINENTAL FCM              | 71.99   |        | 1200B for IBM                | 409.99   |
| Home Accountant              | 84.99   |        | Micromodem IIe               | 239.99   |
| Tax Advantage                | 49.99   |        | NOVATION Appcat II 300 Bd.   | 249.99   |
| CROSSTALK                    | 139.99  |        | Expansion Module             | 29.99    |
| LOTUS 1-2-3                  | 299.99  | J Cat  |                              | 109.99   |

## MODEMS

|                            |        |
|----------------------------|--------|
| HAYES 300 Baud             | 209.99 |
| 1200B for IBM              | 409.99 |
| Micromodem IIe             | 239.99 |
| NOVATION Appcat II 300 Bd. | 249.99 |
| Expansion Module           | 29.99  |
| J Cat                      | 109.99 |

# Computer Discount Products

860 So. Winchester Bl., San Jose, CA 95128

(408) 985-0400 FROM 8AM PST

NO CHARGE FOR CREDIT CARDS • GUARANTEED FAIR PRICING

Purchase Order Prices Differ • Call First • Prices Subject To Change • Software Sales Final

PLEASE ALLOW TIME FOR PERSONAL CHECKS TO CLEAR

CIRCLE 290 ON READER SERVICE CARD

## UTILITIES & ENHANCEMENTS

|     |                       |        |        |                  |       |
|-----|-----------------------|--------|--------|------------------|-------|
| Ap  | BEAGLE D/Code - NEW!  | SCALL  | IBM    | NORTON UTILITIES | 55.99 |
| Ap  | Beagle Graphics       | 44.99  | IBM    | SIDEKICK         | 41.99 |
| Ap  | Dos Boss              | 17.99  | Ap/IBM | COPY II Program  | 25.99 |
| Ap  | Fat Cat               | 26.99  | Ap/IBM | TURBO PASCAL     | 41.99 |
| Ap  | GPLE                  | 32.99  | MAC    | COPY II Program  | 25.99 |
| Ap  | Triple Dump           | 31.99  |        |                  |       |
| Ap  | EASTSIDE Wildcard II  | 111.99 |        |                  |       |
| Ap  | FONTRIX               | 59.99  |        |                  |       |
| Ap  | FINGERPRINT For Epson | 44.99  |        |                  |       |
| Ap  | KOALA Touch Pad       | 85.99  |        |                  |       |
| Ap  | MERLIN                | 44.99  |        |                  |       |
| Ap  | MOCKINGBOARD          | 89.99  |        |                  |       |
| IBM | FONTRIX               | 99.99  |        |                  |       |
| IBM | KOALA Touch Pad       | 95.99  |        |                  |       |

### VIDEX-Apple

|                     |        |
|---------------------|--------|
| ENHANCER II         | 99.99  |
| FUNCTION STRIP      | 31.99  |
| HARDSWITCH          | 14.99  |
| PSIO                | 169.99 |
| SOFTSWITCH          | 25.99  |
| ULTRATERM           | 244.99 |
| VIDEOTERM w/Softsw. | 219.99 |

## ENTERTAINMENT

|        |                            |         |
|--------|----------------------------|---------|
| Ap     | BEAGLE I.O. Silver - NEW!  | SCALL   |
| Ap     | DECATHLON                  | 23.99   |
| Ap     | MASTERTYPE                 | 31.99   |
| Ap     | SIR TECH Knight of Diamond | 27.99   |
| Ap     | Legacy of Lyngamyn         | 31.99   |
| Ap     | Wizardry                   | 37.99   |
| Ap     | Wizprint                   | 19.99   |
| Ap     | WIZPLUS                    | 23.99   |
| IBM    | GATO                       | 29.99   |
| IBM    | MASTERTYPE                 | 34.99   |
| IBM    | SIR TECH Wizardry          | 44.99   |
| Ap/IBM | CHAMP, LODDERUNNER         | 24.99   |
| Ap/IBM | ELECTRONIC ARTS Archon     | 31.99   |
| Ap/IBM | Music Set/Pinball Set      | ea81.99 |
| Ap/IBM | One On One/Sky Fox         | ea81.99 |
| Ap/IBM | Seven Cities of Gold       | 31.99   |
| Ap/IBM | FLIGHT SIMULATOR           | 37.99   |
| Ap/IBM | NIGHT MISSION PINBALL      | 32.99   |
| Ap/IBM | SARGON III                 | 34.99   |
| Ap/IBM | SIERRA ON-LINE Frogger     | 24.99   |
| Ap/IBM | ULTIMA II or III           | 39.99   |
| Ap/IBM | Fahrenheit 451/Shadow      | ea29.99 |
| Ap/IBM | WINDHAM Below The Root     | 18.99   |
| Ap/IBM | Swiss Family Robinson      | 18.99   |
| MAC    | MAC FUN                    | 29.99   |
| MAC    | MAC VAGAS                  | 43.99   |

ea29.99

## WORD PROCESSING

|     |                             |         |
|-----|-----------------------------|---------|
| Ap  | BANK STREET Write/Spell     | ea44.99 |
| Ap  | MICROPRO Wordstar           | 279.99  |
| Ap  | Wordstar Pro w/CP-M         | 349.99  |
| Ap  | SENSIBLE SPELLER            | 89.99   |
| Ap  | SIERRA Screenwriter II      | 89.99   |
| IBM | BANK STREET Writer          | 59.99   |
| IBM | LIFETREE Volkswriter Deluxe | 199.99  |
| IBM | MICROSOFT Word w/Mouse      | 299.99  |
| IBM | MICROPRO Wordstar 2000      | 259.99  |
| IBM | Wordstar 2000 Plus          | 359.99  |

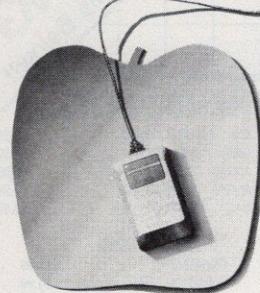
ORDER  
# A5

**ALL SOFTWARE SHIPPED  
FREIGHT-FREE**  
U.S. Mail - \$10 Minimum Chg.  
Hardware Shipping - SCALL

# What to give a mouse that has everything.

"For use with Macintosh™, Lisa™ and Apple computers."

Candy Apple Mat \$11.95



Let the Candy Apple™ red, mouse mat become the apple of everyone's eye. Give your hungry little mouse an apple place to play. The Candy Apple mouse mat gives you a clean, soft surface to run your mouse on and it protects the top of your desk as well.

No more pitter-patter less squeaks and squeals always in the right place with the right feel.

Desk Mouse Mat \$10.95



The desk Mouse mat is for those who want a good looking, functional, soft, cushioned mat that will protect the desk top. The Desk Mouse mat will prevent the paws of your mouse from getting gritty and dirty while keeping him quietly rolling along.

Call or write:  
**Modulus Design**

P.O. Box 66 M.O.  
Shrewsbury, MA 01545  
617-842-7272

ADD \$2.00 1/4 • MA. ADD 5% TAX

Candy Apple™ are trademarks of Modulus Design.

Macintosh is a registered trademark licensed to Apple Computer, Inc.  
Lisa and Apple are registered trademarks of Apple Computer, Inc.

CIRCLE 239 ON READER SERVICE CARD

At last... **TMON**, a genuine debugger with **POWER** for the **Macintosh™** from TMQ Software, Inc.

#### Features:

- Runs on 128K or 512K single Macintosh™
  - Uses mouse or keyboard
  - Multiple windows
- Identifies objects on the heap
  - 8 types of windows:
- Dump • Disassembly • Breakpoint • Number Conversion
  - User Function • Register • Heap • Resource File
- Recognizes symbols generated by Lisa, Pascal
  - Mouse "antifreeze"
  - Resides in low or high memory
- Heap scramble 8 times faster than Apples
  - Available alternate register set
  - Advanced users can generate their own functions

TMON © 1985 TMQ Software, Inc.  
1110 Lake Cook Road Suite 375  
Buffalo Grove, IL 60090  
312-520-4440

on sale now for \$100, MasterCard and Visa accepted  
\$3.00 additional for C.O.D. shipments

CIRCLE 168 ON READER SERVICE CARD

AT pipeline

## HARDWARE ACCESSORIES

II SERIES MAC LISA III

### ► THE BETTER MOUSETRAP

The Better Mousetrap is an accessory for Apple computers that attaches to the side of the computer and holds a mouse. (List Price: \$9.95)

PERK Company  
150 Commercial Street  
Sunnyvale, CA 94086  
(408) 735-1807

CIRCLE READER SERVICE NO. 555



The Better Mousetrap

II SERIES

### ► WICO COMPUTER COMMAND

Computer Command is a line of commercial-quality game controls and hardware accessories that use the same technology as Wico's arcade models.

The Model 50-0120 expander port offers four automatically selected game ports, two of which you can use simultaneously for two-player games. Users can change controllers during play without switching. The expander port uses either 16-pin DIP or 9-pin analog joysticks or other plug-compatible controls.

The Model 50-0108 is a grip-handle joystick that has gate-lock controls for four-way or eight-way directional control.

An Apple analog joystick, the Model 50-1030 also has two independent fire buttons, one on the base and one on the top. It has dual heavy-duty potentiometers, offers 360-degree movement, and has self-center and non-self-center options. The joystick comes with a 5-foot cord.

Finally, the Model 72-4525 is a dual-digital adapter for Apple computers. It features two 9-pin female input plugs mounted on an interface diode board and to which you can connect two digital joysticks simultaneously. (List Price: Models 50-0120, 50-1030, \$49.95; Model 50-0108, \$31.95; Model 72-4525, \$24.95)

**Requires:** Macintosh Computer Accessories Corporation

7696 Formula Place  
San Diego, CA 92121  
(619) 695-3773

CIRCLE READER SERVICE NO. 556

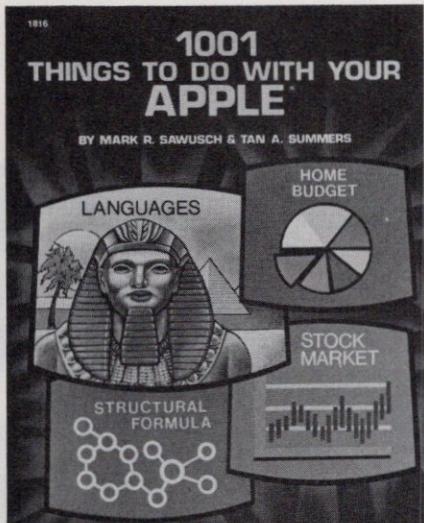
**Requires:** Apple II, II Plus, or IIe

Wico Corporation  
6400 West Gross Point Rd.  
Niles, IL 60648  
(312) 647-7500

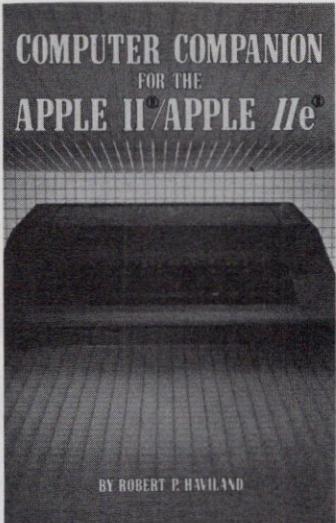
CIRCLE READER SERVICE NO. 557



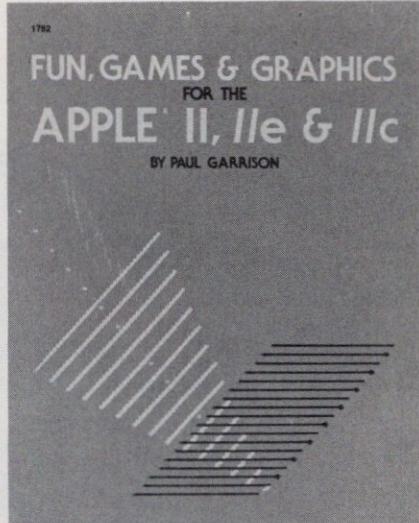
# Discover a Whole New World of Ideas and Applications for Your Apple® !



No. 1816 List Price \$15.95



No. 1603 List Price \$10.25



No. 1752 List Price \$18.95

## Take All 3 Books for Only \$1 95

when you join **The Computer Book Club®**

**GET MORE . . . PAY LESS!** Discover hundreds of exciting new ways to use your Apple: fascinating games . . . practical programs for handling your finances, organizing your activities, making your business more profitable . . . learning opportunities for your children . . . create exciting graphics . . . improve your programming skills . . . even use your Apple to make money! Only *The Computer Book Club* offers you so much . . . at such reasonable cost! Join now, get three outstanding books for only \$1.95 . . . a savings of \$43.20!

### 7 very good reasons to join The Computer Book Club®

- **Big Savings.** Save 20% to 75% on books sure to increase your computer know-how
- **No-Risk Guarantee.** All books returnable within 10 days without obligation
- **Club News Bulletin.** All about current selections—mains, alternates, extras—plus bonus offers. Comes 13 times a year with hundreds of up-to-the-minute titles to pick from
- **"Automatic Order."** Do nothing, and the Main selection will be shipped automatically! But . . . if you want an Alternate selection—or no books at all—we'll follow the instructions you give on the reply form provided with every News Bulletin
- **Bonus Books.** Immediately get a Dividend Certificate with every book purchased and qualify for big discounts of 60% to 80%
- **Extra Bonuses.** Take advantage of added-value promotions, plus special discounts on software, games, and more
- **Exceptional Quality.** All books are first-rate publisher's editions selected by our Editorial Board and filled with useful, up-to-the-minute information

**KEEP ON SAVING**, month after month! State-of-the-art computer developments . . . new interfacing techniques . . . exciting new programs for every conceivable application . . . advice on using sophisticated new business software . . . games and graphics . . . programming techniques . . . *The Computer Book Club* keeps you in step with what's happening and what you can do to get more . . . and more from your Apple. Best of all you buy only the books you want at savings of from 20% to 75%.



**The Computer Book Club®**

P.O. Box 80  
Blue Ridge Summit, PA 17214

Please accept my membership in The Computer Book Club and send my 3-volume Apple Library: *1001 Things To Do With Your Apple* (1816), *Fun, Games, and Graphics for the Apple, II, IIe, and IIc* (1752), and *Computer Companion for the Apple II/IIe* (1603P), billing me \$1.95 plus shipping and handling charges. If not satisfied, I may return the library within ten days without obligation and have my membership canceled. I agree to purchase 3 or more books at reduced Club prices (plus shipping/handling) during the next 12 months, and may resign any time thereafter.

Name  Phone

Address

City

State  Zip

Valid for new members only. Foreign applicants will receive special ordering instructions. Canada must remit in U.S. currency. This order subject to acceptance by the Computer Book Club.

A-585

# NOW YOUR APPLE® CAN HOOK TO ANY MAINFRAME.

Apple is a registered trademark of Apple Computer, Inc.,  
CP/M is a registered trademark of Digital Research, Inc.,  
Dow Jones News/Retrieval is a registered trademark of  
Dow Jones, Inc. The Source is a service mark of  
Source Telecomputing Corporation,  
CompuServe is a registered  
trademark of CompuServe, Inc.



If you have an Apple II, Apple II Plus, or Apple IIe, we have good news for you. Now there are two inexpensive software programs that can turn your Apple into a much more valuable tool.

#### Softerm 1 connects you with information services.

Softerm 1 lets you retrieve information from services such as *The Source*,<sup>sm</sup> Compu-Serve<sup>®</sup>, and Dow Jones News/Retrieval<sup>®</sup>. Plus, gives you the ability to access bulletin boards and send or receive electronic mail. Other features include user-defined keyboard macros, built-in phone book for automatic dialing, terminal mode line capture simultaneously to print or disk, copy screen to print or disk, and terminal status display.

#### Softerm 2 connects you with your company's computer.

This expanded version of Softerm lets you gain access to the information stored in your company's main computer from your home or office. With either version of Softerm, you can download information into your Apple and capture it on your own disk

in any format you choose—DOS, CP/M<sup>®</sup>, or Pascal. Also included with Softerm is a source program for your host computer to ensure compatibility with Softerm's file transfer capabilities.

#### Makes your Apple work exactly like any major terminal.

Softerm 2 provides complete emulation of these terminals: ADDS Regent 20, 25, 40, 60; ADDS Viewpoint; Data General D200; Datapoint 3601; DEC VT102, VT52; Hazeltine 1400, 1410, 1500, 1520; Hewlett-Packard 2622A; Honeywell VIP7205; VIP7801, VIP7803; IBM 3101 Model 10 and 20; Lear Siegler ADM-3A, ADM-5 and TeleVideo 910, 925, 950. And the list is growing all the time. We'll send you a User's Guide, handy reference card, and a telephone number to call if you need more assistance.

#### Softerm can't become obsolete.

We constantly improve Softerm. And we make those improvements available to you 24 hours a day, 7 days a week. To update your program, just dial our computer and transfer the improvements to your disk.

#### Get Softerm now.

It's the inexpensive way to turn your Apple into a much more valuable tool for your home or office. Softerm 1 is only \$135; Softerm 2 is \$195. Both are available now from your local dealer or from Softronics, Inc. For more information or to order, call (901) 683-6850.

**SOFRONICS**  
3639 New Getwell Road, Suite 10  
Memphis, TN 38118. (901) 683-6850

## HARDWARE/ SOFTWARE



### SAVE-IT! UTILITY PROGRAM

Texprint, Inc., has introduced SAVE-IT!, a system-utility program that creates and presents slide shows on the Apple II series. Users can mix any screen—color, black and white, text or graphics, or the new high-resolution modes recently introduced by Apple—and then display the saved images either automatically or manually in any sequence. (List Price: \$29.95)

**Requires:** Apple II, II Plus, or IIe  
Texprint, Inc.  
220 Reservoir Street  
Needham Heights, MA  
02104  
(617) 449-5808

CIRCLE READER SERVICE NO. 558



### VOICE MASTER AND SOUND MASTER

Covox has introduced two related products: Voice Master, which combines a speech synthesizer, a voice-recognition system, and a music machine; and Sound Master, a plug-in board

that enables you to create music, speech, and sound effects.

Voice Master's speech synthesizer speaks in your voice. The system can store up to 64 different sounds and can store vocabularies and load them from disk. The system comes with Voice Harp software so that you can produce multipart harmony when you hum or whistle into the microphone.

To use Voice Master, you must also purchase Sound Master. This product produces three independently programmable tones that cover nine octaves, although you can add a second board to double the number of available tones. The board carries an on-board amplifier that can drive either an internal or external loudspeaker. Sound Master also lets you reproduce prerecorded synthetic or digitized speech. (List Price: Voice Master, \$119.95; Sound Master, \$39.95)

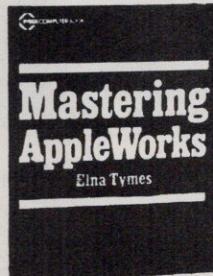
**Requires:** Apple II, II Plus, or IIe  
Covox, Inc.  
675-D Conger Street  
Eugene, OR 97402  
(503) 342-1271

CIRCLE READER SERVICE NO. 559



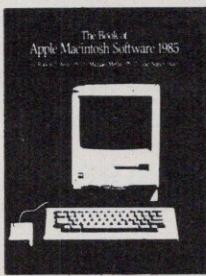
Voice Master combines a speech synthesizer, voice-recognition system, and Voice Harp music-making software in one product.

## GREAT APPLE® BOOKS



Sybex 250 pp. © 1984

Only  
\$15.95



Arrays 300 pp. © 1985

Only  
\$19.95

The Book of Apple Macintosh Software 1985 is as indispensable to Macintosh owners as their power cords. Knowledgeable reviewers who are experts in their field tell how good the program is before you invest time and money into it. The book includes informative introductions to each topic, comparative charts of available features, lists of software vendors and tips on getting the max out of Mac.

Order Today: 1 (800) 821-5226 Ext. 500  
24 hrs. a day, 7 days a week

Or Write:



**WITT'S END**  
42 Morehouse Rd.  
Easton, CT 06612

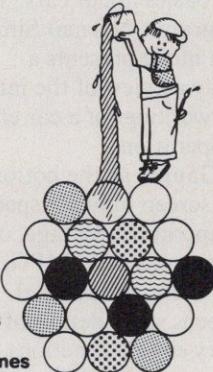
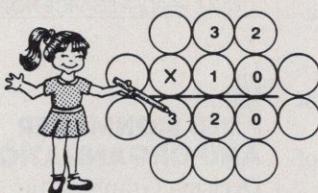


Free and Fast UPS shipping. Add \$3. for C.O.D. APO's FPO's o.k. Add \$5 for foreign shipping. We accept Visa/Mastercard, Personal Check, Certified Check or Money Order.

CIRCLE 152 ON READER SERVICE CARD

**marbles**™

*finally! MacFun for kids*



### 18 different paint games...

- marble paint... for the little ones
- marble math... formatted math drills
- marble walls... a game of skill
- marble messages... hidden word games
- much, much more!

### FOR ELEMENTARY SCHOOL KIDS

to be used with MacPaint™

Please send \$49.95 to:

**IDeAS\***  
2464 Lakeview Ave.  
Los Angeles, California 90039

California residents add \$3.25 tax

Dealer's inquiries invited.

MacPaint™ trademark Apple, Inc.

check  
 money order  
 C.O.D.

Coming soon... 'smore marbles'™!

CIRCLE 131 ON READER SERVICE CARD

## ► SOFTWARE



### ► IMAGIC SIMULATION

Imagic has released two simulation programs—Crime and Punishment, the first in its Fun with Experts series, and Injured Engine, a program in the company's Educational Simulations series.

Crime and Punishment provides players with an opportunity to learn about the workings of the criminal-justice system and the feelings of friends and family about the topics of crime and punishment. In the simulation, Crime and Punishment players act as presiding judge at criminal trials, reviewing details of crimes, examining evidence and testimony, analyzing defendants' records, and requesting assistance to determine proper sentences for a variety of crimes.

Injured Engine teaches the basics about cars. The program's Normal Simulation mode presents a cutaway view of the internal workings of a car engine in operation.

Gauges at the bottom of the screen indicate speed, temperature, voltage, oil pressure, RPM, MPG, and emissions. Additional screens show details of primary engine functions, and on-screen tutorials explain how each part and system works and how they interrelate. In the Troubleshooter Challenge mode, a repair-shop screen allows users to inspect an engine that is not functioning properly and test and replace parts as necessary. (List Price: \$34.95 each)

**Requires:** Apple II, II Plus,

IIe, or IIC; 48K RAM; one disk drive

Imagic  
981 University Avenue  
Los Gatos, CA 95030  
(408) 399-2200

CIRCLE READER SERVICE NO. 560



### ► MACLABELER PACKAGE

MacLabeler lets you organize your Macintosh software library. The program reads the document, application, and folder names on your disks and then prints them on a wraparound label. The program can also display, sort, and print a complete directory of a disk. The package includes a starter pack of pressure-sensitive label material, although you can use any label material you wish. (List Price: \$49.95)

**Requires:** Macintosh, 128K RAM, Imagewriter printer  
Ideaform, Inc.  
P.O. Box 1540  
Fairfield, IA 52556  
(515) 472-7256

CIRCLE READER SERVICE NO. 561



### ► DGI SIGNMAKER AND ORGANIZATION

Decision Graphics, Inc. (DGI) has released two menu-driven programs designed to work with Hewlett-Packard 7470A and 7457A plotters.

You can use The DGI Signmaker to create and edit text slides and signs. Plotter options enable you to use automatic or manual letter sizing, starting location, or page-size selection; to plot on either transparencies or paper; and to select pens without changing them manually.

The DGI Organization

allows you to create organization charts for up to 50 individuals and save them to disk. You can also update previously created charts by adding or deleting individuals, and by changing text, titles, or footnotes of charts. (List Price: The DGI Signmaker, \$75; The DGI Organization, \$175)

**Requires:** Apple II Plus or IIe, 48K RAM, one disk drive, Apple Super Serial card, HP 7470A or 7475A plotter with RS-232C interface

Decision Graphics, Inc.  
P.O. Box 2776  
Littleton, CO 80161  
(303) 796-0341

CIRCLE READER SERVICE NO. 562



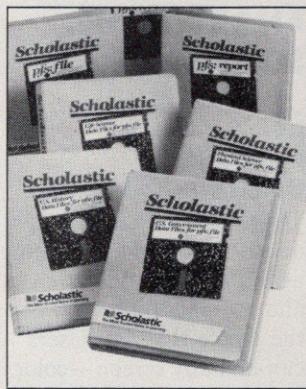
### ► EDUCALC SPREADSHEET

EduCalc is a self-instructional spreadsheet program specifically designed for children ages 12 and older. Featuring easy-to-follow prompts and comprehensive menus, the program allows students to make "what if" calculations and teaches the basics of data manipulation and projection. Built-in tutorials explain spreadsheet concepts and vocabulary and teach children to use the software without constant reference to a manual. Templates that provide administrative applications and applications designed for specific curricular areas will be available later. (List Price: \$49.95)

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

Grolier Electronic Publishing, Inc.  
95 Madison Avenue  
New York, NY 10016  
(212) 696-9750

CIRCLE READER SERVICE NO. 563



Scholastic Software is publishing educational versions of PFS:Write, PFS:File, and PFS:Report, along with four curriculum databases for use with PFS:File and PFS:Report.



### ► SCHOLASTIC SOFTWARE

Scholastic Software is now publishing educational versions of Software Publishing Corporation's PFS:Write, PFS:File, and PFS:Report. In addition, Scholastic is releasing four curriculum databases—History, Life Science, Physical Science, and U.S. Government—for use with PFS:File and PFS:Report. The Scholastic versions of the integrated PFS programs are designed to teach students database and computerized-reporting concepts within the context of a particular subject. Each package includes a program disk, an exercise-file disk, and a three-ring binder containing reference guides, learning activities, a teaching guide, and a keyboard card. (List Price: \$140 each; four databases, \$125 each)

**Requires:** Apple II Plus (PFS: File and PFS: Report only), IIe, or IIC  
Scholastic, Inc.  
730 Broadway  
New York, NY 10003  
(212) 505-3410

CIRCLE READER SERVICE NO. 564

# The word is out on word processors. Format-II® ranked number one.

We've always thought of Format-II as the finest, easiest to use word processor for Apple® II+, IIe and Apple IIc computers. We're pleased that *Peelings II* magazine agrees. They judged Format-II best out of 18 leading word processors. Here's why:

## Format-II makes editing easy.

There's our unique editing process: simple, mnemonic commands logically relate to the task you want to perform. To center text, you press **C**. To delete, **D**. To justify, **J**.

And since what you see on the monitor is exactly what will print out, editing and formatting is always a breeze.

The *Peelings II* reviewer said, "Format-II is one of the few word processors that is so comfortable and predictable, I would consider it as an addition to my small library of personal software."

## Format-II supports all printers.

Unlike other word processors, Format-II is compatible with every printer that works with the Apple, from the simplest dot matrix printer to the most advanced letter quality printer.

## A built in mailing list at no extra cost!

Actually a database system resembling an index card file. A SORTING program will arrange the mailing list alphabetically or numerically. Powerful LOGIC commands merge specific entries into form letters and documents.

### Peelings II Magazine Rating

|                   |    |
|-------------------|----|
| FORMAT-II         | 1  |
| SCREEN WRITER II™ | 2  |
| PIE WRITER™       | 3  |
| WRITE AWAY™       | 4  |
| LETTER PERFECT 5™ | 5  |
| WORDSTAR™         | 6  |
| MEGAWRITER™       | 7  |
| APPLE WRITER II™  | 8  |
| PERFECT WRITER™   | 9  |
| CORRESPONDENT™    | 10 |
| SPELLBINDER™      | 11 |
| MAGIC WINDOW II™  | 12 |
| ZARDAX™           | 13 |
| SUPERTEXT 40/80™  | 14 |
| GUTENBERG™        | 15 |
| WORD HANDLER™     | 16 |
| SELECT™           | 17 |
| SANDY™            | 18 |

Reviewed by John Martellaro, September 1983, based on *Peelings II* rating system for performance and price ratio.

In the words of the *Peelings II* reviewer: "This is the best program I have seen for people who do a lot of work with mailing lists, form letters and short correspondence."

## An easy to follow manual.

Essential to any good program is a manual that's clear and understandable. The *Peelings II* reviewer describes the Format-II manual. "All in all, it is one of the best word processor manuals I have seen. The latest documentation is a model of clarity and organization."

Put it all together. Then add features such as support of hard disk drives and a standard DOS text file format compatible with spellers and communications programs, and it's not hard to see why Format-II has earned the number one rating.

The words of the *Peelings II* reviewer sum it up: "I cannot think of another word processor that would be better overall for business use."

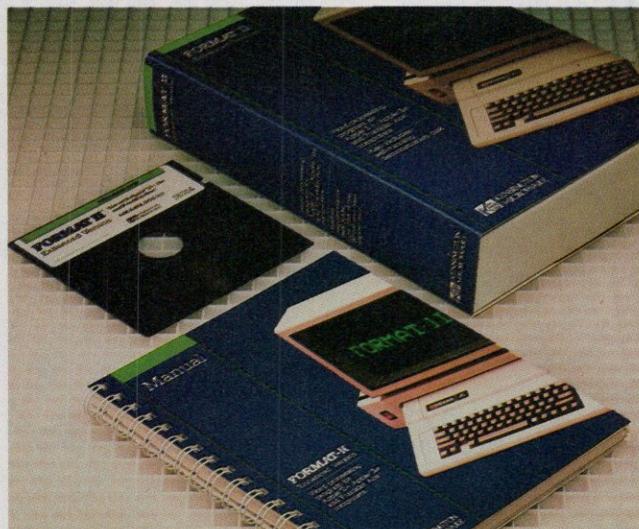
Thanks *Peelings II*. We couldn't have said it better ourselves.

For a reprint of the full review, or to order Format-II, contact: Kensington Microware, Ltd. 251 Park Avenue South, NYC, NY 10010, (212) 475-5200.

Format-II requires 64 K and an 80 column card.

Format-II is a registered trademark of Kensington Microware Ltd.

Peelings II is a registered trademark of Peelings II, Inc. © 1983 Kensington Microware Ltd.



**KENSINGTON**  
MICROWARE™

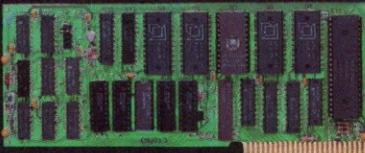
# SUPERCHARGES WITHOUT OVERCHARGING.



## 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 SpeedDemon,™ 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. And it costs far less than competing brands. How can this be? Simple. SpeedDemon 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. SpeedDemon is totally transparent to all software and there is no pre-boot, no programming, no nonsense. For further information contact your local dealer or contact: M-c-T by mail to: 1745 21st Street, Santa Monica, CA 90404. Or dial direct at (213) 829-3643.



**M-c-T**

PRODUCTS OF  
MICRO COMPUTER TECHNOLOGIES



## ► THE STORE MANAGER

The Store Manager, an inventory-control and point-of-sale software package, is now available in a fast Pro-DOS version. The new version can work with the ProFile hard disk to handle more than 7000 inventory items and more than 7000 customers or vendors. The Store Manager produces invoices, purchase orders, receiving reports, expense vouchers, packing slips, and quotations and maintains up-to-date sales totals. (List Price: \$295)

**Requires:** Apple IIe or IIc, ProDOS  
High Technology Software Products, Inc.  
P.O. Box 60406  
Oklahoma City, OK 73146  
(405) 524-4359  
CIRCLE READER SERVICE NO. 570



## ► STICKYBEAR READING, MATH

Two new educational programs that feature the animated character Stickybear, hero of a series of software designed for preschool children, are now available. The new programs—Stickybear Reading and Stickybear Math—are intended for elementary-school children.

Stickybear Reading is a word- and sentence-comprehension program for children ages 5 to 8. It features three distinct activities: Match the Word presents word or picture sets to aid vocabulary building; Find the Word enables children to see words in a sentence come alive; and Build a Sentence teaches subjects, objects, and verbs.

Stickybear Math is an addition and subtraction aid for 6 to 9 year olds. The program has 20 levels of difficulty, and as many as 25 children can use it simultaneously. (List Price: \$39.95 each)

**Requires:** Apple II, II Plus, or IIe

Weekly Reader Family Software  
245 Long Hill Road  
Middletown, CT 06457  
(203) 347-7251

CIRCLE READER SERVICE NO. 571



## ► TEMPERATURE LAB FROM HAYDEN

Temperature Lab is the first offering in a new science-laboratory software series from Hayden Software. The program enables students to conduct experiments and features a temperature sensor that plugs into an interface module connected to the computer's game port. Using this sensor, students can record temperatures, display them on the screen, and compare them with readings taken with an alcohol bulb thermometer, which is also included in the package. The software also enables users to choose Fahrenheit or Celsius

scales, compare them on the screen, vary the time of experiments, and display data in either graph or table form. A comprehensive *Experimenter's Guide* accompanies the program. (List Price: \$99.95)

**Requires:** Apple II, II Plus, or IIe

Hayden Software Company, Inc.  
600 Suffolk Street  
Lowell, MA 01854  
(617) 937-0200

CIRCLE READER SERVICE NO. 572

# inTOUCH



Announcing inTouch.

A remarkable communications program for Macintosh.

Impressive power. Point and Click simplicity.

inTouch transfers information between Macintosh and most other computers with three industry-standard protocols and baud rates to 19,200. Programmable function keys and CCL (Communications Command Language) let you tailor inTouch to your situation and automate repetitive tasks. Plus, inTouch emulates most popular terminals, including Televideo and VT-100. Get inTouch. And you will be.

inTouch communications program for Macintosh. \$149.95.

Software Masters, 3330 Hillcroft, Suite BB, Houston, Texas 77057  
(713) 266-5771.

**Software Masters™**

CIRCLE 196 ON READER SERVICE CARD

## Memo to Apple® users

### SUBJECT:

Put 8 Apples on the Storage Module and take 42 big (mega) bytes.



### METHOD:

Using the NEW SPACE COAST SYSTEMS PRODUCTS illustrated.

### RELEVANT DATA:

- SCS Storage Module mass storage system for Apple II, IIe and III's hold 10, 21 and 42 MB. 21 MB system is qualified as Apple part #A3M0108. Uses RODIME 5 1/4" Winchester hard disk drives.
- SCS Multiuser Disk Server for Apple II, IIe, and Apple III. Supports 8 Apples — 16 with additional channel card. Apple #A3M0109.
- SCS High Speed Tape Streamer Backup Module stores 42 MB on tape in 9 1/2 minutes.

### CONCLUSION:

Order through Apple dealer or get more information by enclosing business card with this memo and send to:

**Space Coast Systems, Inc.**

301 S. Washington Ave., P.O. Drawer 2767 AP  
Titusville, FL 32781  
305-268-0872 • Telex 701506

CIRCLE 135 ON READER SERVICE CARD



### ► PROCESS QUALITY SIMULATOR

Designed for those such as production managers who have to make business and technical decisions about production processes, the Process Quality Simulator helps you evaluate the quality of parts produced by a manufacturing process. The program models your production process, generating units with the same variation and bias, and enables you to use "what if?" analyses to evaluate alternative actions. The program uses Monte Carlo random-number simulations, is easy to use, and comes with a step-by-step tutorial. (List Price: \$135)

**Requires:** Apple II, II Plus, IIe, or IIC  
 Navone Engineering  
 2116 Waterloo Road  
 Stockton, CA 95205  
 (209) 941-2669  
 CIRCLE READER SERVICE NO. 573



### ► RECORD MASTER DATABASE

A full-featured, easy-to-use database program, Record Master performs all standard database functions—you can sort, search, view, print, update, and delete records. The program also has built-in features, such as report titles, page numbers, date and column headers, and various print fonts, that enable you to print reports easily. In addition, the pro-

gram offers global change, arithmetic functions, computed fields, mailing labels, file restructuring, password protection, and more. (List Price: \$59.95)

**Requires:** Apple II Plus, IIe, or IIC; 48K RAM; one disk drive  
 Bridget Software Company  
 1309 Canyon Road  
 Silver Spring, MD 20904  
 (301) 384-7875  
 CIRCLE READER SERVICE NO. 574



### ► LETTER WIZARD WORD PROCESSING

The word-processing program Letter Wizard, designed specifically for home use, has easy-to-use creating and editing functions that enable users to reorga-

nize, insert, and delete text easily. Using the program's simple format feature, you can also print documents exactly as they appear on-screen.

A spelling checker checks the spelling of more than 33,000 words automatically, and you can also create an endless number of user-defined dictionaries. An available option is a database form-letter function that allows you to create personalized form letters. (List Price: \$74.95)

**Requires:** Apple II, II Plus, or IIe  
 Datasoft, Inc.  
 19808 Nordhoff Place  
 Chatsworth, CA 91311  
 (800) 423-5916  
 in CA (818) 701-5161  
 CIRCLE READER SERVICE NO. 575

## Need a Backup of the You Purchased? Lost an Important File or Disk? Mac Zap

- Backup Protected Disks ! Bit Copier
- Track Read/Edit/Write utility
- Read/Edit/Write Blocks on disk, even with Abnormal Address/Data Markers!
- Full Screen Mouse oriented Editor
- Search/Compare/Edit Memory or Disk

Multiple Windows!! 8!  
 Disassembly Graphics  
 Disk Controls Vol Info  
 File Info (Allocation Map)  
 Edit File Attributes  
 Hex and Ascii Window

## Hard Disk Support! Disk and File Recovery!! 50 page Manual with Tutorial and Disk Info.

Also by Micro Analyst Inc. 'Software Protection on Microcomputers'  
 170 page Book on Apple II/Mac/IBM Both Software and Hardware.



To Order, Write or Call  
 Micro Analyst Inc  
 P.O. Box 15003  
 Austin, TX 78761  
 512-9264527

| Price                    |      |
|--------------------------|------|
| Mac Zap                  | \$60 |
| Protection Book          | \$40 |
| Ship (\$10 overseas)     | \$02 |
| Visa/Mastercard Accepted |      |

# THE ADD-ON THAT MULTIPLIES YOUR



## APPLE'S CAPABILITIES EVERY MONTH



Watch the capabilities of your Apple multiply every month when you add on **A+**. The Independent Guide for Apple Computing. It's compatible with every model including the Apple II, II+, IIe, IIc, III, Lisa and Macintosh.

**A+** is your connection to in-depth product reviews of the newest Apple and compatible hardware, software and peripherals... innovative applications including database management, telecommunications and graphics... the hottest new games... helpful tutorials... and much, much more!

Complete and mail the attached order form today to begin your subscription to **A+** the most important add-on for your Apple.

**SUBSCRIBE TODAY  
AND SAVE UP TO 26%!**

**A+**  
**YES**

P.O. Box 2964  
Boulder, Colorado 80322



AM4Z130

I want to subscribe to **A+**. The Independent Guide for Apple Computing. Please enter my subscription for:

8 issues  
Only \$13.97  
Save 16%!

12 issues (One Year)  
Only \$19.97  
Save 20%!

24 issues (Two Years)  
Only \$36.97  
Save 26%!

New or renewal orders.

Savings based on full one-year (12 issues) subscription price of \$24.97.

Mr./Mrs./Ms. \_\_\_\_\_

(please print full name)

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_

Zip \_\_\_\_\_

Check one:  Payment enclosed  Bill me later  Charge my:  American Express  Visa

MasterCard Card No. \_\_\_\_\_ Exp. Date \_\_\_\_\_

Add \$1 per issue in Canada and all other foreign countries.

Please allow 30 to 60 days for delivery of first issue.

Would you like to receive special offers from qualified users of our mailing list?  Yes  No



### SOLITAIRE SOFTWARE

Solitaire has released two new products—The Debit Credit Connection and The Ultimate Shopping Machine Plus Random Dining. The Debit Credit Connection is a fast and easy-to-use double-entry accounting program designed for personal or small-business use. The program can print checks, split transactions, post automatic transactions, and print automated reports. In addition, it uses high-resolution graphics and has on-screen prompts and a help line.

The second product combines two programs. The

Ultimate Shopping Machine reminds you about your food and household needs and then prints a shopping list that lists items with their quantity and price. The list is organized in an order to suit the store where you shop. Random Dining not only stores your recipes but also references your cookbook by name and page. The program can also plan your menus by day, week, or month and can then print a list of all required ingredients. (*List Price: The Debit Credit Connection, \$119.95; The Ultimate Shopping Machine Plus Random Dining, \$50*)

**Requires:** Apple II, II Plus, or IIe; DOS 3.3; one disk

drive  
Solitaire  
7146 West 113th Street  
Bloomington, MN 55438  
(800) 328-6795 Ext. 245  
CIRCLE READER SERVICE NO. 576



**ACCOUNTMATE II**  
A complete, automated accounting package, the AccountMate II programs include General Ledger, Accounts Receivable/Billing Invoice, Accounts Payable, Sales Order, and Purchase Order. All programs are menu-driven, have on-line help and come with easy-to-read manuals. Extensive error checking and warning messages guard against clerical error,

and a two-level password system prevents unauthorized access to data. The programs can accommodate ledgers for one to ten companies, and each company can have up to 99 departments. You can then consolidate department statements and budgets for an entire company or process them separately. (*List Price: \$195-\$395 per module; demo package, \$25*)  
**Requires:** Apple II, II Plus, or IIe; CP/M card; hard disk; dBASE 2.4  
Softech Information Systems, Inc.  
20 Sunnyside Avenue  
Mill Valley, CA 94941  
(800) 762-7788  
in CA (800) 228-8896  
CIRCLE READER SERVICE NO. 577

### Set Up Your DOT MATRIX PRINTER With a Touch of a KEY!

# PCP™

### PRINTER CONTROL PROGRAM

No longer do you have to enter long "set up strings" to take advantage of your DOT MATRIX PRINTER's capabilities. Just select from the MENU...let your computer do the rest! Condensed Characters, Double Strike Printing, Emphasized Characters, Special Line Spacing, and more! Comes complete with PROGRAM DISKETTE and OPERATING MANUAL. Includes information on how to program your printer in Basic, VisiCalc®, Applewriter. PCP is a very handy utility program you will use again and again!

#### VERSIONS:

Apple II, II+, IIe and III  
WITH

Apple DMP & ImageWriter  
Epson MX\*, RX & FX Printers  
C.Itoh Prowriter I & II  
NEC PC8023A  
Okidata 82A, 83A, 92, 93 & 84  
Gemini Star 10, 10X & 15

### PRO/PAC

14925-A Memorial Drive, Dept. B  
Houston, Texas 77079  
(713) 496-1179

\* Requires Graftax Plus™ For Full Features

#### EPSON PRINTER CONTROL PROGRAM

##### PRINTER OPTIONS

|                 |                   |
|-----------------|-------------------|
| A CONDENSED     | G 6 LINES/INCH    |
| B DOUBLE WIDTH  | H 8 LINES/INCH    |
| C ITALICS       | I 10 LINES/INCH   |
| D HALF SIZE     | J SPECIAL SPACING |
| E EMPHASIZED    | K UNIDIRECTIONAL  |
| F DOUBLE STRIKE | L BIDIRECTIONAL   |

##### SOME COMBINATIONS

|                                       |
|---------------------------------------|
| M EMPHASIZED DOUBLE STRIKE            |
| N DOUBLEWIDE EMPHASIZED               |
| O DOUBLEWIDE EMPHASIZED DOUBLE STRIKE |
| P CONDENSED DOUBLEWIDE                |
| Q CONDENSED DOUBLEWIDE DOUBLE STRIKE  |
| R CONDENSED DOUBLE STRIKE             |
| S CONDENSED HALF SIZE                 |
| T RETURN TO STANDARD SETTINGS         |

TYPE LETTER, PRESS RETURN [O ENDS]

#### THIS IS WHAT THE EPSON MX VERSION MENU LOOKS LIKE

Be sure to specify BOTH microcomputer and printer to obtain correct version.

**ONLY \$29.95**

plus \$2.00 shipping and handling USA

VISA and MasterCard Credit Cards

See Your Dealer or Write or Call Us!

APPLE™ is a registered trademark of Apple Computer, Inc.

CIRCLE 165 ON READER SERVICE CARD

# BLANK DISKS

Major Brands • Low Prices

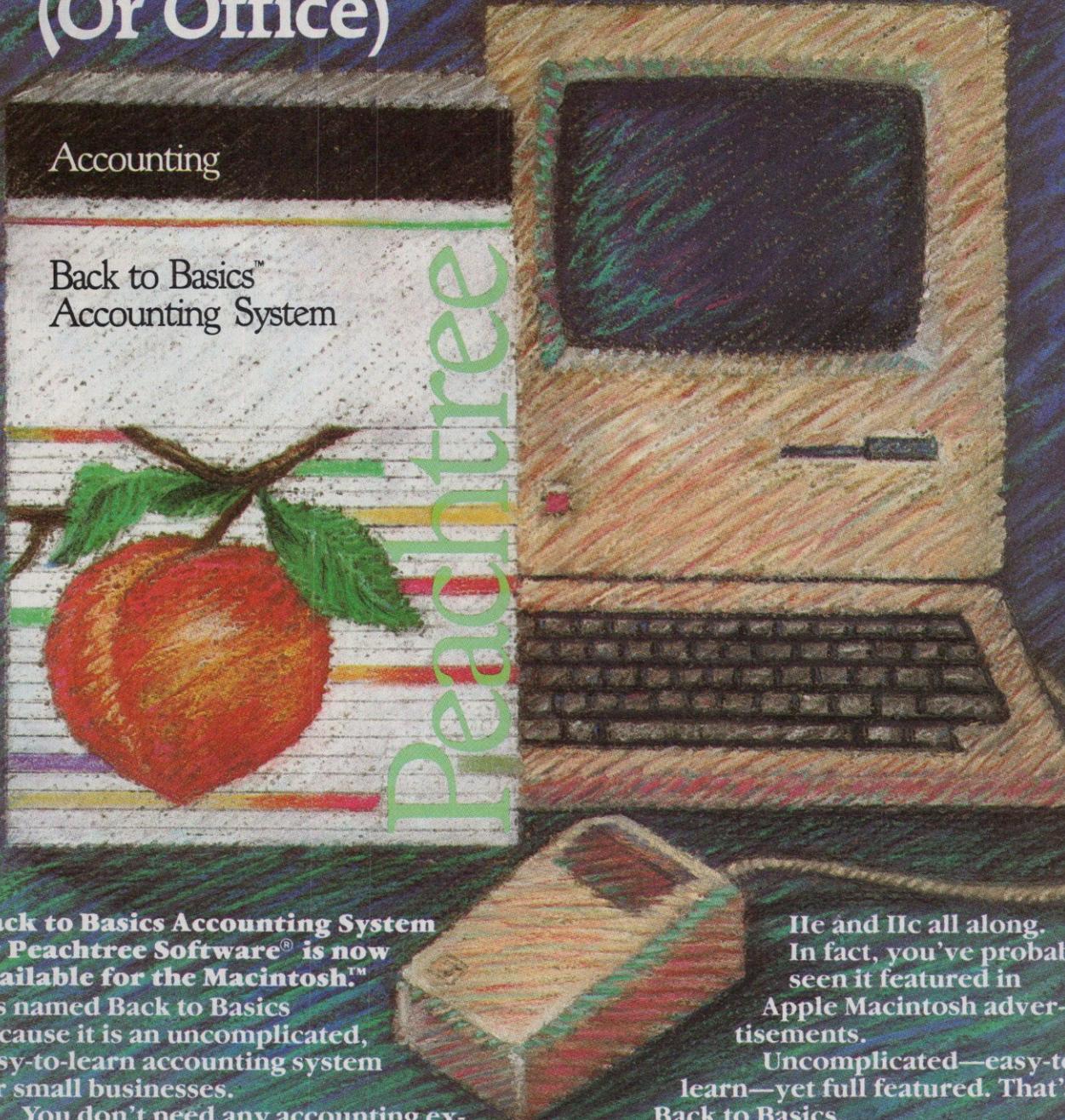
Call ALF first  
**1-800-321-4668**

If you need 50 or more top quality disks, bulk-packed (without expensive labels or fancy packaging), call the toll-free number above for the latest price on your favorite brand. ALF copies thousands of disks each day—so we know which disks will perform best with your system! Inside Colorado call 234-0871.

**ALF**

ALF Products • Denver, CO

# Introducing Accounting For Those With A Mouse In The House. (Or Office)



**Back to Basics Accounting System by Peachtree Software® is now available for the Macintosh.™**

It's named Back to Basics because it is an uncomplicated, easy-to-learn accounting system for small businesses.

You don't need any accounting experience and barely need any computing experience. The straightforward manual teaches both accounting and computing at the same time.

But make no mistake. This is a full-featured series of interactive products including General Ledger, Accounts Payable and Accounts Receivable.

The first business accounting system for the Macintosh, Back to Basics has been enjoyed by owners of Apple® II+,

IIe and IIc all along. In fact, you've probably seen it featured in Apple Macintosh advertisements.

Uncomplicated—easy-to-learn—yet full featured. That's Back to Basics.

For more information, contact your local dealer or Peachtree Software, 1-800-554-8900.

**America's Software grows on the Peachtree.®**

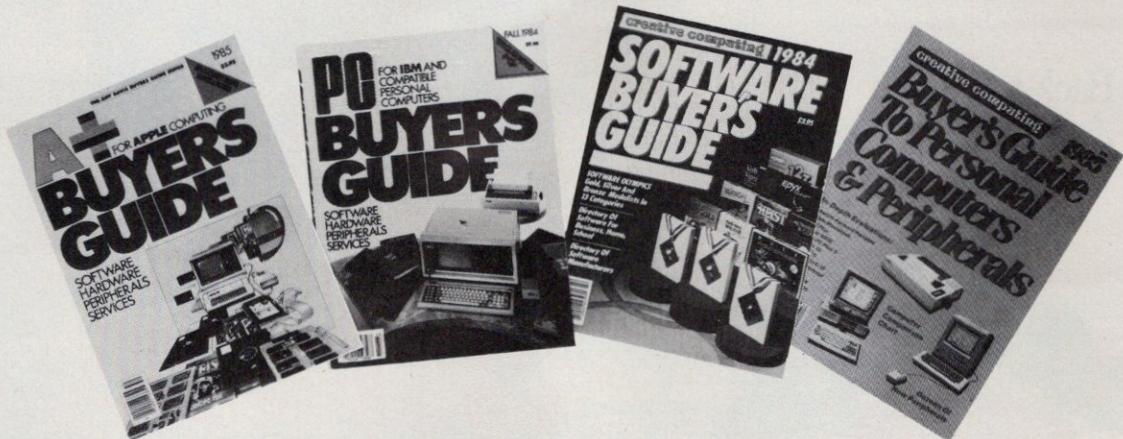
**Peachtree Software**



Apple is a registered trademark licensed to Apple Computer, Inc. Macintosh is a trademark licensed to Apple Computer, Inc. Peachtree and Peachtree Software are registered trademarks of Peachtree Software Incorporated, an MSA Company.

CIRCLE 318 ON READER SERVICE CARD

# THE WORLD'S MOST COMPLETE REFERENCE AND SOURCEBOOKS FOR MICROCOMPUTERS!



If you own or use a microcomputer, and you're in the market for new software, peripherals, and add-ons, you need current information that will help you make the right decisions at the right prices.

If you're new to microcomputing, you need a guidebook that will help you understand what's available on the market and what services will help you choose the right system at the right price.

No matter who you are, you need the guides and sourcebooks that both experts and beginners turn to—you need a Ziff-Davis Computer Buyers Guide!

## A+ BUYERS GUIDE

For the most complete and current listing of over 3,000 software, hardware, peripherals, services and organizations for the Apple II series, III, Lisa and Macintosh! Published twice a year so it's always timely, A+ BUYERS GUIDE is the definitive source for Apple computing needs and services. \$5.95.

## PC BUYERS GUIDE

This is the reference guide for all IBM PC, PCXT, PCjr, PCAT and compatible owners and users. Published every 3 months, there is no other guide as complete or timely as PC BUYERS GUIDE! Updated quarterly to reflect the newest changes and innovations in IBM PC technology, PC BUYERS GUIDE brings you full listings on products, software, services, add-ons and compatibility requirements. \$7.95

## CREATIVE COMPUTING SOFTWARE BUYER'S GUIDE

A comprehensive buyer's guide to the leading software and application packages for Apple, Atari, Commodore, TRS-80, and IBM microcomputers. Complete listings, compatibility specifications and performance reviews covering over 1,000 business, education, personal and recreational programs and packages. \$3.95

**FOR FASTER SERVICE  
PHONE TOLL FREE 1-800-631-8112  
(In NJ only 1-201-540-0445)**

From the publishers of A+, PC, PC TECH JOURNAL, PC WEEK and CREATIVE COMPUTING.

## CREATIVE COMPUTING BUYER'S GUIDE TO PERSONAL COMPUTERS AND PERIPHERALS

If you want to buy your first system or expand your current system, don't make a decision without consulting this buyer's guide! You'll be provided with complete reviews on the leading microcomputers and peripherals on sale today. Compiled by the editors of CREATIVE COMPUTING, the #1 magazine of computer software, applications and evaluations. \$3.95

## ZIFF-DAVIS PUBLISHING COMPANY

DEPT. FN6F, 39 EAST HANOVER AVENUE, MORRIS PLAINS, NJ 07950

Please send me the Buyers Guide listed below:

| Title  | Qty. | Price Each | Postage Handling | Total Price |
|--|------|------------|------------------|-------------|
| A+ BUYERS GUIDE  |      | \$5.95*    | \$1.55           |             |
| PC BUYERS GUIDE  |      | \$7.95*    | \$1.55           |             |
| CREATIVE COMPUTING SOFTWARE BUYER'S GUIDE                            |      | \$3.95**   | \$1.00           |             |
| CREATIVE COMPUTING BUYER'S GUIDE TO PERSONAL COMPUTERS & PERIPHERALS |      | \$3.95**   | \$1.00           |             |

Please add applicable sales tax:

Total Amount

\*Residents of CA, CO, CT, DC, FL, IL, MA, MI, MO, NJ and NY State.

\*\*Residents of CA, NJ and NY State.

Payment Enclosed \$\_\_\_\_\_ (Outside USA add \$1.50 per order.)

Charge My: (\$10 minimum)  American Express  Visa  MasterCard

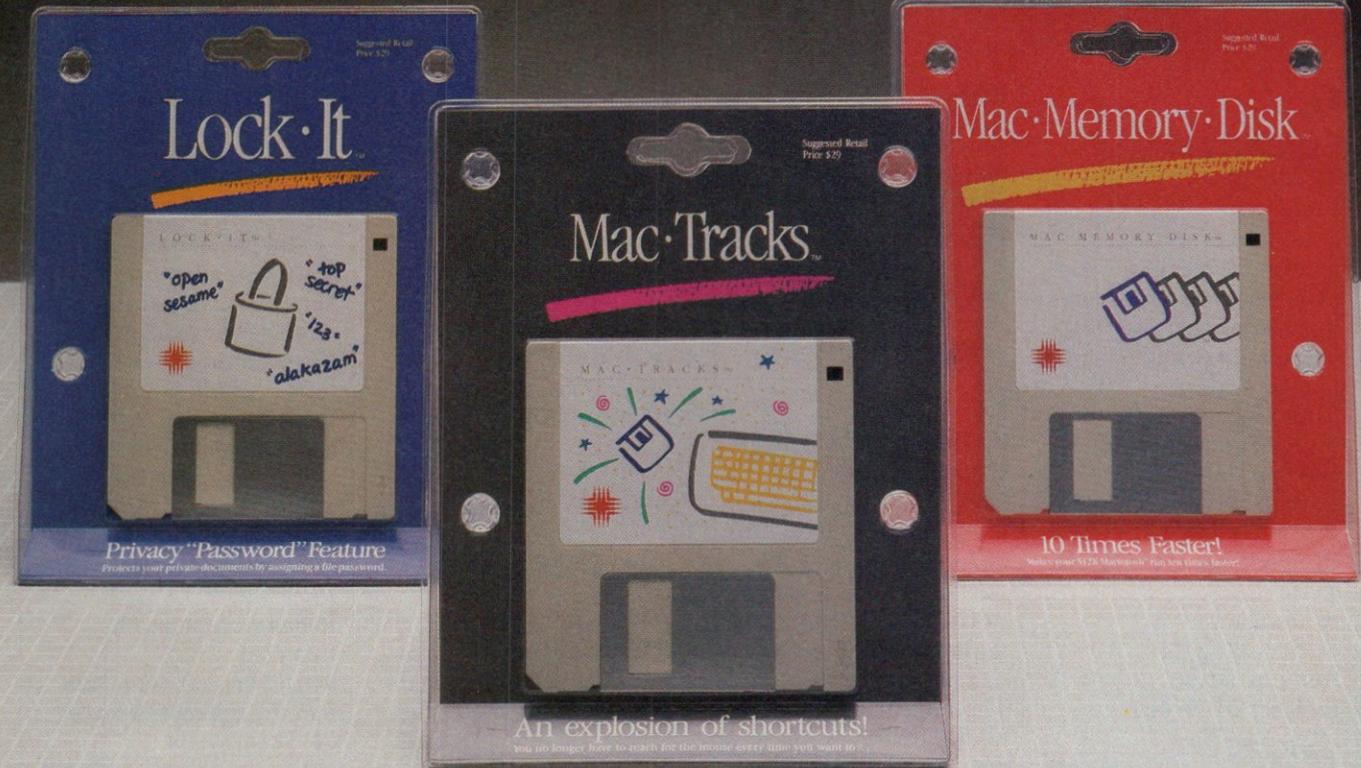
Card No.\_\_\_\_\_ Exp. Date.\_\_\_\_\_

Mr/Mrs/Ms\_\_\_\_\_

print full name

Address\_\_\_\_\_

City/State/Zip\_\_\_\_\_



# Three great ways to accomplish a lot. For very little.

The cost of productivity has come down. With three new, incredibly useful tools from Assimilation that make it easier than ever to do more with your Macintosh.™ For only \$29 each.

**Mac·Tracks™** For customized shortcuts and command flexibility. Mac·Tracks traces the movement of the mouse and lets you assign specific control keys that automatically duplicate what the mouse does. You can even store up to 5,000 characters on one key.

**Lock·It™** To protect your documents. With Lock·It, you limit access to your files by inserting a password which intercepts the "open" command. The password can be any combination of characters and can be applied to any document in any software application.

**The Mac·Memory·Disk™** For more memory and speed. The Mac·Memory·Disk lets you access more of the memory in your 512K Macintosh. It makes interaction between software applications ten times faster. It also lets you allocate a portion of the RAM (Random Access Memory) resident in your 512K Macintosh and treat it like a disk.

The Mac·Memory·Disk, Lock·It, and Mac·Tracks are three outstanding yet inexpensive tools that give you greater flexibility. See for yourself how little it takes to accomplish a lot. Stop by your local Apple Computer Dealer. Or call toll-free to order: 1-800-MAC-5464. In California, toll-free to order: 1-800-421-0243.



**Assimilation**™



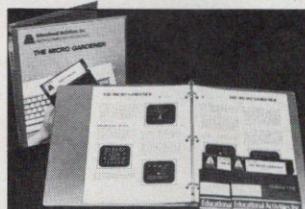
## ► EINSTEIN MEMORY TRAINER

Five lessons within this program lead users through proven techniques for remembering people's names, word or number lists, important dates, and phone numbers. Memory Mix, a game included in the software, helps users practice and apply what they have learned in the lessons. (List Price: \$39.95)

**Requires:** Apple II Plus, IIe, or IIc

Avant-Garde Publishing Co.  
P.O. Box 30160  
Eugene, OR 97403  
(503) 345-3043

CIRCLE READER SERVICE NO. 582



*Micro Gardener, from Educational Activities, Inc.*



## ► MICRO GARDENER SIMULATION

This high-resolution simulation program allows students to study up to 18 weeks of plant growth in 12 to 18 minutes. Three programs simulate the growth of a potted plant from seed. The student decides on a weekly basis how much water, sunlight, temperature,

and heat to give the plant.

Animated graphics show the expected growth of the plant in relation to the care it's receiving. Successful horticulturists receive a first-place ribbon. (List Price: \$63)

**Requires:** Apple II Plus, IIe, or IIc

Educational Activities, Inc.  
P.O. Box 392  
Freeport, NY 11520  
(516) 223-4666

CIRCLE READER SERVICE NO. 583



## ► THE DESKSET PROGRAM

The DeskSet, a desk-management program for the Macintosh, provides tools for organizing and planning

personal and business activities. The program includes a notepad that has a filing system and full editing abilities, a desk directory and phone book, and a calendar and appointment book. The program also has a financial calculator that has several built-in functions, including rate of return, discounted cash flow, depreciation calculations, and amortization and interest problems. An Encryption feature provides password protection. (List Price: \$99.95)

**Requires:** Macintosh EnterSet  
410 Townsend, Suite 408  
San Francisco, CA 94107  
(415) 543-7644

CIRCLE READER SERVICE NO. 584

# RENT SOFTWARE

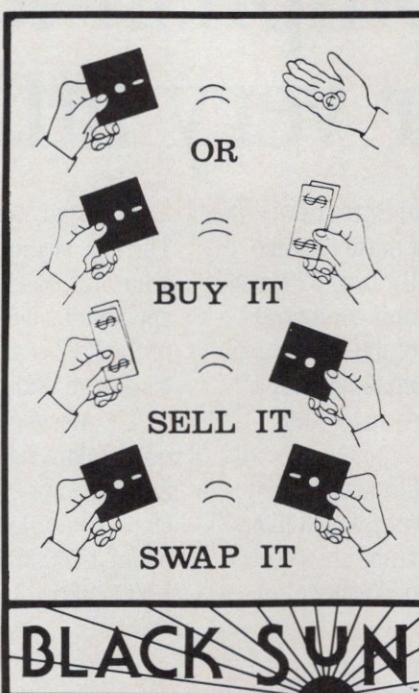
Over 1400 titles for the Apple family of computers . . .  
Now featuring Macintosh software!

If you can't afford to waste money on software that is seldom used, you should consider our unique rental program. All too often, software fails to perform as anticipated or advertised. Or it quickly becomes boring. Unfortunately, this discovery is made after it's too late. Because unlike an ill-fitting garment, you cannot return or exchange ill-fitting software.

Renting software before you make a commitment to buy it, helps you choose the right software for your applications. You can rent software for 3 weeks at a fraction of the retail price. All rental fees are applied to our ultra-low prices...if you decide to buy! And our expanding, diversified collection of over 1400 titles provides you with the widest range of software available for the Apple.

There are of course, many applications where renting software is simply more practical than buying it. 3 weeks may be all the time you'll need with many of our entertainment and educational selections. If you belong to a video club or library, you already know about the advantages this arrangement provides.

Renting software is not the only way we can save you money. Chances are, you already have some dust-collectors on your shelves. Selling or swapping is a good way to recover some of the money that's tied up in little used software. But you'll need our catalog for more information on these flexible options.



**BLACK SUN**

### RENTAL CATEGORIES

Adventure/Fantasy • Business  
Communications • Education • Games  
Home/Hobby/Utility • Strategy  
Word Processing • Hardware • Books  
plus hundreds of Rare & 1/2 price items!

### INTRODUCTORY OFFER

Join now and save \$5.00 off the normal \$25.00 membership fee. There are no annual dues, upkeep fees, or hidden costs. Send check or Visa/MC info for \$20.00 along with your name, address & phone #. Please specify type of computer and memory (II, II+, IIe, IIc, etc.). We will rush you our latest catalog, forms, and membership #. If you are not completely satisfied with our service and/or selections (try us out at no risk!), let us know within 30 days and we will refund your membership fee!

### For more information

**Call  
(215) 967-3300**

or write  
**Black Sun**  
411-A State Road  
Emmaus, PA 18049

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

CIRCLE 160 ON READER SERVICE CARD

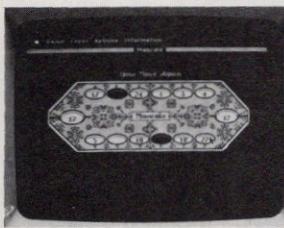
# 3 GREAT GAMES

## ON ONE GREAT DISK!

- Ask Mac to suggest a good move • Undo your moves
- Learn the rules and histories • Save your games
- Choose your skill level • Review game moves

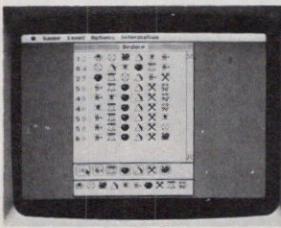
### MANCALA

Like Pits & Pebbles—easy to learn but tough to beat. Mac gets better as you play. Addictive, so watch out.



### DEDUCE

Get the whole family to help find the secret pattern. All ages can share in the fun. Educational. Super graphics.



### BACKGAMMON

Beginner? Mac will help you learn the game.

### ENTER THE BACKGAMMON TRIPLE PLAY-OFF

**\$4,000 IN PRIZES**

Details on the 3-in-one disk.  
Hurry. Contest ends May 15, 1985

**ALL THREE JUST \$39.50**  
Money back if not delighted.  
VISA, Master Card accepted.



### TRIPLE PLAY™

P.O. Box 6354-AE  
Lafayette, IN 47903  
317+742-5369

CIRCLE 158 ON READER SERVICE CARD

## Professional Handicapping Systems



by Professor Jones

### 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. 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                | 4) Post Last | 7) Running Style              |
| 2) Post Today           | 5) Distance  | 8) Weight                     |
| 3) Kennel               | 6) Condition | 9) All new internal weighting |
| 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™ \$299.95

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

Complete Football Analysis with Data-Base.

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

Highest percentage of winners 1984

\$49.95 complete \$99.95 with Data Base Management

### MHH. Master Harness Handicapper™

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

\$159.95 complete with integrated Master Bettor™ \$199.95

### NBA. Basketball™

This data base managed analysis will provide the user with "ALL" betting situations while storing relevant information on the disk.

\$79.95 complete with Manual

### LOT. Lottery Analysis™

Statistical comparison program designed to detect subtle patterns in winning lottery numbers.

\$49.95 complete with Manual

## BROCHURE AVAILABLE

CIRCLE 148 ON READER SERVICE CARD

**Prof. Jones**

1114 N. 24th St.  
Boise, ID 83702



**48 HR. FREE SHIPPING**

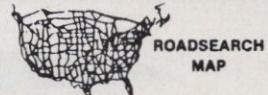


**CALL  
208-342-6939**

TERMS: FREE SHIPPING  
ALL SOFTWARE. Add  
\$6.00 UPS Blue/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

## COMPUTER ROAD ATLAS

TAKE TRIPS WITH COMPUTER  
LISTINGS SHOWING THE  
BEST ROUTE



ROADSEARCH IS A COMPUTERIZED ROAD ATLAS that helps you plan trips. Enter the departing city and the destination city. ROADSEARCH computes the shortest route or other routes more suitable to your needs. Printout includes detailed driving directions, mileage, time, fuel and more.

ROADSEARCH contains a roadmap of 487 cities/road junctions and 70,000 road miles. ROADSEARCH-PLUS (extra cost) also contains a ROADMAP DEVELOPMENT SYSTEM which lets you customize your roadmap. ROADSEARCH-PLUS lets you add up to 269 towns, road junctions, roads or shortcuts for local or interstate travel.

EASY TO USE. Back-up copies allowed. Specify Apple II or Commodore-64. All Columbia Software carries a 15 DAY MONEYBACK GUARANTEE.

STOP USING THE "OLD FASHIONED" METHOD of tracing routes on a map. It is tedious, time consuming, and inaccurate. Use your computer to plan your next route. The printed output will help you navigate.

ORDER ROADSEARCH OR ROADSEARCH-PLUS from your dealer or directly from Columbia Software. ROADSEARCH-PLUS is \$74.95 and ROADSEARCH is only \$34.95. Add \$1.50 for shipping and handling. MD residents add 5% state tax.

MAIL COUPON OR CALL TODAY

(301) 997-3100

**Columbia Software**  
Box 2235W, Columbia, MD 21045

( ) ROADSEARCH-PLUS for \$74.95 ( ) Apple II(64K)

Please send me ( ) ROADSEARCH for \$34.95 for ( ) C-64 disk

Add \$1.50 shipping. If I am not satisfied, I may return it for a full refund.

( ) check ( ) Master Charge ( ) VISA

Card Number

Expiration Date

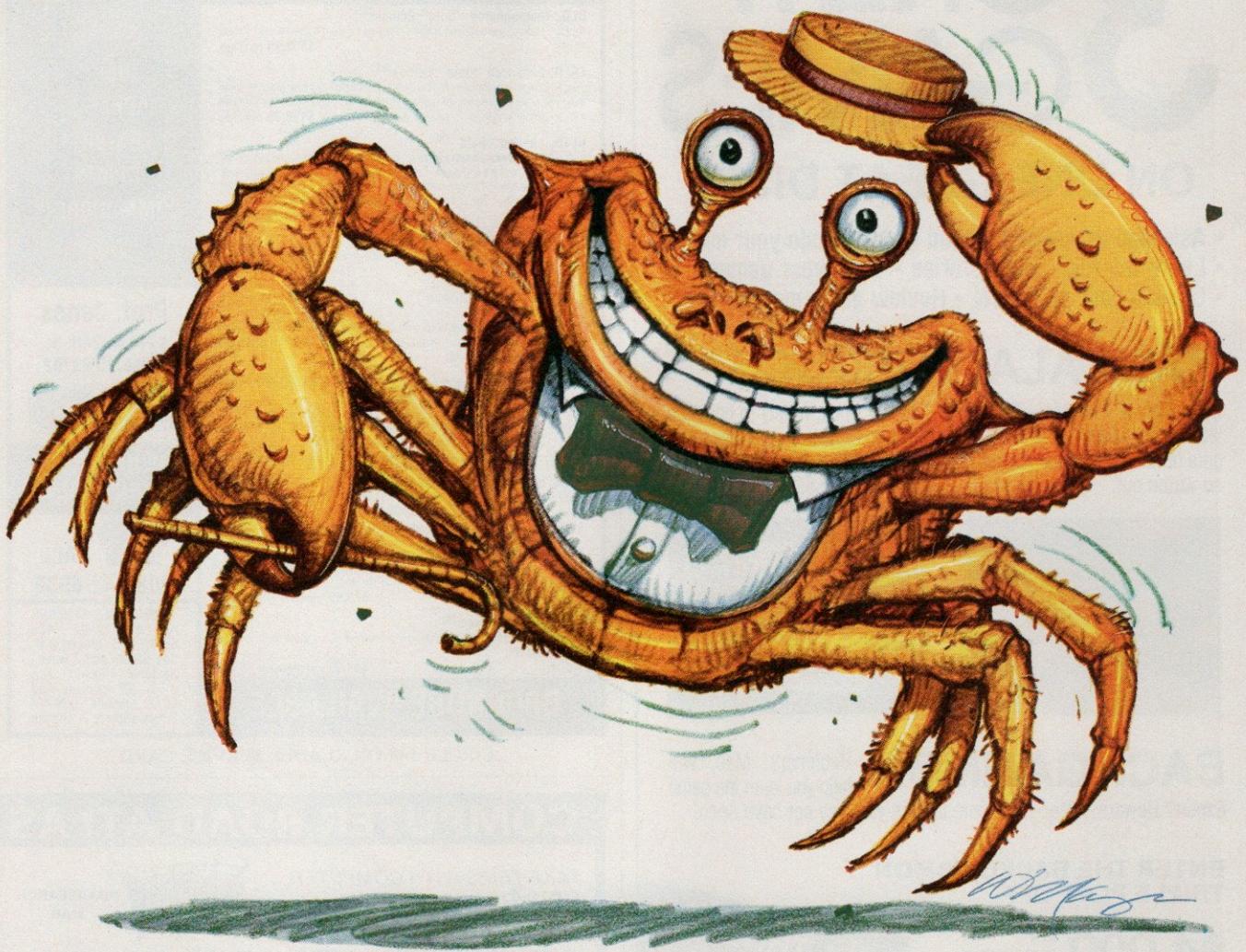
NAME

ADDRESS

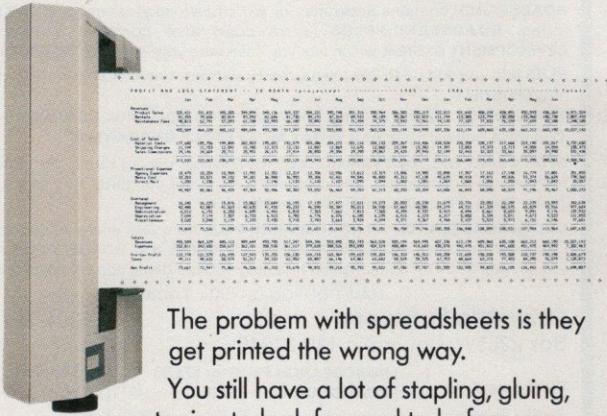
CITY STATE ZIP

**ORDERS: 1-800-835-2246, Ext. 172**

CIRCLE 238 ON READER SERVICE CARD



## Sometimes the best way to get ahead is to go sideways.



The problem with spreadsheets is they get printed the wrong way.

You still have a lot of stapling, gluing, or taping to look forward to before your printout is readable.

To really get ahead, go Sideways.<sup>TM</sup>

Sideways is the clever software program that prints your spreadsheets—you guessed it—sideways. So your spreadsheet columns need never fall off the edge of your printer paper again.

With Sideways on your side, no spreadsheet you invent with Lotus 1-2-3<sup>®</sup>, Symphony<sup>™</sup>, VisiCalc<sup>®</sup>, Multiplan<sup>®</sup>, or SuperCalc<sup>™</sup> is too wide! And it's just as powerful an ally when you're creating far-into-the-future schedules and pert charts. So for a presentable printout, get rid of that glue stick and scotch tape—put your best foot forward and go Sideways.

You can go Sideways today with an IBM<sup>®</sup> PC or an Apple<sup>®</sup> II, and over a dozen different printers, including Epson<sup>®</sup>, Okidata, IBM<sup>®</sup>, Apple<sup>®</sup>, C. Itoh and Mannesmann Tally. Ask for Sideways at your local ComputerLand<sup>®</sup>, Entre, or other computer store. Or mail a \$60 check to Funk Software, P.O. Box 1290, Cambridge, MA 02238. Or call 617-497-6339. MC/Visa accepted.

**SIDEWAYS<sup>™</sup>**  
SIDEWAYS PRINTS SPREADSHEETS SIDEWAYS.

## SPEAKING OF GRAPHICS BY ROBERTA SCHWARTZ AND MICHAEL CALLERY

Designing graphics for  
needlepoint projects,  
teaching programming  
to gifted kids,  
animation, and more

# LETTERS, WE GET LETTERS

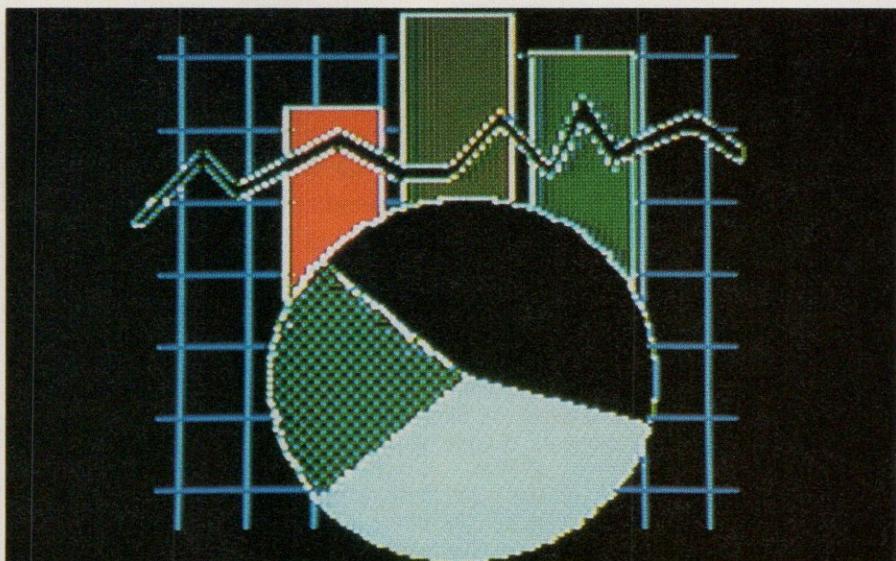
We're delighted that so many of you read and enjoy the column. We welcome your questions, and we're trying to answer all of you personally; please be patient. When questions might be of interest to others, we'll include them in the column.

### Here Goes...

For Barbara, who spent two years in search of a program that would help her design graphics for needlepoint and cross-stitch projects—your search has ended. Check out *The Stitch Grapher* from Compucrafts.

For Donald, who's using graphics to teach computer programming to gifted children, we recommend an excellent book by Daniel Watts. It comes in two versions: *Learning with Logo* and *Learning with Apple Logo*. While we're on the subject of books, here are two that we find very helpful. *Apple II Computer Graphics*—by Williams, Kernaghan, and Kernaghan—covers the ins and outs of using hi-res graphics, including Applesoft shapes and shifted shapes for animation. Roy E. Myers' *Microcomputer Graphics* successfully clarifies graphics concepts.

Donald also expressed his frustration in trying to grasp the basic concepts of graphics and animation, even though he's been doing a lot of reading and experimenting. You can learn just so much on your own. It's helpful to take a course—at a local community college or other institution—in pro-



*The Graphics Department, from Sensible Software*

gramming, computer graphics, or any other subject when you're exploring it. A teacher can answer questions and clarify some of the mysteries. You may also want to join a users' group, where you can exchange ideas with people who have similar interests.

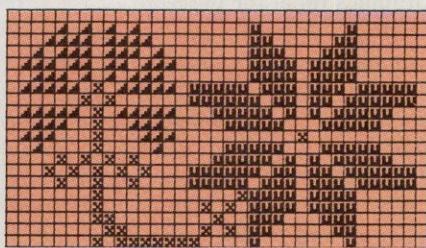
Ken sent a query about the sample screen display in our article "Seeing Double" (A+, December 1984, pages 98-101). After he typed HGR:POKE -16290,0 on his Apple IIe, Ken's display looked different from the one in our illustration. Coincidentally, when we got his letter, we were in the midst of verifying programs and illustrations for the final manuscript of our book. We discovered that the display on Roberta's IIc is different from the one on Michael's IIc, and both are different from the one Ken gets! Ken was concerned that this difference meant he couldn't use double-hi-res graphics. No problem. A little testing revealed that the only constant is the vertical black bars created by the HGR command in main memory. The contents of auxiliary

memory appear to vary from computer to computer—we don't know why. In any case, the commercial programs take care of initializing and managing the auxiliary memory necessary for double hi-res graphics. If you want to do it yourself, you must work from assembly language and follow the guidelines in the manual for Apple's Extended 80-Column Card or the reference manual for the IIc.

By the way, Ken, the printout you sent us was helpful, but it wasn't an accurate picture of the double-hi-res screen. Many of the older printer-dump cards decode the first or second hi-res page, but they don't mix the main and auxiliary memory. If you want instant dumps of double-hi-res screens, look into the new generation of interface cards, such as Print-It and Serial Grappler. Before you discard older interfaces, check with the manufacturers to see if upgrades are available.

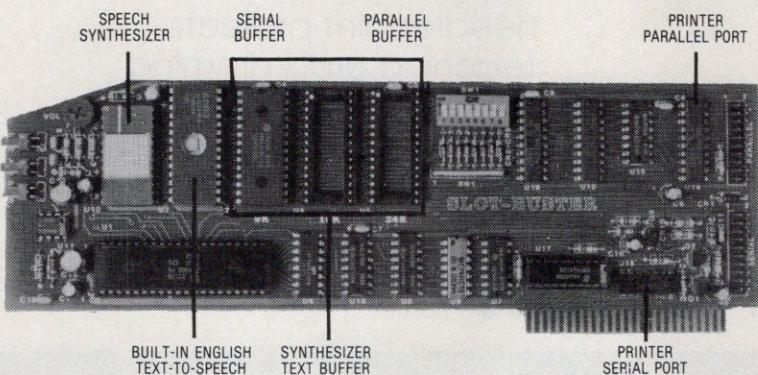
### The Graphics Department

When we wrote the theme article on presentation graphics ("Presentations



*A sample pattern from Compucraft's 'The Stitch Grapher'*

# If You've Got A Slot, We've Got The Card.



## SLOT — BUSTER™

The New Generation Peripheral Card  
for the Apple II, II Plus, and //e

The Slot-Buster is the first complete **six-function** card available for the Apple II series computers. It contains fully software compatible Centronics parallel and RS-232 serial printer interfaces for accessing correspondence and letter quality printers. And with the built-in printer buffers, you'll be able to use your Apple while the Slot-Buster takes care of printing your documents. Two documents at once, if you like!

Also included in the Slot-Buster is the most innovative and first really *useful* speech synthesizer that leaves all the others utterly speechless. It's so intelligent, in fact, that you can easily teach it to speak foreign languages, or create an unlimited number of sound effects. Using it couldn't be simpler either, because you access it just like a printer from within your programs. Even program listings can be directed to the synthesizer for verbal output. And another first... *The synthesizer's internal text-to-speech rules can be easily redefined for virtually any spoken language.* (We've even included Spanish text-to-speech rules on disk, free!) And with the built-in text buffer, there's never any waiting.

If you're worried that all of these advanced features will bog down your Apple, stop worrying. A fast and powerful on-board Z80-based computer oversees all of the Slot-Buster's functions, so your Apple doesn't have to. In fact, *the Slot-Buster doesn't even use any of your Apple's memory!* We think you'll also be pleasantly surprised with the Slot-Buster's price - it's only slightly higher than you'd expect to pay for a card with only one function.

The Slot-Buster is compatible with all popular printers including Apple's ImageWriter. All functions are compatible with AppleWorks, BASIC, PASCAL 1.1, and CP/M. Free disk software includes a hi-res printer dump program that supports both single and double hi-res graphics, a self-test diagnostic program, and more.

**\$229.95**  
(suggested retail price)

24 - Hour TOLL-FREE order line  
(800) 227-1617 ext. 595B

For more information write or call: In California: (800) 772-3545

**RC Systems, Inc.**  
121 W. Winesap Rd., Bothell, WA 98012 (206) 771-6883

Apple, AppleWorks, and ImageWriter are trademarks of Apple Computer, Inc. CP/M is a trademark of Digital Research, Inc.

CIRCLE 118 ON READER SERVICE CARD

with Personality," *A+*, February 1985, pages 26-33), we had a chance to explore many programs that we hadn't used before. One of these programs impressed us so much that we thought we should devote some space to it here.

The Graphics Department is an easy-to-use, well-documented business-and presentation-graphics utility. This package has everything you need to create dynamic presentations. The Chart Generator creates pie, bar, scatter, and

**You can learn just so much on your own. It's helpful to take a course— at a local community college or other institution.**

line charts from data that you key in or from DIF (Data Interchange Format) files (files created with programs such as VisiCalc). You have a choice of 20 fonts for lettering your screens, and these fonts can be shadowed, colored, and so on.

With this program you can draw and paint in 100 colors. The program works with standard 8K hi-res pictures, so you can use it with graphics that you create with any standard Apple graphics program. A full range of editing options includes Cut and Paste, Overlay, Merge, Flip, Shrink, Invert, and more.

The Slide Projector module gives you control of up to 32 hi-res pictures for display on your CRT. You can subtitle and show these pictures at varying speeds in an interactive or self-running slide show.

Although we highly recommend this program for individuals as well as businesses, we must state our objection to the company's latest ad, which reads, *"Replace that graphic 'artist' with a complete Graphics Department."* (The italics are ours.) We suggest that you *reward* that graphic "artist" with a complete Graphics Department.

### Graphics Input for the Mac

If you want to use the mouse for tracing images, check out Mouse-Around from FrontRunner. We have the prototype, which consists of a horse-shoe-shaped plastic frame, a plastic drawing board, and a horizontal-vertical alignment bar. The device is good-looking and well-constructed, and it works.

For those who are having difficulty

manipulating the mouse, Summagraphics Corporation has announced the MacTablet, a 6 x 9 graphics tablet for the Mac. (Watch for a review in an upcoming issue of *A+*.)

Many digitizers are available for the Mac. We use Magic from New Image Technology, Inc. It is the most expensive one of the lot, but it gives users the most control. A future issue of *A+* will contain a comprehensive, comparative review of Mac digitizers.

#### Slide Show

We end this column with a program all Apple artists can use. It creates a self-running slide show of your hi-res pictures. The program uses a technique known as "page-flipping," so the viewer never sees the pictures load.

```

10 TEXT:HOME
20 L1=8192:L2=16384:LOC=L1
30 READ F$
40 IF F$="DONE" THEN GOTO 500
50 PRINT CHR$(1); "BLORD"; F$; ",R"; LOC
60 C=C+1:IF C>1 THEN GOSUB 200
70 IF LOC=8192 THEN GOTO 100
80 POKE -16299,0:LOC=L1
90 GOTO 30
100 POKE -16300,0:LOC=L2
110 GOTO 30
200 POKE -16297,0
210 POKE -16302,0
220 POKE -16304,0
230 RETURN
500 END
1000 DATA mypic1.pic
1010 DATA mypic2.pic
1020 DATA continue your pic names
1900 DATA DONE

```

Put your picture names—standard 33/34-sector pictures—in the data statements, beginning at line 1000. Be sure to type the filenames exactly as they appear on the catalog. Don't change line 1900; the last name in the DATA list must be DONE.

The key to this program is in the use of a variable to represent where to load each picture. The variable LOC contains either 8192 (page 1) or 16384 (page 2). The IF statement in line 70 is responsible for flip-flopping the value of LOC. Line 50 loads a picture to the value stored in LOC. When the program is run, LOC is set to 8192, and the first picture is loaded to page 1. Line 60 contains a counter so that the necessary screen switches will be thrown to display hi-res graphics the first time the program is run. When the IF statement in line 70 is true, the program branches

# kyan

## PASCAL

### For the Apple

*kyan pascal* is the most complete package available for learning and using the Pascal language. And now, it's available for the Apple II family of computers.

*kyan pascal* is easy to use, lightning fast, and loaded with features. It's a full Pascal implementation. It compiles and runs many times faster than other Pascal compilers.

#### *kyan pascal features:*

- Optimized Machine Code Compiler;
- Built-In Full Screen Text Editor;
- String-Handling, Chaining, Include File, and Other Powerful Extensions;
- Random Access Files and Full Graphics Support;
- Built-In Assembler (Allows Full Hardware Control);
- 13-Digit Arithmetic Precision; and,
- Tutorial Manual with Sample Programs.

*kyan pascal* requires 64K of memory and a single disk drive. No additional hardware is necessary. And, it comes with *kyan's* MONEY BACK GUARANTEE... **If not completely satisfied, return it within 15 days for a full refund.**

*kyan pascal for the Apple* ..... \$69.95  
(Add \$4.50/copy for handling, \$12.00 outside North America. California residents add \$4.55/copy for sales tax)

Send Check/Money Order to: **kyan software**, Dept.K  
Call: (415) 775-2923    
MC/Visa Accepted

CIRCLE 161 ON READER SERVICE CARD

# IT'S LIKE DISKETTES FOR 99¢ EACH!



- 100% more capacity than Single Side Diskettes
- For use in **ANY** 5 1/4 Disk Drive
- Just turn it over to use the other side
- Both sides are certified 100% Error Free
- 5 Year Guarantee

- **MADE IN U.S.A.**
- **TOTAL SEAM BONDING**
- **TYVEK JACKETS, REINFORCED HUB RINGS**
- **EXCEEDS INDUSTRY TECHNICAL SPECIFICATIONS**

**\$19.80\*** for 10 disks (20 sides)  
only call for quantity discounts

\* On all orders add \$2. for postage & handling  
(\$5 Foreign). Florida res. add 5% Sales Tax.

**SATISFACTION GUARANTEED  
OR YOUR MONEY BACK!**



**TOLL FREE 1-800-642-2536**

FLORIDA 305-493-8355

or send check or money order to:

**nibble notch®**  
computer products

4211 NW 75th Terrace • Dept. 232 • Lauderhill, FL 33319

CIRCLE 237 ON READER SERVICE CARD

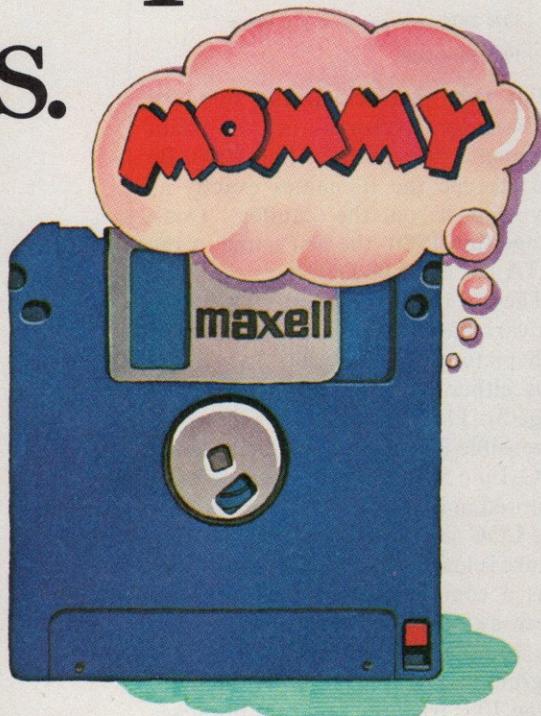


## Maxell Gold.

The 3½" microdisk  
that gives Macintosh™  
more to chew on  
and helps the  
HP® Touchscreen PC  
tap your deepest  
memories.

Whether you're in search of primeval wisdom, or polishing up financial projections, Maxell makes the Gold Standard microdisk for your computer. In fact, there's a Gold Standard for virtually every computer made. Maxell floppys are industry leaders in error-free performance. Each comes with a lifetime warranty. And each microdisk is perfectly compatible with your 3½" drive.

**maxell.**  
IT'S WORTH IT.



Macintosh is a trademark licensed to Apple Computer, Inc.

to line 100, which does the POKE to turn on page 1, changes LOC to 16384, and loops back to read the name of the next picture. When the IF statement is false, line 80 does the POKE to turn on page 2 and changes LOC to 8192. Then line 90 jumps back to the READ statement to find out which picture to load. The value of LOC, then, determines which page to load to and which screen to show. After all of your pictures are displayed, when F\$ is DONE, the program ends.

If the pictures go too fast, add a delay loop at line 85 and 105; if the pictures go too slowly, use a commercial DOS speedup utility. You can modify this program to include a text or low-res title screen by using a subroutine at line 15; the text/low-res page will be on the screen until line 60 is executed.

Please write to us, c/o A+ Magazine, 11 Davis Drive, Belmont, CA, 94002.

+

## ► PRODUCT INFORMATION

### The Graphics Department

Sensible Software, Inc.  
24011 Seneca  
Oak Park, MI 48237  
(313) 399-8877

**List Price:** \$124.95

CIRCLE 390 ON READER SERVICE CARD

### MacTablet

Summagraphics Corporation  
777 State Street Ext.  
Fairfield, CT 06430  
(203) 384-1344

**List Price:** \$495

CIRCLE 391 ON READER SERVICE CARD

### Magic

New Image Technology, Inc.  
Suite 104  
10300 Greenbelt Road  
Seabrook, MD 20706  
(301) 464-3100

**List Price:** \$399; with camera, \$549

CIRCLE 392 ON READER SERVICE CARD

### MouseAround

FrontRunner  
316 California Avenue  
Suite 712  
Reno, NV 89509  
(702) 786-4600

**List Price:** \$49.95

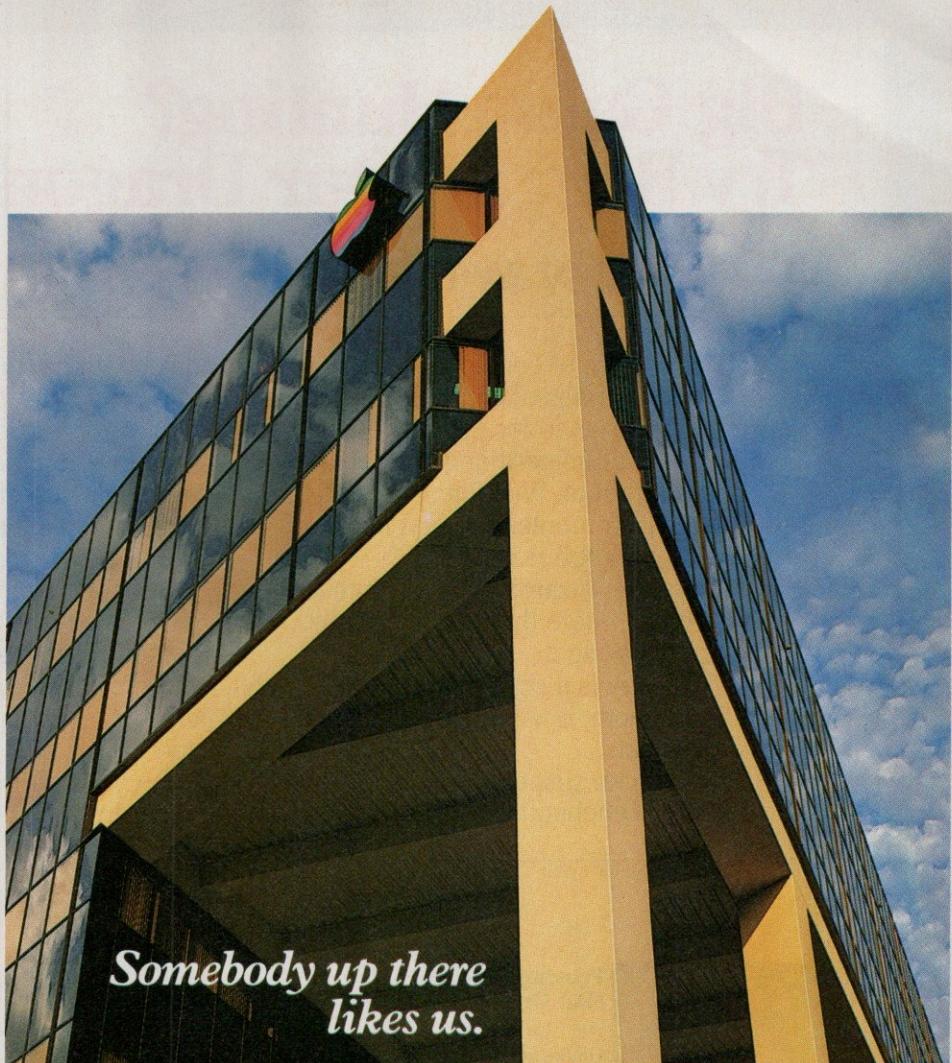
CIRCLE 393 ON READER SERVICE CARD

### The Stitch Grapher

Compucrafts  
RFD 2, Box 216  
Lincoln, MA 01773  
(617) 259-0409

**List Price:** \$89.95

CIRCLE 394 ON READER SERVICE CARD



The people at Apple® should know a good peripheral when they see one. And when they developed ProDOS™ to upgrade the Apple II line, they made it automatically recognize and read Thunderclock.

Not surprising, when you consider Thunderclock's long list of useful applications. In the office, the lab and at home. It starts with time and date stamping disk files and just keeps growing. To automatically accessing data bases, sending electronic mail, timing experiments, controlling your sprinklers and even tracking satellites.

*The fact is, the better you are with your Apple, the more useful Thunderclock becomes.*



Thunderclock adds a new dimension to all the new ProDOS-based software (like APPLEWORKS™ and WORD JUGGLER II™). And gives you access to the time from years down to milliseconds. It comes with a one-year warranty and never misses a tick. On-board batteries keep it running for up to four years before you snap in a new pair.

So if you want to make ProDOS really produce, turn to page 36 in the *Basic Programming With ProDOS* manual. Then get yourself a Thunderclock. You'll see why somebody up there likes us.

See your dealer or contact us today.

 **THUNDERWARE, INC.**

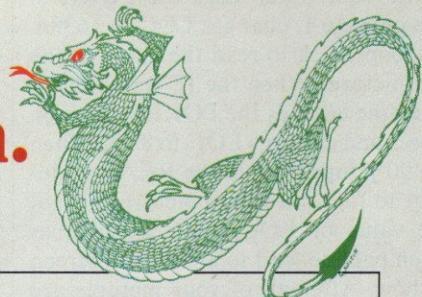
19G Orinda Way  
Orinda, CA 94563  
(415) 254-6581

\*Apple and the Apple logo are registered trademarks of Apple Computer, Inc.  
\*\*ProDOS and APPLEWORKS are trademarks of Apple Computer, Inc.  
WORD JUGGLER II is a trademark of Quark Incorporated.

CIRCLE 226 ON READER SERVICE CARD

# 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.

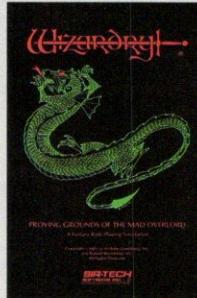
Four years old and still growing, the game is already recognized by critics and game lovers as a classic.

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

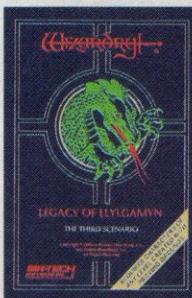


### Proving Grounds of the Mad Overlord

#### *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

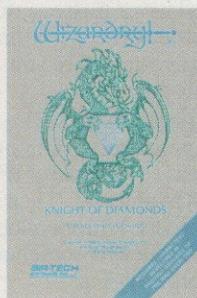


### Legacy of Llylgamyn

#### *The Third Scenario*

A spellbinder that advances the classic traditions of Wizardry. Find the great dragon Lkbreh 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

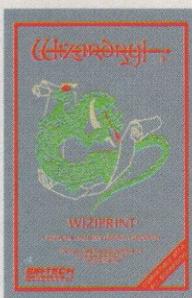


### Knight of Diamonds

#### *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.

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

Apple is a registered trademark of Apple Computer, Inc. IBM is a registered trademark of International Business Machines. Wizardry is a registered trademark of Sir-Tech Software, Inc.

CIRCLE 260 ON READER SERVICE CARD

THE HITCHHIKER'S GUIDE TO THE GALAXY  
SEVEN CITIES OF GOLD  
TRIPLE PLAY  
ADVENTURES IN FLESH  
UNIVERSE

# THAT'S enter>tainment



'You have destroyed most of a small galaxy. Please pick your words with greater care.'

## A ZANY PLOT AND KNOTTY PROBLEMS

Awakening from an uncomfortable sleep, you soon perceive three facts: It's dark; you've got a particularly nasty hangover; and, unaccountably, a big yellow bulldozer is doing its best to demolish your house. Not long after you've pulled yourself together and gone outside, you happen to notice that a fleet of alien spaceships has swooped down from the sky, intent on pulverizing the earth.

Your morning is not turning out very well at all.

Despite these problems, you're not going to panic. You know who you are—for the time being, at least. It may be the end of the world, but you still have time for a bit of fun.

And fun you'll have, as you assume the role of Arthur Dent, the mild-mannered, often befuddled Englishman who is the hero of Infocom's latest science-fiction text adventure, *The Hitchhiker's Guide to the Galaxy* (HGG).

If you've enjoyed Infocom's previous games (Zork, Starcross, Deadline, et al.), you will love HGG. A "standard level" adventure (or "interactive fiction," as Infocom now calls all of its games), HGG does not present as many frustrating puzzles as the com-

pany's "advanced" or "expert" games do. It offers a zany and convoluted plot, however, and enough knotty problems to challenge even a veteran Infocom fan.

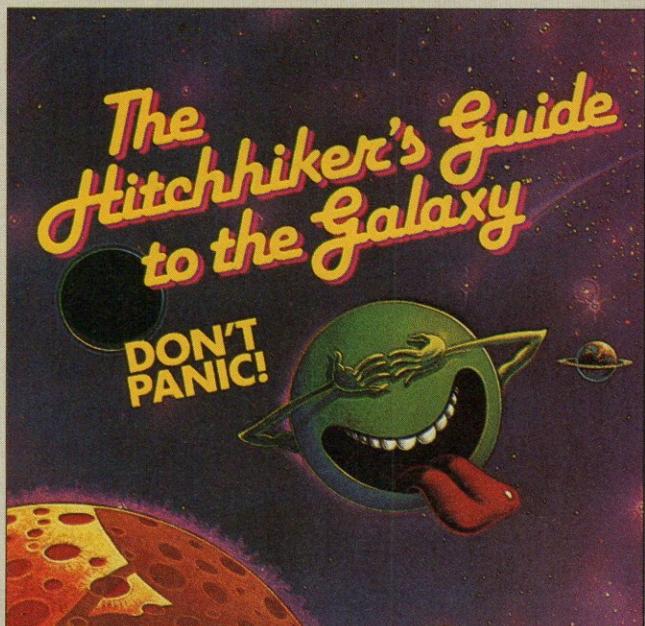
Novice players should expect to spend many hours getting through this game, and they will need a hint or two at certain critical points. (Can't stop the bulldozer? Try a little civil disobedience. Is the Babel fish too slippery? Make use of the junk you brought into space.)

### Inspired Collaboration

HGG is the result of an inspired collaboration between Douglas Adams, the author of the best-selling novel of the same name, and Infocom's Steve Meretzky (Planetfall, Sorcerer). This

game is Infocom's first attempt at adapting a story line from another medium, and the effort is a success. The game retains the look of a typical Infocom adventure—with its all-text format and trademark parser—as it incorporates the essence of Adams' witty, science-fiction spoof: "You have destroyed most of a small galaxy. Please pick your words with greater care."

Readers of the book will recognize similarities between events in the game and the intergalactic adventures of the fictional characters of Arthur, Ford, Trillian, Zaphod, and Marvin. In fact, players who have read the book and/or its sequels (or who have fol-



laxed the radio or TV series) will already comprehend the function of such mysterious objects as the Sub-Etha device; the Babel fish; the Infinite Improbability Drive; and, of course, the Guide itself. This foreknowledge doesn't spoil the game, though; there are lots of new plot twists, as well as plenty of opportunities for personality switches and space/time travel.

HGG's documentation is clearly written and colorfully illustrated, and the game's innovative book-like package is compact, attractive, and well organized, but you won't actually need to read the manual to play the game.

You must complete several tricky puzzles and a half dozen miniscenarios in order to finish HGG, yet the

game provides only eight save-game positions. This player would have preferred more.

Like all other Infocom games, this one requires too much waiting before the program's clock lets you continue. Also, too much of the story deals with collecting unnecessary items. These drawbacks, however, are minor. The Hitchhiker's Guide to the Galaxy is well worth the fare.

Patricia Fitzgibbons

**The Hitchhiker's Guide to the Galaxy**

Infocom, Inc.  
55 Wheeler Street  
Cambridge, MA 02138

(617) 576-3190

**List Price:** \$39.95

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

CIRCLE READER SERVICE NO. 380

**MORE THAN A GAME**

Seven Cities of Gold, Electronic Arts' new game/simulation, recreates the age of the conquistador, with you in the shoes of the explorer of the New World. Your mission is to explore this



strange new realm, seek out new civilizations, and boldly go where no one has gone before.

The game presents the New World exactly as Columbus (and the others) found it—pristine, unspoiled, and unmapped. As you journey—by land or by

sea—the world unfolds before you, with your computer cartographer keeping track of your discoveries. You and your men—with varying amounts of ships, food, trade goods, and (when you can find it) gold—can write your own ticket with the natives.

Have you always admired Attila the Hun? Go to it, then, pillage and plunder to your heart's content. Be aware, though, that the natives have good memories and a grapevine that carries news faster than you can travel.

When you've had your fill of reality, Seven Cities has a world builder that can create an endless number of unique Western Hemispheres for your exploring pleasure.

**Graphics and Sound Effects**  
As in most games from



*the way forward*

# IT'S IMPOSSIBLE !!

THAT'S WHAT EVERYONE SAID BUT WE'VE DONE IT!

## THE APPLE //c CP/M SYSTEM

The //c CP/M PLUS SYSTEM adds the finishing touch to the APPLE //c computer. It consists of an adaptor (which fits totally inside the //c) and DIGITAL RESEARCH's CP/M PLUS operating system fully configured for the APPLE //c. It features 128K of bank-switched memory, use of the mouse, an inbuilt print spooler and keyboard buffer and supports the normal ports on the //c.

CONTACT YOUR LOCAL APPLE DEALER TO PLACE YOUR ORDER

U.S. Distributor: GREENGATE PRODUCTIONS, 241 PIONEER COURT, SAN MATEO, CA 94403, (415) 345 3064  
CIRCLE 230 ON READER SERVICE CARD

# NEW LOW PRICES FROM THE WORLD'S LARGEST SPORTS SOFTWARE COMPANY!

Whether you're a coach, player, computer bug, statistician, dabbler, doer or just a real sports fan, PDS has a package for you...at our lowest prices ever! Check our line-up below, and then order your first PDS Sports Package.

**FOOTBALL STATISTICS.** A comprehensive computer software system. You compare teams in over 60 offensive and defensive situations and watch the matchups on the screen. Every team is given a power rating. PDS also provides "year-to-date" data diskettes for a nominal charge. 39.95

**FOOTBALL HANDICAPPING.** (Includes FOOTBALL STATISTICS Package). Forecasts the outcome of football games based on massive amounts of statistical data, morning lines and point spreads. 49.95

**BASKETBALL STATISTICS.** The most comprehensive basketball program ever written. "What-if" your way into every imaginable comparison and formulation. 39.95

**BASKETBALL HANDICAPPING.** (Includes BASKETBALL STATISTICS). Gives you an inside look into the outcome of games by mathematically equating statistics, lines and point spreads. 49.95

**BASEBALL STATISTICS.** See how opposing baseball teams stack up against each other. See summarizations. Performance stats on every team in the major leagues. 39.95

**BASEBALL HANDICAPPING.** (Includes BASEBALL STATISTICS) Makes you better-prepared to predict the winner of any game. At least, mathematically. 49.95

**THOROUGHBRED HANDICAPPING.** This "world class" program gives you an edge in predicting winners. A proven system...by PDS and many horseracing enthusiasts. 129.00

**HARNESS RACE HANDICAPPING.** The fast, easy way to find out what races and what horses should be looked at...all summarized in a "power rating" format. 129.00

**QUARTER HORSE HANDICAPPING.** the computer system actually "rates" the horses in each race of what is the fastest growing segment in the sport of kings. 129.00



**TRAINER STATISTICS.** Analyzes all local race-horse trainers and gives you a rating for each one. 39.95



**JOCKEY STATISTICS.** A short time with this software package will show you why the top 15 jockeys at local tracks win over 90% of all races. 39.95



**HARNESS DRIVER STATISTICS.** A complement to the HARNESS HORSE HANDICAPPING System, this package tells you all you need to know about the man (or woman) behind the horse. 39.95

## PDS SPORTS™

P.O. BOX E / TORRANCE, CA 90507 / (213) 516-6688  
Please send me the following PDS SOFTWARE PACKAGE:

\_\_\_\_\_...\$ \_\_\_\_\_  
\_\_\_\_\_...\$ \_\_\_\_\_  
\_\_\_\_\_...\$ \_\_\_\_\_

Total

Add \$6.00 for postage and handling.

Calif. residents add 6 1/2% sales tax

I have an APPLE ( ) IBM ( ) TRS-80 ( )  
COMMODORE-64 ( )

DISKETTE ( ) CASSETTE ( ); MODEL # \_\_\_\_\_

( ) Check enclosed

( ) Charge my credit card: A.E. ( ), VISA ( ),  
M.C. ( )

Card No. \_\_\_\_\_ Expires \_\_\_\_\_

Signature \_\_\_\_\_

(As it appears on credit card)

OR CHARGE BY PHONE... CALL (800) 222-2601  
(In Calif: (213) 516-6688)

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_ PHONE \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

*Dealer Inquiries Invited*

Electronic Arts, the graphics are well done. The map scrolls so smoothly you'll scarcely be aware that it's moving, and all terrain is instantly recognizable and pleasing to the eye. Sound effects are OK, but not great, consisting primarily of a marching sound when you're moving and a bugle when you discover notewor-

► As in most games from Electronic Arts, the graphics are well done.

thy areas, such as vast plains, deep canyons, lush jungles, the mouth or source of a river, or the New World on your first voyage.

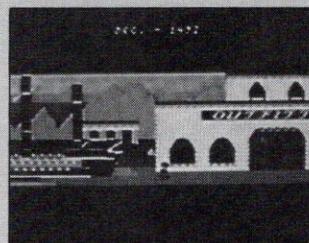
Fortunately for those of

us with parents, spouses, or offspring who sometimes prefer to enjoy the sound of silence while we explore, Control-S toggles the sound effects off and on. For a silent start-up, hold Control-S and (on an Apple II Plus) the Repeat key as you boot your disk.

#### Discover for Yourself

Seven Cities is one of those games that provides minimal documentation so that you can discover things for yourself as you play. I spent nearly 25 minutes puzzling over how to drop "excess baggage" before calling Electronic Arts for a hint. Other than that, the documentation is fine. After all, this is a joystick-driven game. The joystick gives movement direction and selects among menu options, and the button offers a new menu or selects the

currently highlighted menu option for action. This game mechanism literally



allows you to kick back and enjoy the game. You need touch the keyboard only to freeze or restart the game; use the joystick for everything else.

My only criticism of the game is that you can save the game for later play only when the locale is Europe. In the early voyages, this limitation is OK, but with later voyages taking as much as two or three hours, it does restrict things a bit. The problem is that the

game is so addicting that I didn't want to wait for a three-hour time slot to play. Considering the vast complexity and scope of the simulation, however, this inconvenience is bearable. If you were to make a wall map of the New World, at the scale shown on your game view screen, it would be 20 feet high and 12 feet wide. While you play, you see only a 3 x 3-inch square at a time, which really gives you an idea of the immensity of the area the early explorers faced.

All in all, Seven Cities is more than a game. The historical version lets young people discover for themselves the geography of the Western Hemisphere, as well as the various possibilities for social interaction with the natives. (Hint: If you want to be friendly,

## word processing with zardax



for old hands  
... or new

All the power you need at the office.

Large documents. "Chaining" for long reports.

Mail merge and glossary phrases.

All the standard editing features.

Supports over 40 printers. Commands for complex formatting. Print preview.

Printer spooling in the background.

All the simplicity you need at home or school.

Sample documents on disk.

Lessons disk available for educators.

Manual tutorial. Written in English.

Memorable commands that make sense.

No need to remember printer control codes.

**Apple ][+, //c, //e. Your choice of DOS or ProDOS. Apple /// SOS version, too.**  
**All: \$210. Zip-Comm modem communications option: \$80.**

At your dealer, or from us.

Zardax™ Computer Solutions, Australia

Apple™ Apple Computer, Inc.

**Action-Research NW**

11442 Marine Vw. Dr. S.W. / Seattle, WA 98146

(206) 241-1645 / Source: CL2542

# SEE THE "TOTAL PICTURE" ON YOUR APPLE

Get the "total picture" for your spreadsheets with the Checkmate Technology MultiView 80/160 Card™.

The pictures shown are actual photos of 4 of MultiView's 7 screen sizes. The 132 and 160-column sizes display 12 full months of data PLUS totals to show you a "total picture" of your spreadsheet without scrolling! *And these sizes can be seen on any low-cost monitor (12MHz or better).*

Multi-View's 7 screen sizes are: 80 x 24, 80 x 32, 80 x 48, 96 x 24, 132 x 24, 132 x 30, and 160 x 24. MultiView's exclusive "wide angle" command can stretch all screen sizes making them easier to read.

The pictures shown use the underline attribute, one of MultiView's 12 standard attributes which include bold and inverse.

The **Universal Spreadsheet PreBoot™**, used to create the pictures shown, supports six spreadsheet programs including **Visicalc**, **Multiplan**, and **Magicalc**. *MultiView is the only card offering 160-columns with these programs.*

MultiView's usefulness doesn't stop with spreadsheets.

Popular word processors such as **Wordstar**, **Apple Writer** and **Magic Window** can use MultiView's larger sizes. For the first time, you can really see on screen what your printout will look like — no matter if you're printing in pica, elite, or condensed mode.

And **AppleWorks** can use MultiView's letter quality character set, attributes and wide angle screens on a IIe and II+!

Add one of these options and MultiView's flexibility increases: the **SuperWorks EPROM™** adds 20 function keys and a BASIC program line editor to your Apple; a **Language Factory Prom™** adds a second character set such as Spanish, German or math characters; and coming soon will be a high-resolution light pen. A 50 Hz international card version is also available.

See your local computer dealer to get the "TOTAL PICTURE" for your Apple or call Checkmate Technology for the name of the dealer nearest you.

**SUGGESTED RETAIL PRICE \$349.95**

Other fine products for your Apple Computer:

**IIe MaxiRam Card™** Adds 80-columns and an expandable 64K to 576K of memory to the IIe. Starts at \$159.95 with 64K of RAM.

**Zee80A Card** Turns the Apple into a CP/M computer to run Wordstar, dBase II, etc. Software not provided. \$89.95

**IIe-80RAM Card** Adds 64K of memory and 80-columns to the Apple IIe. \$129.95



Prices subject to change  
International CIF Prices - Add 10%

**Checkmate Technology, Inc.**

509 South Rockford Drive • Tempe, Arizona 85281-3021

(602) 966-5802 U.S.A.  
(800) 325-7347 Order Desk

Telex: 165-025 CEC PHX

**ALL PRODUCTS MADE IN THE U.S.A. — EXCLUSIVE 5 YEAR WARRANTY**

CIRCLE 128 ON READER SERVICE CARD

| 80 x 24       |               |       |       |       |       |       |       |       |   |   |   |
|---------------|---------------|-------|-------|-------|-------|-------|-------|-------|---|---|---|
| Total Revenue |               |       |       |       |       |       |       |       |   |   |   |
| PA-A          | B             | C     | D     | E     | F     | G     | H     | I     | J | K | L |
| 1             |               | JAN   | FEB   | MARCH | APRIL | MAY   | JUNE  | JULY  |   |   |   |
| 2             | Sales         |       |       |       |       |       |       |       |   |   |   |
| 3             | Product Y     | 36330 | 37025 | 36836 | 38755 | 39932 | 42421 | 43890 |   |   |   |
| 4             | Product Z     | 5663  | 7235  | 8867  | 10894 | 11853 | 15482 | 17249 |   |   |   |
| 5             | Other Income  | 1083  | 755   | 4433  | 651   | 275   | 286   | 739   |   |   |   |
| 6             |               |       |       |       |       |       |       |       |   |   |   |
| 7             | Total Revenue | 43002 | 45015 | 45278 | 49500 | 52060 | 57537 | 57427 |   |   |   |
| 8             | Expenses      |       |       |       |       |       |       |       |   |   |   |

| 96 x 24       |               |       |       |       |       |       |       |       |   |   |   |
|---------------|---------------|-------|-------|-------|-------|-------|-------|-------|---|---|---|
| Total Revenue |               |       |       |       |       |       |       |       |   |   |   |
| PA-A          | B             | C     | D     | E     | F     | G     | H     | I     | J | K | L |
| 1             |               | JAN   | FEB   | MARCH | APRIL | MAY   | JUNE  | JULY  |   |   |   |
| 2             | Sales         |       |       |       |       |       |       |       |   |   |   |
| 3             | Product Y     | 36330 | 37025 | 36836 | 38755 | 39932 | 42421 | 43890 |   |   |   |
| 4             | Product Z     | 5663  | 7235  | 8867  | 10894 | 11853 | 15482 | 17249 |   |   |   |
| 5             | Other Income  | 1083  | 755   | 4433  | 651   | 275   | 286   | 739   |   |   |   |
| 6             |               |       |       |       |       |       |       |       |   |   |   |
| 7             | Total Revenue | 43002 | 45015 | 45278 | 49500 | 52060 | 57537 | 57427 |   |   |   |
| 8             | Expenses      |       |       |       |       |       |       |       |   |   |   |

| 132 x 24      |               |       |       |       |       |       |       |       |   |   |   |
|---------------|---------------|-------|-------|-------|-------|-------|-------|-------|---|---|---|
| Total Revenue |               |       |       |       |       |       |       |       |   |   |   |
| PA-A          | B             | C     | D     | E     | F     | G     | H     | I     | J | K | L |
| 1             |               | JAN   | FEB   | MARCH | APRIL | MAY   | JUNE  | JULY  |   |   |   |
| 2             | Sales         |       |       |       |       |       |       |       |   |   |   |
| 3             | Product Y     | 36330 | 37025 | 36836 | 38755 | 39932 | 42421 | 43890 |   |   |   |
| 4             | Product Z     | 5663  | 7235  | 8867  | 10894 | 11853 | 15482 | 17249 |   |   |   |
| 5             | Other Income  | 1083  | 755   | 4433  | 651   | 275   | 286   | 739   |   |   |   |
| 6             |               |       |       |       |       |       |       |       |   |   |   |
| 7             | Total Revenue | 43002 | 45015 | 45278 | 49500 | 52060 | 57537 | 57427 |   |   |   |
| 8             | Expenses      |       |       |       |       |       |       |       |   |   |   |

| 160 x 24      |               |       |       |       |       |       |       |       |   |   |   |
|---------------|---------------|-------|-------|-------|-------|-------|-------|-------|---|---|---|
| Total Revenue |               |       |       |       |       |       |       |       |   |   |   |
| PA-A          | B             | C     | D     | E     | F     | G     | H     | I     | J | K | L |
| 1             |               | JAN   | FEB   | MARCH | APRIL | MAY   | JUNE  | JULY  |   |   |   |
| 2             | Sales         |       |       |       |       |       |       |       |   |   |   |
| 3             | Product Y     | 36330 | 37025 | 36836 | 38755 | 39932 | 42421 | 43890 |   |   |   |
| 4             | Product Z     | 5663  | 7235  | 8867  | 10894 | 11853 | 15482 | 17249 |   |   |   |
| 5             | Other Income  | 1083  | 755   | 4433  | 651   | 275   | 286   | 739   |   |   |   |
| 6             |               |       |       |       |       |       |       |       |   |   |   |
| 7             | Total Revenue | 43002 | 45015 | 45278 | 49500 | 52060 | 57537 | 57427 |   |   |   |
| 8             | Expenses      |       |       |       |       |       |       |       |   |   |   |

80 x 24

96 x 24

132 x 24

160 x 24

## Dealer Inquiries Invited

Apple is the registered trademark of Apple Computer, Inc. Apple Writer and AppleWorks are trademarks of Apple Computer, Inc. MagiCalc and Magic Window are the trademarks of Artsi, Inc. Multiplan is the registered trademark of Microsoft Corporation. VisiCalc is the trademark of Software Arts, Inc. WordStar is the trademark of MicroPro Corporation.

Copyright ©1984 CHECKMATE TECHNOLOGY, INC.  
All rights reserved



# Space

| THE MASSARD CORPORATION---STATEMENT OF OPERATIONS (000's) |          |       |        |       |       |       |        |           |         |          |          |         |          | THE MASSARD CORPORATION---STATEMENT OF OPERATIONS (000's) |        |         |          |       |        |       |        |       |        |           |         |          |          |       |        |       |        |
|---|----------|-------|--------|-------|-------|-------|--------|-----------|---------|----------|----------|---------|----------|---|--------|---------|----------|-------|--------|-------|--------|-------|--------|-----------|---------|----------|----------|-------|--------|-------|--------|
| WESTERN OPERATIONS  |          | 1985  |        |       |       |       |        |           |         |          |          |         |          | WESTERN OPERATIONS  |        | 1985    |          |       |        |       |        |       |        |           |         |          |          |       |        |       |        |
| January   | February | March | April  | May   | June  | July  | August | September | October | November | December | January | February | March   | April  | January | February | March | April  | May   | June   | July  | August | September | October | November | December |       |        |       |        |
| Net Revenues  | \$       | \$    | \$     | \$    | \$    | \$    | \$     | \$        | \$      | \$       | \$       | \$      | \$       | \$  | \$     | \$      | \$       | \$    | \$     | \$    | \$     | \$    | \$     | \$        | \$      | \$       | \$       | \$    |        |       |        |
| Retail Prod Under 1K                                      | 92,993   | 81.1  | 83,142 | 81.1  | 93    | 81.1  | 93     | 81.1      | 93,637  | 81.1     | 93,819   | 81.1    | 94,010   | 81.1  | 94,421 | 81.1    | 94,642   | 81.1  | 94,874 | 81.1  | 95,116 | 81.1  | 95,638 | 81.1      | 95,925  | 81.1     | 96,221   |       |        |       |        |
| Retail Prod Under 5K                                      | 998      | 2.4   | 994    | 2.4   | 998   | 2.4   | 998    | 2.4       | 1,009   | 2.4      | 1,015    | 2.4     | 1,020    | 2.4   | 1,026  | 2.4     | 1,033    | 2.4   | 1,040  | 2.4   | 1,046  | 2.4   | 1,052  | 2.4       | 1,057   |          |          |       |        |       |        |
| Direct Prod Under 1K                                      | 548      | 1.1   | 442    | 1.1   | 548   | 1.1   | 548    | 1.1       | 549     | 1.1      | 552      | 1.1     | 554      | 1.1   | 557    | 1.1     | 560      | 1.1   | 563    | 1.2   | 577    | 1.2   | 581    | 1.2       | 589     | 1.2      | 593      |       |        |       |        |
| Direct Prod Under 5K                                      | 672      | 1.9   | 675    | 1.9   | 672   | 1.9   | 672    | 1.9       | 677     | 1.9      | 676      | 1.9     | 681      | 2.0   | 686    | 2.0     | 691      | 1.9   | 697    | 2.0   | 707    | 1.9   | 714    | 1.9       | 718     | 1.9      | 724      |       |        |       |        |
| Direct Prod Over 5K                                       | 525      | 1.1   | 422    | 1.1   | 525   | 1.1   | 525    | 1.1       | 529     | 1.1      | 532      | 1.1     | 535      | 1.1   | 538    | 1.1     | 541      | 1.1   | 544    | 1.1   | 547    | 1.1   | 551    | 1.1       | 554     | 1.1      | 556      |       |        |       |        |
| DEM Prod Under 1K   | 567      | 1.8   | 671    | 1.8   | 674   | 1.8   | 676    | 1.7       | 682     | 1.8      | 686      | 1.8     | 693      | 2.1   | 699    | 1.8     | 704      | 1.8   | 715    | 1.8   | 715    | 1.8   | 715    | 1.8       | 715     | 1.8      | 715      |       |        |       |        |
| DEM Prod Under 5K   | 911      | 0.9   | 832    | 0.9   | 836   | 0.9   | 836    | 0.8       | 838     | 0.9      | 846      | 0.9     | 842      | 0.9   | 844    | 1.0     | 846      | 0.9   | 849    | 0.9   | 851    | 0.9   | 854    | 0.9       | 855     | 0.9      | 855      |       |        |       |        |
| DEM Prod Over 5K  | 574      | 0.8   | 473    | 0.8   | 574   | 0.8   | 574    | 0.8       | 578     | 0.8      | 581      | 0.8     | 584      | 0.8   | 587    | 0.8     | 591      | 0.8   | 594    | 0.8   | 597    | 0.8   | 601    | 0.8       | 604     | 0.8      | 604      |       |        |       |        |
| VRR Prod Under 1K   | 9117     | 3.2   | 9123   | 3.2   | 9129  | 3.2   | 9135   | 3.0       | 9142    | 3.2      | 9149     | 3.2     | 9156     | 3.7   | 9172   | 3.2     | 9181     | 3.2   | 9196   | 3.2   | 9205   | 4.4   | 9208   | 4.4       | 9211    | 4.4      | 9213     |       |        |       |        |
| VRR Prod Under 5K   | 534      | 1.8   | 434    | 1.8   | 534   | 1.8   | 534    | 1.8       | 535     | 1.8      | 536      | 1.8     | 537      | 1.8   | 538    | 1.8     | 539      | 1.8   | 540    | 1.8   | 541    | 1.8   | 542    | 1.8       | 543     | 1.8      | 543      |       |        |       |        |
| VRR Prod Over 5K  | 572      | 1.9   | 575    | 1.9   | 579   | 1.9   | 583    | 1.9       | 587     | 1.9      | 591      | 1.9     | 595      | 1.9   | 599    | 1.9     | 603      | 1.9   | 607    | 1.9   | 611    | 1.9   | 615    | 1.9       | 619     | 1.9      | 623      |       |        |       |        |
| Total Net Revenues  | 3,598    | 190.0 | 3,875  | 189.8 | 4,068 | 189.8 | 4,272  | 95.0      | 4,405   | 189.0    | 4,718    | 189.0   | 4,945    | 188.8   | 5,115  | 185.5   | 5,458    | 186.0 | 5,724  | 186.0 | 6,011  | 186.0 | 6,311  | 186.0     | 6,614   | 186.0    | 6,914    |       |        |       |        |
| Cost of Goods Sold:                                       |          |       |        |       |       |       |        |           |         |          |          |         |          |   |        |         |          |       |        |       |        |       |        |           |         |          |          |       |        |       |        |
| Retail Products   | 54       | 1.5   | 54     | 1.5   | 54    | 1.5   | 54     | 1.5       | 55      | 1.5      | 55       | 1.5     | 55       | 1.5   | 55     | 1.5     | 55       | 1.5   | 55     | 1.5   | 55     | 1.5   | 55     | 1.5       | 55      | 1.5      | 55       |       |        |       |        |
| Direct Sales Products                                     | 22       | 0.5   | 23     | 0.5   | 23    | 0.5   | 23     | 0.5       | 24      | 0.5      | 24       | 0.5     | 24       | 0.5   | 24     | 0.5     | 24       | 0.5   | 24     | 0.5   | 24     | 0.5   | 24     | 0.5       | 24      | 0.5      | 24       |       |        |       |        |
| DEM Products  | 12       | 2.3   | 13     | 2.3   | 14    | 2.3   | 15     | 2.4       | 15      | 2.3      | 16       | 2.3     | 17       | 2.3   | 18     | 2.4     | 18       | 2.3   | 19     | 2.3   | 20     | 2.4   | 21     | 2.3       | 22      | 2.4      | 23       |       |        |       |        |
| VRR Products  | 24       | 0.9   | 24     | 0.9   | 24    | 0.9   | 24     | 0.9       | 24      | 0.9      | 24       | 0.9     | 24       | 0.9   | 24     | 0.9     | 24       | 0.9   | 24     | 0.9   | 24     | 0.9   | 24     | 0.9       | 24      | 0.9      | 24       |       |        |       |        |
| Total Gross Profit  | 2,704    | 11.1  | 2,704  | 11.1  | 2,704 | 11.1  | 2,704  | 11.1      | 2,704   | 11.1     | 2,704    | 11.1    | 2,704    | 11.1  | 2,704  | 11.1    | 2,704    | 11.1  | 2,704  | 11.1  | 2,704  | 11.1  | 2,704  | 11.1      | 2,704   | 11.1     | 2,704    |       |        |       |        |
| Operating Expenses:                                       |          |       |        |       |       |       |        |           |         |          |          |         |          |   |        |         |          |       |        |       |        |       |        |           |         |          |          |       |        |       |        |
| Marketing   | 449      | 12.2  | 484    | 10.4  | 584   | 9.4   | 391    | 9.2       | 546     | 12.2     | 491      | 10.4    | 466      | 9.4   | 476    | 9.2     | 663      | 12.2  | 676    | 9.4   | 578    | 9.2   | 613    | 9.2       | 613     | 10.2     | 626      |       |        |       |        |
| Development   | 148      | 1.8   | 148    | 1.8   | 148   | 1.8   | 148    | 1.8       | 148     | 1.8      | 148      | 1.8     | 148      | 1.8   | 148    | 1.8     | 148      | 1.8   | 148    | 1.8   | 148    | 1.8   | 148    | 1.8       | 148     | 1.8      | 148      |       |        |       |        |
| Finance & Admin   | 404      | 10.9  | 364    | 9.4   | 346   | 8.5   | 325    | 8.2       | 491     | 10.9     | 442      | 9.4     | 429      | 8.5   | 422    | 8.2     | 527      | 10.9  | 521    | 9.4   | 521    | 8.5   | 521    | 9.4       | 521     | 10.9     | 521      |       |        |       |        |
| Total Expenses  | 1,634    | 33.5  | 1,111  | 26.7  | 1,851 | 25.8  | 1,777  | 25.8      | 1,777   | 25.8     | 1,777    | 25.8    | 1,777    | 25.8  | 1,777  | 25.8    | 1,777    | 25.8  | 1,777  | 25.8  | 1,777  | 25.8  | 1,777  | 25.8      | 1,777   | 25.8     | 1,777    |       |        |       |        |
| Income from Ops.  | 1,064    | 63.5  | 64.4   | 64.4  | 64.4  | 64.4  | 64.4   | 64.4      | 64.4    | 64.4     | 64.4     | 64.4    | 64.4     | 64.4  | 64.4   | 64.4    | 64.4     | 64.4  | 64.4   | 64.4  | 64.4   | 64.4  | 64.4   | 64.4      | 64.4    | 64.4     |          |       |        |       |        |
| Interest (Inc. (Exp.)                                     | 11       | 0.3   | 11     | 0.3   | 11    | 0.3   | 11     | 0.3       | 11      | 0.3      | 11       | 0.3     | 11       | 0.3   | 11     | 0.3     | 11       | 0.3   | 11     | 0.3   | 11     | 0.3   | 11     | 0.3       | 11      | 0.3      | 11       |       |        |       |        |
| Income before Taxes                                       | 2,355    | 63.8  | 2,635  | 68.0  | 2,875 | 70.7  | 3,050  | 71.6      | 3,068   | 63.8     | 3,204    | 63.8    | 3,497    | 70.7  | 3,717  | 71.6    | 3,474    | 63.7  | 3,897  | 68.1  | 4,253  | 70.8  | 4,518  | 71.6      | 4,342   | 63.7     | 4,739    | 68.1  | 5,171  | 70.8  | 5,492  |
| Prov. Inc. Taxes  | 0        | 0.0   | 0      | 0.0   | 0     | 0.0   | 0      | 0.0       | 0       | 0.0      | 0        | 0.0     | 0        | 0.0   | 0      | 0.0     | 0        | 0.0   | 0      | 0.0   | 0      | 0.0   | 0      | 0.0       | 0       | 0.0      | 0        | 0.0   | 0      | 0.0   |        |
| Net Income (Loss)   | 8,235    | 63.8  | 62,635 | 68.0  | 8,875 | 70.7  | 8,958  | 71.6      | 8,988   | 63.8     | 9,204    | 63.8    | 9,497    | 70.7  | 9,317  | 71.6    | 9,374    | 63.7  | 9,897  | 68.1  | 10,253 | 70.8  | 10,516 | 71.6      | 10,781  | 63.7     | 10,951   | 70.8  | 11,221 | 71.6  | 11,481 |
| WESTERN OPERATIONS  |          |       |        |       |       |       |        |           |         |          |          |         |          |   |        |         |          |       |        |       |        |       |        |           |         |          |          |       |        |       |        |
| Net Revenues  | 3,187    | 189.0 | 3,062  | 189.0 | 3,405 | 189.0 | 3,597  | 188.0     | 3,777   | 188.0    | 3,966    | 188.0   | 4,164    | 188.0   | 4,374  | 187.0   | 4,572    | 188.0 | 4,591  | 188.0 | 4,666  | 188.0 | 5,215  | 188.0     | 5,461   | 188.0    | 5,899    | 188.0 | 6,156  | 188.0 |        |
| Cost of Goods Sold:                                       |          |       |        |       |       |       |        |           |         |          |          |         |          |   |        |         |          |       |        |       |        |       |        |           |         |          |          |       |        |       |        |
| Retail Products   | 10       | 4.9   | 10     | 5.0   | 10    | 5.0   | 10     | 5.0       | 10      | 5.0      | 10       | 5.0     | 10       | 5.0   | 10     | 5.0     | 10       | 5.0   | 10     | 5.0   | 10     | 5.0   | 10     | 5.0       | 10      | 5.0      | 10       | 5.0   | 10     | 5.0   |        |
| Direct Sales Products                                     | 10       | 4.5   | 10     | 4.5   | 10    | 4.5   | 10     | 4.5       | 10      | 4.5      | 10       | 4.5     | 10       | 4.5   | 10     | 4.5     | 10       | 4.5   | 10     | 4.5   | 10     | 4.5   | 10     | 4.5       | 10      | 4.5      | 10       | 4.5   | 10     | 4.5   |        |
| DEM Products  | 10       | 8.3   | 11     | 9.3   | 12    | 10.3  | 13     | 10.3      | 14      | 10.3     | 15       | 10.3    | 16       | 10.3  | 17     | 10.3    | 18       | 10.3  | 19     | 10.3  | 20     | 10.3  | 21     | 10.3      | 22      | 10.3     | 23       | 10.3  | 24     | 10.3  |        |
| VRR Products  | 20       | 6.7   | 20     | 6.7   | 20    | 6.7   | 20     | 6.7       | 20      | 6.7      | 20       | 6.7     | 20       | 6.7   | 20     | 6.7     | 20       | 6.7   | 20     | 6.7   | 20     | 6.7   | 20     | 6.7       | 20      | 6.7      | 20       | 6.7   | 20     | 6.7   | 20     |
| Total Gross Profit  | 94       | 3     | 181    | 3     | 186   | 3     | 191    | 3         | 196     | 3        | 201      | 3       | 206      | 3   | 213    | 3       | 218      | 3     | 223    | 3     | 228    | 3     | 233    | 3         | 238     | 3        | 243      | 3     | 248    | 3     | 253    |
| Operating Expenses:                                       |          |       |        |       |       |       |        |           |         |          |          |         |          |   |        |         |          |       |        |       |        |       |        |           |         |          |          |       |        |       |        |
| Marketing   | 378      | 18.2  | 348    | 18.4  | 323   | 18.4  | 339    | 18.2      | 349     | 18.2     | 351      | 18.2    | 351      | 18.4  | 351    | 18.4    | 351      | 18.4  | 351    | 18.4  | 351    | 18.4  | 351    | 18.4      | 351     | 18.4     | 351      | 18.4  | 351    |       |        |
| Development   | 33       | 1.2   | 33     | 1.2   | 33    | 1.2   | 33     | 1.2       | 33      | 1.2      | 33       | 1.2     | 33       | 1.2   | 33     | 1.2     | 33       | 1.2   | 33     | 1.2   | 33     | 1.2   | 33     | 1.2       | 33      | 1.2      | 33       | 1.2   | 33     | 1.2   | 33     |
| Finance & Admin   | 340      | 18.9  | 366    | 19.4  | 375   | 19.5  | 377    | 19.5      | 377     | 19.5     | 377      | 19.5    | 377      | 19.5  | 377    | 19.5    | 377      | 19.5  | 377    | 19.5  | 377    | 19.5  | 377    | 19.5      | 377     | 19.5     | 377      | 19.5  | 377    | 19.5  | 377    |
| Total Expenses  | 1,216    | 21    | 1,216  | 21    | 1,216 | 21    | 1,216  | 21        | 1,216   | 21       | 1,216    | 21      | 1,216    | 21  | 1,216  | 21      | 1,216    | 21    | 1,216  | 21    | 1,216  | 21    | 1,216  | 21        | 1,216   | 21       | 1,216    | 21    | 1,216  |       |        |
| Income from Ops.  | 1,247    | 21.0  | 1,247  | 21.0  | 1,247 | 21.0  | 1,247  | 21.0      | 1,247   | 21.0     | 1,247    | 21.0    | 1,247    | 21.0  | 1,247  | 21.0    | 1,247    | 21.0  | 1,247  | 21.0  | 1,247  | 21.0  | 1,247  | 21.0      | 1,247   | 21.0     | 1,247    | 21.0  | 1,247  |       |        |
| Interest (Inc. (Exp.)                                     | 2,461    | 18.2  | 283    | 18.4  | 314   | 18.4  | 371    | 18.2      | 517     | 18.2     | 465      | 18.4    | 446      | 18.2  | 454    | 18.2    | 462      | 18.2  | 470    | 18.2  | 478    | 18.4  | 486    | 18.2      | 494     | 18.4     | 502      | 18.2  | 510    |       |        |
| Income before Taxes                                       | 8,221    | 63.8  | 62,496 | 68.0  | 7,874 | 70.7  | 8,897  | 71.6      | 9,016   | 68.0     | 9,324    | 68.0    | 9,682    | 70.7  | 9,913  | 71.6    | 9,356    | 68.0  | 9,291  | 68.1  | 9,427  | 70.8  | 9,447  | 71.6      | 9,467   | 71.6     | 9,484    | 70    |        |       |        |

# case.

|     | July  | August | September | October | November | December | TOTALS |        |       |        |       |        |       |         |
|-----|-------|--------|-----------|---------|----------|----------|--------|--------|-------|--------|-------|--------|-------|---------|
|     | x     | x      | x         | x       | x        | x        | x      |        |       |        |       |        |       |         |
| 853 | 81.1  | 77,200 | 81.1      | 77,562  | 81.1     | 77,940   | 81.1   | 80,337 | 81.1  | 80,754 | 81.1  | 80,192 | 81.1  | 85,540  |
| 896 | 2.4   | 8216   | 2.4       | 8227    | 5.0      | 8238     | 2.4    | 8250   | 2.4   | 8263   | 2.4   | 8276   | 6.1   | 82,566  |
| 103 | 1.0   | 8182   | 1.0       | 8182    | 1.0      | 8182     | 1.0    | 8187   | 1.1   | 8193   | 1.1   | 8198   | 1.1   | 81,155  |
| 113 | 1.1   | 8197   | 1.1       | 8197    | 2.3      | 8197     | 1.1    | 8197   | 1.1   | 8193   | 1.1   | 8198   | 2.6   | 81,155  |
| 165 | 1.9   | 8173   | 1.9       | 8161    | 4.0      | 8191     | 1.9    | 8200   | 1.9   | 8218   | 1.9   | 8221   | 4.9   | 82,053  |
| 182 | 2.0   | 8182   | 2.0       | 8182    | 2.0      | 8182     | 2.0    | 8182   | 2.0   | 8182   | 2.0   | 8182   | 2.0   | 81,940  |
| 184 | 1.8   | 8162   | 1.8       | 8176    | 3.8      | 8179     | 1.8    | 8182   | 1.8   | 8197   | 1.8   | 8207   | 4.6   | 81,925  |
| 187 | 0.9   | 8176   | 0.9       | 8179    | 1.8      | 8182     | 0.9    | 8188   | 0.9   | 8192   | 0.9   | 8197   | 2.1   | 81,899  |
| 193 | 0.9   | 8182   | 0.9       | 8184    | 1.8      | 8184     | 0.9    | 8188   | 0.9   | 8192   | 0.9   | 8197   | 1.8   | 81,899  |
| 207 | 3.2   | 8201   | 3.2       | 8205    | 6.6      | 8316     | 3.2    | 8325   | 3.2   | 8341   | 3.2   | 8359   | 6.9   | 83,336  |
| 482 | 1.0   | 8080   | 1.0       | 8091    | 2.0      | 8091     | 1.0    | 8095   | 1.0   | 8109   | 1.0   | 8115   | 1.0   | 81,865  |
| 165 | 1.9   | 8173   | 1.9       | 8182    | 4.0      | 8181     | 1.9    | 8200   | 1.9   | 8219   | 1.9   | 8221   | 4.9   | 82,053  |
| 458 | 100.0 | 8,681  | 100.0     | 9,325   | 267.4    | 9,791    | 100.0  | 10,208 | 100.0 | 10,794 | 100.0 | 11,374 | 252.1 | 105,400 |
| 196 | 96.9  | 8,681  | 96.9      | 9,025   | 294.2    | 9492.53  | 97.0   | 9,962  | 96.9  | 10,454 | 96.9  | 10,945 | 249.9 | 105,181 |

|     | July | August | September | October | November | December | TOTALS |       |      |       |      |       |      |        |
|-----|------|--------|-----------|---------|----------|----------|--------|-------|------|-------|------|-------|------|--------|
|     | x    | x      | x         | x       | x        | x        | x      |       |      |       |      |       |      |        |
| 882 | 10.4 | 838    | 9.4       | 855     | 9.2      | 1,191    | 10.2   | 1,072 | 10.4 | 1,818 | 9.4  | 1,829 | 5.6  | 10,798 |
| 771 | 1.0  | 8182   | 1.0       | 8182    | 1.0      | 8182     | 1.0    | 8182  | 1.0  | 8182  | 1.0  | 8182  | 1.0  | 81,798 |
| 794 | 9.4  | 754    | 8.5       | 769     | 8.6      | 1,072    | 10.9   | 965   | 9.4  | 916   | 8.5  | 935   | 8.6  | 97,710 |
| 429 | 28.7 | 8394   | 25.9      | 8376    | 25.8     | 8375     | 33.5   | 8398  | 28.7 | 8388  | 25.9 | 8386  | 25.8 | 83,694 |
| 771 | 6.8  | 6,297  | 70.9      | 6,675   | 71.6     | 6,216    | 63.5   | 7,015 | 66.2 | 7,654 | 70.9 | 8,114 | 71.6 | 72,461 |
| (9) | 0.1  | 8182   | 0.1       | 8182    | 0.1      | 8182     | 0.1    | 8182  | 0.1  | 8182  | 0.1  | 8182  | 0.1  | 81,461 |
| 762 | 58.6 | 6,284  | 70.8      | 6,675   | 71.6     | 6,228    | 63.5   | 7,006 | 66.2 | 7,645 | 70.8 | 8,114 | 71.6 | 72,461 |
| 762 | 58.1 | 6,284  | 70.8      | 6,675   | 71.6     | 6,228    | 63.5   | 7,006 | 66.1 | 7,645 | 70.8 | 8,114 | 71.6 | 72,461 |

|     | July  | August | September | October | November | December | TOTALS |        |       |        |       |        |       |         |
|-----|-------|--------|-----------|---------|----------|----------|--------|--------|-------|--------|-------|--------|-------|---------|
|     | x     | x      | x         | x       | x        | x        | x      |        |       |        |       |        |       |         |
| 776 | 81.1  | 86,965 | 81.1      | 86,368  | 81.1     | 86,686   | 81.1   | 87,021 | 81.1  | 87,370 | 81.1  | 87,747 | 81.1  | 87,834  |
| 173 | 2.4   | 8182   | 2.4       | 8191    | 2.4      | 8201     | 2.4    | 8211   | 2.4   | 8232   | 2.4   | 8232   | 2.5   | 82,161  |
| 182 | 1.0   | 8182   | 1.0       | 8182    | 1.0      | 8182     | 1.0    | 8182   | 1.0   | 8182   | 1.0   | 8182   | 1.0   | 81,841  |
| 978 | 1.1   | 8182   | 1.1       | 8182    | 1.1      | 8182     | 1.1    | 8195   | 1.1   | 8198   | 1.1   | 8198   | 1.2   | 81,972  |
| 139 | 1.9   | 8146   | 1.9       | 8153    | 3.4      | 8160     | 1.9    | 8158   | 1.9   | 8177   | 1.9   | 8186   | 4.1   | 81,729  |
| 138 | 1.8   | 8136   | 1.8       | 8143    | 3.4      | 8150     | 1.8    | 8158   | 1.8   | 8166   | 1.8   | 8174   | 3.9   | 81,621  |
| 661 | 0.8   | 8182   | 0.8       | 8187    | 1.5      | 8178     | 0.8    | 8174   | 0.8   | 8177   | 0.8   | 8188   | 1.6   | 81,795  |
| 225 | 3.2   | 8237   | 3.2       | 8248    | 5.6      | 8261     | 3.2    | 8274   | 3.2   | 8287   | 3.2   | 8308   | 6.7   | 82,889  |
| 193 | 1.0   | 8182   | 1.0       | 8182    | 1.0      | 8182     | 1.0    | 8182   | 1.0   | 8182   | 1.0   | 8182   | 1.0   | 81,841  |
| 139 | 0.9   | 8146   | 0.9       | 8153    | 3.4      | 8160     | 0.9    | 8168   | 0.9   | 8177   | 0.9   | 8186   | 1.1   | 81,729  |
| 122 | 100.0 | 7,478  | 100.0     | 7,652   | 174.6    | 8,245    | 100.0  | 8,657  | 100.0 | 9,998  | 100.0 | 9,544  | 210.3 | 105,825 |
| 186 | 1.0   | 8182   | 1.0       | 8182    | 1.0      | 8182     | 1.0    | 8182   | 1.0   | 8182   | 1.0   | 8182   | 1.0   | 81,825  |
| 24  | 0.6   | 8182   | 0.6       | 8182    | 0.6      | 8182     | 0.6    | 8182   | 0.6   | 8182   | 0.6   | 8182   | 0.6   | 81,824  |
| 44  | 0.7   | 8182   | 0.7       | 8182    | 0.7      | 8182     | 0.7    | 8182   | 0.7   | 8182   | 0.7   | 8182   | 0.7   | 81,824  |
| 228 | 3     | 8236   | 3         | 8255    | 3        | 8254     | 3      | 8255   | 3     | 8255   | 3     | 8257   | 3     | 82,718  |
| 982 | 96.9  | 9,681  | 96.9      | 7,600   | 171.6    | 7,794    | 97.0   | 8,389  | 96.9  | 8,883  | 96.9  | 8,238  | 209.1 | 105,847 |

|      | July | August | September | October | November | December | TOTALS |       |      |       |      |       |      |        |
|------|------|--------|-----------|---------|----------|----------|--------|-------|------|-------|------|-------|------|--------|
|      | x    | x      | x         | x       | x        | x        | x      |       |      |       |      |       |      |        |
| 742  | 10.4 | 765    | 9.4       | 758     | 9.2      | 1,083    | 10.2   | 983   | 10.4 | 1,250 | 9.4  | 1,875 | 9.2  | 9,952  |
| 519  | 3.9  | 688    | 3.9       | 688     | 3.9      | 688      | 3.9    | 688   | 3.9  | 688   | 3.9  | 688   | 3.9  | 67,729 |
| 668  | 9.4  | 635    | 8.5       | 642     | 8.5      | 683      | 10.3   | 768   | 8.9  | 729   | 7.6  | 743   | 8.5  | 66,184 |
| 682  | 28.7 | 1,944  | 25.9      | 1,979   | 25.2     | 2,754    | 33.5   | 2,482 | 28.7 | 2,358 | 25.9 | 2,490 | 25.2 | 85,805 |
| 868  | 58.2 | 5,382  | 70.9      | 5,621   | 71.6     | 5,236    | 63.5   | 5,987 | 66.2 | 6,445 | 70.9 | 6,832 | 71.6 | 61,942 |
| (19) | 0.1  | 8182   | 0.1       | 8182    | 0.1      | 8182     | 0.1    | 8182  | 0.1  | 8182  | 0.1  | 8182  | 0.1  | 81,846 |
| 801  | 60.1 | 5,292  | 70.8      | 5,621   | 71.6     | 5,247    | 63.5   | 5,987 | 66.2 | 6,445 | 60.1 | 6,832 | 71.6 | 61,910 |
| 651  | 66.1 | 5,293  | 70.8      | 5,621   | 71.6     | 5,247    | 63.5   | 5,988 | 66.1 | 6,436 | 70.8 | 6,832 | 71.6 | 61,915 |

|     | July | August | September | October | November | December | TOTALS |        |      |        |      |        |      |        |
|-----|------|--------|-----------|---------|----------|----------|--------|--------|------|--------|------|--------|------|--------|
|     | x    | x      | x         | x       | x        | x        | x      |        |      |        |      |        |      |        |
| 983 | 81.1 | 77,981 | 81.1      | 80,350  | 81.1     | 80,776   | 81.1   | 80,921 | 81.1 | 80,675 | 81.1 | 80,402 |      |        |
| 817 | 2.4  | 8216   | 2.4       | 8229    | 2.4      | 8251     | 2.4    | 8263   | 2.4  | 8276   | 2.4  | 8276   | 2.5  | 82,781 |
| 173 | 1.0  | 8182   | 1.0       | 8182    | 1.0      | 8182     | 1.0    | 8182   | 1.0  | 8182   | 1.0  | 8182   | 1.0  | 81,841 |
| 977 | 1.1  | 8182   | 1.1       | 8182    | 1.1      | 8182     | 1.1    | 8195   | 1.1  | 8198   | 1.1  | 8198   | 1.2  | 81,972 |
| 173 | 1.9  | 8146   | 1.9       | 8153    | 3.4      | 8160     | 1.9    | 8158   | 1.9  | 8177   | 1.9  | 8186   | 4.1  | 81,729 |
| 162 | 1.8  | 8136   | 1.8       | 8143    | 3.4      | 8150     | 1.8    | 8157   | 1.8  | 8166   | 1.8  | 8174   | 3.9  | 81,621 |
| 117 | 0.9  | 8182   | 0.9       | 8182    | 0.9      | 8182     | 0.9    | 8182   | 0.9  | 8182   | 0.9  | 8182   | 0.9  | 81,841 |
| 116 | 1.0  | 8171   | 1.0       | 8176    | 1.0      | 8180     | 1.0    | 8187   | 1.0  | 8207   | 1.0  | 8216   | 1.0  | 82,826 |
| 778 | 2.0  | 8188   | 2.0       | 8188    | 2.0      | 8188     | 2.0    | 8188   | 2.0  | 8188   | 2.0  | 8188   | 2.0  | 81,845 |
| 682 | 3.2  | 8236   | 3.2       | 8248    | 5.6      | 8262     | 3.2    | 8274   | 3.2  | 8287   | 3.2  | 8308   | 5.3  | 82,815 |
| 173 | 1.9  | 8182   | 1.9       | 8182    | 1.9      | 8182     | 1.9    | 8200   | 1.9  | 8216   | 1.9  | 8224   | 2.0  | 82,815 |
| 651 | 66.1 | 5,293  | 70.8      | 5,625   | 71.6     | 5,247    | 63.5   | 5,988  | 66.1 | 6,436  | 70.8 | 6,831  | 71.6 | 61,915 |

|     | July | August | September | October | November | December | TOTALS |        |      |        |      |        |     |        |
|-----|------|--------|-----------|---------|----------|----------|--------|--------|------|--------|------|--------|-----|--------|
|     | x    | x      | x         | x       | x        | x        | x      |        |      |        |      |        |     |        |
| 983 | 81.1 | 77,981 | 81.1      | 80,350  | 81.1     | 80,776   | 81.1   | 80,921 | 81.1 | 80,675 | 81.1 | 80,402 |     |        |
| 817 | 2.4  | 8216   | 2.4       | 8229    | 2.4      | 8251     | 2.4    | 8263   | 2.4  | 8276   | 2.4  | 8276   | 2.5 | 82,781 |
| 173 | 1.0  | 8182   | 1.0       | 8182    | 1.0      | 8182     | 1.0    | 8182   | 1.0  | 8182   | 1.0  | 8182   | 1.0 | 81,841 |
| 977 | 1.1  | 8182   | 1.1       | 8182    | 1.1      | 8182     | 1.1    | 8195   | 1.1  | 8198   | 1.1  | 8198   | 1.2 | 81,972 |
| 173 | 1.9  | 8146   | 1.9       | 8153    | 3.4      | 8160     | 1.9    | 8158   | 1.9  | 8177   | 1.9  | 8186   | 4.1 | 81,729 |
| 162 | 1.8  | 8136   | 1.8       | 8143    | 3.4      | 8150     | 1.8    | 8157   | 1.8  | 8166   | 1.8  | 8174   | 3.9 | 81,621 |
| 117 | 0.9  | 8182   | 0.9       | 8182    | 0.9      | 8182     | 0.9    | 8182   | 0.9  | 8182   | 0.9  | 8182   | 0.9 | 81,841 |
| 116 | 1.0  | 8174   | 1.0       | 8176    | 1.0      | 8180     | 1.0    | 8187   | 1.0  | 8207   | 1.0  | 8216   | 1.0 | 82,826 |
| 168 | 0.8  | 8166   | 0.8       | 8176    | 0.8      | 8180     | 0.8    | 8184   | 0.8  | 8204   | 0.8  | 8214   | 0.8 | 81,994 |
| 173 | 1.9  | 8182   | 1.9       | 8182    | 1.9      | 8182     | 1.9    | 8200   | 1.9  | 8216   | 1.9  |        |     |        |

you've got to have patience. It also helps to put on a good show.) The nonhistorical scenarios allow those of us who didn't sleep through history and geography to have our own "unknown" out there to discover.

#### Don't Lose the Gold

I recommend that you consider keeping a journal and supplementary maps when you play this game. It's a frustrating experience to forget where you left a cache of 5000 gold pieces.

David Long

#### Seven Cities of Gold

Electronic Arts  
2755 Campus Drive  
San Mateo, CA 94403  
(415) 571-7171

**List Price:** \$40

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

CIRCLE READER SERVICE NO. 381

## OLD WINE, NEW BOTTLE

There is something unusually appealing about playing ancient games on a modern computer.

Maybe it's the contrast of the eternal game, lurking somewhere deep in our subconscious, coming slap against the newest wave of technology.

Maybe it's because these old games are built around

the same kind of simple, straightforward logic that also inspires the creation of computers.

Or maybe it's just because programmers who write old games for new computers are able to give their all, without worrying about the convoluted ins and outs of copyright law before putting game to disk.

Whatever the reason, these vintage games have always been among the first

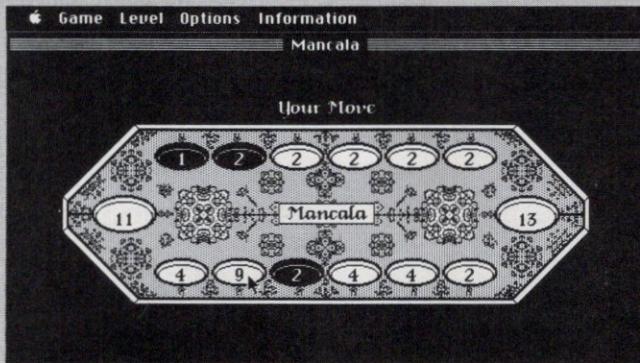
to arrive for each new generation of computer.

#### Three On One

Triple Play has brought three of them onto one Macintosh disk: Backgammon, Mancala (sometimes known as Awari), and Deduce (a game that's quite similar to Mastermind).

All three have found their way onto computers before. (In fact, you can find BASIC-language versions of both Mancala and Deduce in lots of different computer-game books.)

Triple Play adds a lot to these simple, generic versions, though: sharp on-screen graphics that look like actual game boards; mouse control of playing pieces that mimics how you'd move the pieces by hand; and pull-down menus that offer a host of options, from silencing the sound ef-



## TELEMAX, INC. ENHANCEMENT PRODUCTS

*WE turn Apples and Franklins into gold, with a little alchemy and lots of engineering.*

### RGB COLOR BOARDS

Apple II, II+, IIe; Franklin ACE 1000, 1200, 100 (color or monochrome)

#### The Color Master VCB-8

The new video board that provides RGB (red/green/blue) video signals for crisp, vivid displays of color graphics and text, with exceptional resolution and color quality, is now available.

Can be used with 80 column text, so both color graphics and text are displayed on one RGB monitor. Text can be displayed in anyone of 8 colors, software selectable. A text mode enhancement circuit improves resolution and readability. Board plugs into slot 7 and comes with 4' cable for signal output. Optional monitor connector, wired to cable is available (specify RGB monitor make and model).

For the Apple II or II+, the optional VSS-80 soft-switch or VSP-80 switchplate can be used to interface Videoterm, Ultraterm, ALS Smarterm, Viewmaster 80, Viewmax or other similar boards. For Franklin computers, the VSP-80 is available to implement this feature.

For further information contact your computer dealer/distributor or: **TELEMAX, Inc.**

Computer and Video Products  
P.O. Box 339  
Warrington, PA 18976  
(215) 343-3000

Apple® is registered by Apple Computer, Inc.  
Franklin® is registered by Franklin Computer, Inc.

Prices & Specifications are subject to change without notice

### RGB-APPLE IIC

**The Peacock CM2C RGB Video Interface.** Enjoy the brilliant, crisp, vivid displays of color graphics and text that are obtainable from the Apple IIC Computer when used with the Telemex Colormaster IIC.

**Features:** A stand alone module, one end plugs into the Apple IIC Video Port, the other end plugs into your RGB Monitor. 14 combinations of foreground and background colors in text mode are user selectable. Text mode enhancement circuits improve resolution and readability of 80 column displays. Operation is software independent. A 3.5 ft. monitor cable is supplied. Comes ready to operate, with complete instructions. (Specify make and model monitor.)

\$199.

**Chipmaster IC Tester Interface card. MOD. ICT-2.** Tests 14, 16, 18, 20 pin devices. Displays results on video monitor. Card plugs into any slot. Comes with test socket, software diskette, instructions. Ideal for service shops, labs, schools.

\$229.00

#### The Kaleidoscope II, VCB-24

Has the same specs. as the COLORMASTER, with the following added features:  
**Each line of 24 lines of text can be independently set to anyone of 8 colors, on anyone of 8 colors of background. 2 page memory. Software provided.**

**Signal output:** RED, GREEN, BLUE, Sync., both composite and H&V. Levels are TTL, both + and -; other outputs: ±5 VDC, +12 VDC. Signals are American Standard. European version is available. Universal RGB monitor compatibility.

#### ORDERING INFORMATION:

| APPLE II, II+, IIe | Price    |
|--------------------|----------|
| Colormaster        | \$139.00 |
| Kaleidoscope II    | \$199.00 |
| Softswitch         | \$45.00  |
| Switchplate        | \$30.00  |

#### FRANKLIN Ace 100, 1000, 1200 (Specify Revision)

| Price    |
|----------|
| \$169.00 |
| \$219.00 |
| \$30.00  |

Monitor connector, wired to cable: \$15.00

Add \$3.00 shipping via UPS Air  
Add \$6.00 for C.O.D. shipments, UPS Air  
Credit Cards Not Accepted.

**TOLL FREE: 950-1088**  
**Wait for tone, then dial TELEMAX (TOUCH TONE ONLY)**

fects to reviewing a game from start to finish.

Each game pits you against the Macintosh, but don't worry about the 68000 always outpacing you. You can select a playing level for each game, from beginning to advanced. In backgammon you can even switch playing levels in the middle of a game.

The disk comes packed in a Styrofoam container, without a manual. All the instructions you need to play each game are included right in the program, as are a history of the game and a summary of the rules.

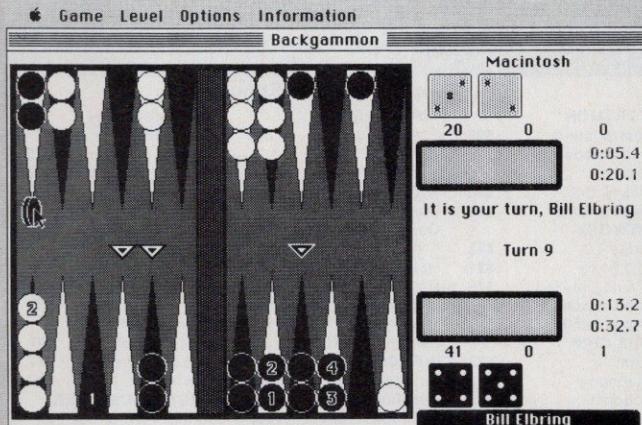
Overall, the instructions are good and the graphics well designed. The program runs smoothly. What more could you ask? Still, each game, as you'd expect, does have its quirks.

### Mancala

Take Mancala, for example. The idea behind the game is quite simple. Two players face each other, with two rows of stones in six small pits between them. At each end is a scoring pit.

To play, you simply pick up stones from one pit and distribute them one by one into each pit to the right. At the end, the player with the most stones in the scoring pit wins the game.

On screen is a striking image of a carefully crafted playing board. Instead of actually showing the stones in each pit, however (which would have been easy enough with the Macintosh), the screen displays only the number of stones per pit. This situation detracts from the overall visual effect, although it makes it easier to see instantly how



many stones you have.

Mancala gets smarter as you play. Just because you beat it one time with one strategy doesn't mean you can win again.

Here's the rub, though: the Mac plays Mancala to tie. Get it into a tie game, and it will keep playing the same strategy over and over until you change your moves.

### Backgammon

If you're competitive by nature, you'll probably respond well to a feature of the Backgammon part of Triple Play—a contest in which 20 players will be awarded \$200 apiece. (You must, however, get your entry in by May 15, 1985; so whizzes at Backgammon should move quickly if they're interested.)

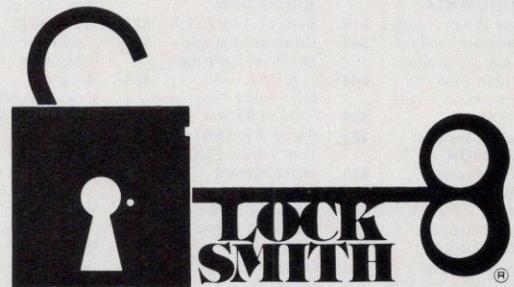
**The loss of data contained  
on this \$3 diskette could  
cost you or  
your company  
\$thousands\$.**

**That's why you need**

Even the highest quality diskettes are very delicate. They are easily damaged by magnetic fields, sharp objects, spilled sodapop, and peanut butter.

Locksmith backs up your data faster than ANY other backup utility available for the Apple. (Locksmith Version 5.0 can reliably backup a disk in as little as 8 seconds!)

Locksmith can backup programs which the manufacturer didn't intend for you to backup, (so-called protected software). Let's face it—the company that sold you your software yesterday may not be around tomorrow.



We are the SOURCE for Locksmith 5.0, it's our product. We are so totally committed to providing the best support for Locksmith that we hired the author of Locksmith and the entire Locksmith programming team to support Locksmith for you.

Locksmith currently comes with backup parameters for hundreds of "protected" programs.

Locksmith at \$99.95—the best insurance value for your software investment.

Available from your local dealer or order direct from:



**Alpha Logic Business  
Systems Inc.**

4119 North Union Road  
Woodstock, IL 60098  
(815) 568-5166

Visa & Mastercard accepted  
As the manufacturer of Locksmith,  
we invite all dealer inquiries.

**Coming Soon—  
Locksmith/PC and  
MAC-Locksmith**

# Software Discounters of America (& Peripherals, too!)



For Orders Only 1-800-225-7638\*

Inquiries and PA 412-361-5291 Open Saturday

- Free shipping on orders over \$100 in continental USA
- No surcharge for VISA/MASTERCARD

## Your Apple Software Specialist

| ACTIVISION                        |          | FIRST STAR   |             | SCARBOROUGH                                  |          |
|-----------------------------------|----------|--|-------------|--|----------|
| Ghostbusters                      | \$25     | Spy vs Spy   | \$23        | Build A Book                                 | \$27     |
| Mindshadow                        | \$25     | HBJ  |             | Masterype                                    | \$25     |
| Pitfall II                        | \$25     | Computer SAT   | \$49        | Make Millions (MAC)                          | \$33     |
| Rock N' Bolt                      | \$25     | HAYDEN   |             | Net Worth                                    | \$49     |
| Space Shuttle                     | \$25     | Computer Novel   |             | Run for the                                  |          |
| ARTWORK                           |          | Construction Set   |             | Money (MAC)                                  | \$33     |
| Bridge 4.0                        | \$16     | (MAC)  | Call        | SIERRA ON LINE                               |          |
| Strip Poker                       | \$21     | Holy Grail   | \$33        | Homework                                     | \$43     |
| Female Data Disk                  | \$18     | Holy Grail (MAC)   | \$33        | Homework w/Speller                           | \$67     |
| Male Data Disk                    | \$18     | SAT (MAC)  | \$67        | King's Quest (128K)                          | \$33     |
| Strip Poker (MAC)                 | Call     | Sargon III   | \$33        | Screenwriter II                              |          |
| BLUE CHIP                         |          | Sargon III (MAC)   | \$33        | w/Dictionary                                 | \$97     |
| Baron                             | \$33     | INFOCOM  |             | Time Zone (6 disks)                          | \$67     |
| Millionaire                       | \$33     | Cut Throats  | \$25        | Ultima II                                    | \$39     |
| Tycoon                            | \$33     | Deadline   | \$33        | SIMON & SCHUSTER                             |          |
| These titles available<br>for MAC | \$39 Ea. | Enchanter  | \$25        | Gonzo in Wordrider                           | \$23     |
| BRODERBUND                        |          | Hitchhiker's Guide   |             | Kermit's Electronic                          |          |
| Bank St. Writer                   | \$43     | to the Galaxy  | \$25        | Storymaker                                   | \$23     |
| Bank St. Writer (IIC)             | \$43     | Infidel  | \$29        | NY Times Crossword                           |          |
| Bank St. Speller                  | \$43     | Planetfall   | \$25        | Puzzles 1                                    | \$16     |
| Champ Loderunner                  | \$23     | Seastalker   | \$25        | NY Times Crossword                           |          |
| Dazzle Draw (128K)                | \$39     | Sorcerer   | \$29        | Puzzles 2                                    | \$16     |
| Karateka                          | \$23     | Suspect  | \$29        | Typing Tutor III                             | \$33     |
| Loderunner                        | \$21     | Witness  | \$25        | Typing Tutor III (MAC)                       | \$39     |
| Print Shop                        | \$33     | Zork I   | \$25        | SPINNAKER                                    |          |
| Print Shop Graphics               |          | Zork II or III   | \$29        | All Titles                                   | Call     |
| Library                           | \$19     | *All titles available<br>for Macintosh at<br>prices listed above |             | SPRINGBOARD                                  |          |
| Welcome Aboard                    |          | KOALA  |             | Easy Games                                   | \$23     |
| Muppets                           | \$25     | Gibson Light Pen   | Call        | Easy as ABC                                  | \$27     |
| CBS                               |          | Muppet Learning Keys   | (IIC & IIC) | Mask Parade                                  | \$27     |
| Adventure Master                  | \$29     | Mac Vision   | Call        | Newsroom                                     | \$33     |
| Algebra Series                    | Call     | Tablet w/Painter   | \$75        | Stickers                                     | \$23     |
| America Coast to<br>Coast         | \$27     | Tablet w/Painter (IIC)   | \$75        | SSI  |          |
| Dinosaur Dig                      | \$27     | LEARNING COMPANY   |             | Battle Normandy                              | \$25     |
| Dr. Seuss                         | \$21     | Addition Magician  | \$23        | Broadsides                                   | \$25     |
| Dream House                       | \$27     | Bumble Games   | \$25        | Carrier Force                                | \$39     |
| Felony                            | \$23     | Gertrudes Secrets  | \$27        | Computer Baseball                            | \$25     |
| Goren Bridge                      | \$49     | Number Stumper   | \$25        | Computer QB                                  | \$25     |
| Mastering the SAT                 | \$89     | Rocky's Boots  | \$33        | 50 Mission Crush                             | \$25     |
| Math Series                       | Call     | Robot Odyssey I  | \$33        | Gemstone Warrior                             | \$23     |
| Micro Speed Read                  | \$79     | Solo Flight  | \$23        | Germany 1985                                 | \$39     |
| Murder by<br>Dozen                | \$23     | MINDSCAPE  |             | Kampfgruppe                                  | \$39     |
| Murder by<br>Dozen (MAC)          | \$29     | Bank St. Storybook   | \$27        | Pro Tour Golf                                | \$25     |
| Sea Voyagers                      | \$27     | Crossword Magic  | \$33        | Questron                                     | \$33     |
| CONTINENTAL                       |          | Mr. Pixel's Cartoon  |             | Rails West                                   | \$25     |
| Book of Adv. Games                | \$16     | Kit  | \$23        | Reforger '88                                 | \$39     |
| Home Accountant                   | \$44     | Mr. Pixel's Programming  |             | Ringside Seat                                | \$25     |
| (128K IIC & IIC)                  | \$44     | Paint Set  | \$23        | War in Russia                                | \$53     |
| Home Accountant<br>(MAC)          | \$99     | PREPARATION SAT  | \$49        | SUBLOGIC                                     |          |
| Home Cataloger                    | \$33     | Tink's Subt. Fair  | \$19        | Flight Simulator II                          | \$33     |
| DAVIDSON                          |          | MONOGRAM   |             | TRILLIUM                                     |          |
| Math Blaster                      | \$33     | Dollars & Sense  | \$67        | Amazon                                       | \$25     |
| Speed Reader II                   | \$43     | Dollars & Sense (IIC)  | \$77        | Dragonworld                                  | \$25     |
| Spell It                          | \$33     | Dollars & Sense  |             | Fahrenheit 451                               | \$25     |
| Word Attack                       | \$33     | (MAC)  | \$95        | Rendezvous w/Rama                            | \$25     |
| DOW JONES                         |          | OMNITRENDS   |             | Shadow Keep                                  | \$25     |
| News/Retrieval                    |          | Universe   | Call        | *All titles coming soon<br>for the Macintosh |          |
| Membership Kit<br>(5 hrs.)        | \$21     | PRACTICORP   |             | WINDHAM CLASSICS                             |          |
| ELECTRONIC ARTS                   |          | Practical Calc II  | \$35        | Alice in Wonderland                          | \$21     |
| All Titles Available              | Call     | PRECISION  |             | Below the Root                               | \$21     |
| EPYX                              |          | Superbase  | \$65        | Swiss Family                                 |          |
| Impossible Mission                | \$23     | PROFESSIONAL   |             | Robinson                                     | \$21     |
| Pitstop II                        | \$25     | SOFTWARE   |             | Wizard of Oz                                 | \$21     |
| Robots of Dawn                    | \$25     | Trivia Fever   | \$25        | ACCESSORIES                                  |          |
| Robots of Dawn<br>(MAC)           | \$25     | Trivia Fever (MAC)   | \$27        | Anchor Modems                                | Call     |
| Summer Games                      | \$25     | RESTON   |             | BASF SS, DD                                  | \$14 Bx. |
| Summer Games II                   | Call     | Movie Maker  | \$35        | BASF DS, DD                                  | \$19 Bx. |

P.O. BOX 278-DEPT AP-WILDWOOD, PA 15091

**\*Ordering and Terms:** Orders with cashier check or money order shipped immediately. Personal/company checks, allow 3 weeks clearance. No C.O.D.'s. **Shipping:** Continental U.S.A.—Orders under \$100 add \$3; free shipping on orders over \$100. PA residents add 6% sales tax. AK, HI, FPO-APO—add \$5 on all orders. **International Order Policy:** No Credit Cards—add \$15 or 15% of order whichever is greatest. Defective merchandise will be replaced with same merchandise—NO CREDITS! Return must have authorization number (412) 361-5291. Prices subject to change without notice.

CIRCLE 155 ON READER SERVICE CARD

# THAT'S entertainment

The Backgammon portion of the program is designed to duplicate an actual game—all the way down to the fact that you must move each piece manually with the mouse. A couple of shortcuts you'd expect from computerized backgammon aren't here: you can't just click on the piece you want to move; and you can't combine the total on both dice in a single move. Also, the game doesn't include a doubling cube, a betting add-on that can intensify strategies and allow you to finish games more quickly.

As you're playing, Backgammon can display all possible moves for you and even suggest which move is a good one—both of which are useful to the novice.

### Deduce

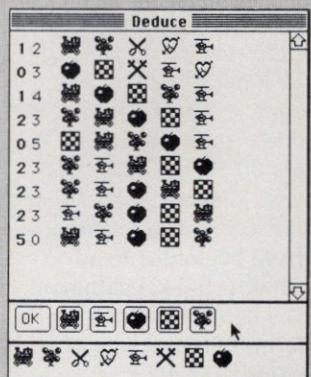
The third part of Triple Play, Deduce, is a guessing game in which you try to figure out the exact place-

### Deduce is an exercise in logic.

ment of a series of tokens. After each guess, the computer tells you how many tokens you've placed correctly and how many tokens were chosen correctly, but are in the wrong place. It won't, however, tell you which are right and which are wrong.

You have up to 50 guesses to deduce which token goes where. Deduce is an exercise in logic—you can always find a way to figure out the right answer. It's not always easy, though. If you're ever frustrated, you can check the right answer right away.

If you want to experiment on your own, Deduce



gives you wide options for setting up the board. You first select the number of tokens (6-10) and the number of spaces (4-10) you want to use (you don't have to use the same number of each). You then try to fit the tokens into the appropriate spaces. It's also your choice whether or not to allow tokens to be used more than once.

The tokens themselves are interesting little graphic characters of trains, pickaxes, checkers, and the like. You select them one by one with the mouse, or you select an entire row at once (for instance, a row in which you came close to the right answer) and just edit one or two of the tokens.

Triple Play is available primarily through mail order, although you may be able to find a dealer that carries it. The price includes postage and handling. It's copy-protected; and no backup disk is provided.

J. Anthony Dirksen

### Triple Play Game Disk Number 1

Triple Play  
P.O. Box 6354  
Lafayette, IN 47903  
(317) 742-5369

**List Price:** \$39.50

**Requires:** Macintosh  
CIRCLE READER SERVICE NO. 382

## ANATOMY ADVENTURE

Contrary to the impression the title might give, Adventures in Flesh is not a seedy, X-rated, pornographic program to indulge your computerized fantasies. It is instead an educational game that uses a text-only adventure-game format to explore human anatomy and physiology.

Remember an old television show called "Fantastic Voyage"? It featured a group of scientists navigating a submarine through a human body. Well, Adventures in Flesh is the computer version. The object is to find and diagnose 11 disorders in various parts of the body, and in the process, you reinforce lessons about human physiology.

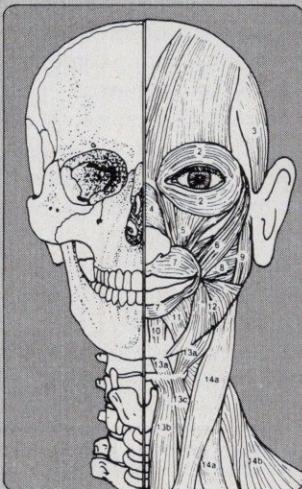
As an adventure game, Adventures in Flesh is rather primitive, understanding only 100 words. You issue one-letter commands to indicate directions and two-word commands such as LOOK CELL and BLAST.

► The intent of the program is to explore the human body.

VIRUS to have it perform various activities. From time to time, communications from the outside detail external symptoms and help you zero in on disorders.

The disorders stand out like neon lights. You need no medical degree to match an internal observation with a disorder, but remember the intent of the program is to explore the human body. The disorders are only there to prod students to continue the game.

Navigating through the body to find 11 disorders can take a lot of time. Fortunately, you can save a game in progress. Aside from getting eaten by a white blood cell or falling out of one of the body's openings, you have little to fear. The biggest problem is getting lost in the lymphatic system. Do yourself a favor—don't forget that you are an infection, and stay



away from the lymph nodes.

Adventures in Flesh includes a human-anatomy coloring book, which is a helpful guide for introducing human physiology to children. It is also a rudimentary road map of internal systems.

All in all, I appreciate Adventures in Flesh but caution that a background in physiology is almost a prerequisite to enjoy the program to its fullest.

Russ Lockwood

### Adventures in Flesh

Krell Software  
1320 Stony Brook Road  
Stony Brook, NY 11790  
(516) 751-5139

**List Price:** \$49.95  
**Requires:** Apple II Plus, IIe, or IIc; 48K RAM; one disk drive

CIRCLE READER SERVICE NO. 383

# One Third Off.

**The keypad for the Apple IIe\* now costs one-third less.**

If you do spreadsheets, ledgers, tax prep—any program on your Apple IIe that uses numbers—you need a IIe Tender Keypad. And now it costs one third less than it's ever cost before.

**Only \$99.**

With the IIe Tender, you get complete cursor control in all directions, the four mathematical functions, a decimal point, comma, space bar and delete key. For a few dollars more, you can have the IIe Tender Programmable, which also gives you four keys that can be permanently defined to any frequently-used key.

**A little extra.**

Either way, you get a well built, color-coordinated keypad that installs in minutes without taking up an expansion slot; one that's human engineered to provide you with a sure touch and less user fatigue. Not to mention the free Coupler-Calc software you get to turn your keypad into a fixed or floating-point calculator.

**Try one.**

There's never been a better time to try a IIe Tender. At your local Apple\* dealer or software store now.



Track House is a division of Grimes Co.

### GRIMES

115 South Arvista Circle  
Brea, California 92621  
Telephone (714) 671-3931

Dealer and Dealer Rep. inquiries invited. Several territories available.



Standard model keypads are also available for the Apple II+\*. Ask your dealer for details.

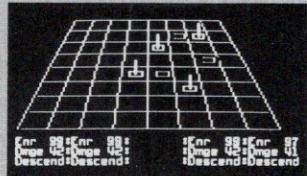
\*Apple, Apple IIe and Apple II+ are registered trademarks of Apple Computer, Inc.

## RACE TO SAVE CIVILIZATION

If your idea of a good game is one you can just pop into the disk drive and start playing, Omnitrend's Universe is not for you. But, if you love the challenge of a vast, complex game—with all the lure of a science-fiction fantasy—and if you yearn to captain your own ship—with all the challenge of studying charts, parts lists, and finances; making deals and running a business; piloting flights and planning military strategy—then Universe may provide the perfect vehicle for your flights of fancy.

Omnitrend's effort with this multidisk fantasy/simulation game is ambitious. The game's potential to fascinate possibly rivals that of the classic Wizardry, poten-

tially supplying months (maybe even years) of complex science-fiction-based adventures and saving your progress to disk as you go. The manual offers detailed documentation—72 pages in an 8½ x 11-inch vinyl binder, with seven two-sided quick-reference cards (also



8½ x 11)—and you'll need every word of it because it contains critical information you need to maneuver the game, information that does not appear on the screen. (You should plan to have both manual and cards at hand, and be ready to thumb through them as you play.) Omnitrend sells sup-

plements to the manual that supply even more detailed statistics for the advanced players.

The program includes some graphics, but it relies primarily on text. The game does use color, but a monochrome monitor works fine. The massive Universe program is contained on four diskettes and requires a fair amount of diskette swapping—especially for inexperienced players, since you find yourself constantly going back to pick up some item you've overlooked.

Here's the premise: At a time far in the future, space explorers from earth discover a hyperspace booster left by a technologically advanced alien culture. Humans have devised a hyperspace transportation system, but this alien device makes faster-than-light

travel more efficient, enabling explorers to travel many light years further than ever before. As a game player, you are part of a colony established in an-

► Universe may provide the perfect vehicle for your flights of fancy.

other galaxy around the star Axia. The colony has received daily shipments of new technology from earth—its lifeline in this isolated region of the universe. Eighty days ago, however, these shipments suddenly stopped without explanation. The situation is desperate. The colony



## QUALITY APPLE® SOFTWARE



### BUSINESS

|                                | LIST | TRIAD             |
|--------------------------------|------|-------------------|
| AP, AR, INV, PAY (BPI) .....   | (EA) | \$395.00 \$238.00 |
| CROSSTALK .....                |      | 195.00 132.00     |
| DB.MASTER 4 PLUS .....         |      | 295.00 175.00     |
| FLASHCALC (VISICORP) .....     |      | 99.00 62.95       |
| GENERAL ACCOUNTING (BPI) ..... |      | 395.00 238.00     |
| GRAPHWORKS .....               |      | 60.00 44.95       |
| HABA MERGE .....               |      | 69.95 48.50       |
| MEGA WORKS .....               |      | 125.00 85.00      |
| PFS FILE .....                 |      | 125.00 73.50      |
| PFS FILE & REPORT (MAC) .....  |      | 195.00 115.00     |
| PFS REPORT .....               |      | 125.00 73.50      |
| PRO FILER .....                |      | 89.95 61.50       |
| SIDEWAYS (DOS 3.3 ONLY) .....  |      | 60.00 35.95       |
| THINK TANK .....               |      | 150.00 102.00     |
| VERSALEDGER II .....           |      | 149.95 102.00     |
| VISICALC PACKAGE .....         |      | 179.00 110.00     |

### EDUCATION

|                                 | LIST | TRIAD            |
|---------------------------------|------|------------------|
| ALGEBRA 1/2/3/4 .....           | (EA) | \$39.95 \$ 24.50 |
| ALPHABET CIRCUS (DLM) .....     |      | 29.95 18.95      |
| BUILD A BOOK ABOUT YOU .....    |      | 39.95 25.50      |
| EARLY GAMES . YOUNG CHILD ..... |      | 29.95 21.95      |
| FACEMAKER .....                 |      | 29.95 19.50      |
| GRAMMAR EXAMINER .....          |      | 44.95 28.50      |
| MASTER TYPE (IMPROVED) .....    |      | 39.95 24.50      |
| MATH BLASTER .....              |      | 49.95 30.50      |
| MICKEY'S SPACE ADVENTURE .....  |      | 39.95 24.50      |
| NEWSROOM (SPRINGBOARD) .....    |      | 49.95 30.50      |
| READER RABBIT .....             |      | 39.95 24.50      |
| SPELL-IT .....                  |      | 49.95 30.50      |
| STICKYBEAR MATH .....           |      | 39.95 24.50      |
| STICKYBEAR READING .....        |      | 39.95 24.50      |
| STORY MAKER .....               |      | 34.95 21.50      |
| TYING TUTOR III .....           |      | 49.95 30.50      |
| WINNIE THE POOH .....           |      | 39.95 24.50      |
| WORD ATTACK .....               |      | 49.95 30.50      |

### WORD PROCESSING

|                                       | LIST | TRIAD             |
|---------------------------------------|------|-------------------|
| BANK STREET SPELLER .....             |      | \$ 69.95 \$ 42.50 |
| BANK STREET WRITER (64K) .....        |      | 69.95 42.50       |
| BANK STREET WRITER (128K) .....       |      | 69.95 42.50       |
| FORMAT ENHANCED .....                 |      | 150.00 88.50      |
| HANDLER PACK .....                    |      | 169.95 102.00     |
| PFS WRITE (2E/2C) .....               |      | 125.00 73.50      |
| SCREENWRITER II PRO .....             |      | 129.95 76.50      |
| SENSIBLE SPELLER (DOS, PRO)(EA) ..... |      | 125.00 73.50      |
| WORD HANDLER V4.0 .....               |      | 79.95 48.95       |
| WRITE CHOICE (WAGNER) .....           |      | 44.95 27.50       |

### HOBBY

|                                   | LIST | TRIAD             |
|-----------------------------------|------|-------------------|
| ALPHA PLOT (DOS 3.3) .....        |      | \$ 39.50 \$ 21.50 |
| APPLE MECHANIC (DOS 3.3) .....    |      | 29.50 16.50       |
| BEAGLE MASTER (REQ 64K) .....     |      | 34.95 19.50       |
| BLAZING PADDLES (BAUDVILLE) ..... |      | 49.95 34.95       |
| BEAGLE GRAPHICS (REQ 128K) .....  |      | 59.95 31.95       |
| C.I.A. (GOLDEN DELICIOUS) .....   |      | 65.00 44.95       |
| COPY II PLUS (VER 5.0) .....      |      | 39.95 24.50       |
| D-CODE (BEAGLE) .....             |      | 39.95 22.50       |
| DAZZLE DRAW .....                 |      | 59.95 36.50       |
| DISK QUIK (2C/2E-128K) .....      |      | 29.50 16.50       |
| DOS BOSS (DOS 3.3) .....          |      | 24.00 13.95       |
| DOUBLE TAKE (DOS & PRODOS) .....  |      | 34.95 19.50       |
| FAT CAT (DOS & PRODOS) .....      |      | 34.95 19.50       |
| FONTRIX (DATA TRANSFORMS) .....   |      | 75.00 43.95       |
| FONTPAK #1/2/3/4/5/6/7/8/9 .....  | (EA) | 20.00 13.95       |
| GPLE (DOS & PRODOS) .....         |      | 49.95 26.95       |
| GRAPHICS MAGICIAN .....           |      | 59.95 36.50       |
| PRODOS ORCA/M (NEW) .....         |      | 79.95 49.95       |
| PRONTO DOS (DOS 3.3) .....        |      | 29.50 16.50       |
| SILICON SALAD (DOS 3.3) .....     |      | 24.95 13.95       |
| TAKE 1 (BAUDVILLE) .....          |      | 59.95 41.50       |
| TIP DISK #1, TYPEFACES .....      | (EA) | 20.00 11.50       |
| TRIPLE-DUMP (DOS & PRODOS) .....  |      | 39.95 21.95       |
| UTILITY CITY (DOS 3.3) .....      |      | 29.50 16.50       |

### HOME/COMMUNICATION

|   | LIST | TRIAD             |
|---|------|-------------------|
| ANCHOR MARK XII MODEM .....               |      | \$399.00 \$240.00 |
| ASCII EXPRESS PRO (DOS, PRODOS)(EA) ..... |      | 129.95 77.95      |
| DOLLARS & SENSE (64K + E) .....           |      | 100.00 61.50      |
| DOLLARS & SENSE (128K E/C) .....          |      | 119.95 72.50      |
| FAMILY ROOTS (QUINSEPT) .....             |      | 185.00 123.00     |
| HAYES MICROMODEM 2E W/SC .....            |      | 329.00 220.00     |
| HOME ACCOUNTANT (2 + E/C) .....           |      | 74.95 45.50       |
| MACH II JOYSTICK .....                    |      | 44.95 30.50       |
| MICROMODEM 2E W/SMARTCOM .....            |      | 329.00 232.00     |
| PRINT SHOP .....                          |      | 49.95 30.50       |
| PRINT SHOP GRAPHICS LIB#1 .....           |      | 24.95 16.50       |
| PROMETHEUS PROMODEM 1200 A .....          |      | 449.00 302.00     |
| TRIVIA FEVER .....                        |      | 39.95 27.50       |

### TRIAD Software Products

1414 Cherry Tree Lane  
Papillion, NE 68046  
Orders Only: 1-800-835-7427, Ext. 310  
Information: 1-402-331-7312

### RECREATION

|                                   | LIST     | TRIAD    |
|-----------------------------------|----------|----------|
| AMAZON .....                      | \$ 39.95 | \$ 24.95 |
| BARON .....                       | 49.95    | 30.50    |
| BEAGLE BAG .....                  | 29.50    | 16.95    |
| CHAMPIONSHIP LODE RUNNER .....    | 34.95    | 21.95    |
| COMPUTER BASEBALL .....           | 39.95    | 24.95    |
| DR. J & LARRY BIRD (1-on-1) ..... | 40.00    | 26.95    |
| EXODUS: ULTIMA III .....          | 59.95    | 36.50    |
| F-15 STRIKE EAGLE .....           | 34.95    | 21.95    |
| FLIGHT SIMULATOR II .....         | 49.95    | 31.95    |
| HITCHHIKERS TO THE GALAXY .....   | 39.95    | 24.50    |
| I. O. SILVER (BEAGLE) .....       | 29.95    | 16.95    |
| KING'S QUEST .....                | 49.95    | 30.50    |
| KNIGHT OF DIAMONDS (WIZ 2) .....  | 34.95    | 21.50    |
| LEGACY OF LYLGAMYN (WIZ 3) .....  | 39.95    | 24.50    |
| LODE RUNNER .....                 | 34.95    | 21.95    |
| MILLIONAIRE .....                 | 49.95    | 30.50    |
| PINBALL CONSTRUCTION SET .....    | 40.00    | 26.95    |
| PITSTOP II .....                  | 40.00    | 25.50    |
| RAILS WEST (SSI) .....            | 39.95    | 24.95    |
| RENDEZVOUS WITH RAMA .....        | 39.95    | 24.95    |
| SARGON III (2 + 2E) .....         | 49.95    | 30.95    |
| SEVEN CITIES OF GOLD .....        | 40.00    | 26.95    |
| SKYFOX .....                      | 40.00    | 26.95    |
| SQUIRE .....                      | 49.95    | 30.50    |
| TYCOON .....                      | 49.95    | 30.50    |
| WIZARDRY (PROVING GROUND) .....   | 49.95    | 30.50    |
| ZAXXON .....                      | 29.95    | 18.95    |
| ZORK I .....                      | 39.95    | 24.50    |

### TERMS

**PAYMENT:** Checks/VISA/MC/MO/School P.O./COD. Credit Card—Add 3% (Include #, Exp. Date, Tel #) COD—Add \$2.50 School Purchase Orders—Add 3% (Min. \$3.00). School Terms: 2%—10/Net 30. Personal Checks—Allow 10-14 Days for Processing Unless Guaranteed by Credit Card Number and Expiration Date. Nebraska Residents—Add 3% Sales Tax.

**SHIPPING:** UPS Ground—\$2.00/Order. Others—Actual + \$3.00.

**WARRANTY:** Defect-free for 30 Days. Our Shipping Date.

**RETURNS:** Call for a TRIAD Return Authorization Number (TRA#).

**2000 ITEM DISKETTE CATALOG:** \$5.00 (\$2.50 with Order).

**FREE:** Latest Flyer (100 items) on Request.

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

PREPARED MAR., 1985 PRICES SUBJECT TO CHANGE (#85-5)

CIRCLE 120 ON READER SERVICE CARD

cannot return to earth—the booster does not work in reverse—but just 15 days ago the Axian Central Educational Institute announced evidence that a second

► Your mission: to save the entire civilization from annihilation.

booster exists somewhere in the Local Group in the region of Axia. Your mission: to find this second booster, secure your fortune, and save the entire civilization from annihilation.

You'll have to spend a great deal of time preparing to play. You must obtain a loan, which is easy enough;

but you are required to repay it, with interest, which means you must earn a living while you search for the booster. You must choose a ship design; buy and outfit your ship with crew, necessary parts, fuel, and computer programs; decide where to stow them all on board; and plan your expedition in such a way that you will be able to repay your loan out of profits from your money-making ventures (mining, trading, transporting passengers, and/or piracy). You must do all of these things while you search out the second hyperspace booster and fend off enemy attacks.

To me, this extensive preparation to play is the game's greatest drawback. It's possible to spend hours, days, even weeks to get well into the game—and that's

frustrating. In fact, the complaint is so common that Omnitrend includes a sample game strategy in the manual to help you get your ship built and equipped;

► You'll have to spend a great deal of time preparing to play.

take you out to a Starport to pick up passengers; get you started with some mining, trading, and flight; and then send you off on your own.

Omnitrend is proud of providing solid customer support for registered owners. It provides updates to new versions and even offers two hours of free time on its

Universe bulletin board, giving responses to questions and giving players a chance to exchange experiences and suggestions and post captain's logs.

#### Experienced Delight

Assuming that Omnitrend continues this support, Universe and the promised sequels are likely to delight experienced computer adventure-game players who are looking for a complex and ongoing challenge.

Diane Moser

#### Universe

Omnitrend Software  
P.O. Box 3  
West Simsbury, CT 06092  
(203) 658-6917

**List Price:** \$98.50  
**Requires:** Apple II, II Plus, IIe, or IIc; 48K RAM; one disk drive

**CIRCLE READER SERVICE NO. 384**

## MECC SOFTWARE For the Apple II Family

**\$24.95**  
each

FREE  
Catalog  
with  
first  
order



MIND  
PUZZLES

### OTHER PROGRAMS—Have Fun Learning

The Friendly Computer  
The Market Place  
Paint With Words

Path Tactics  
Early Addition  
Jenny's Journeys

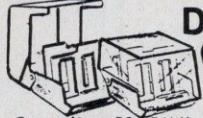
Problem Solving Strategies  
Sound Tracks

**All Programs ONLY**

**\$200**

Data  
Case

Reg. \$17.95  
only  
\$9.95  
with  
any order



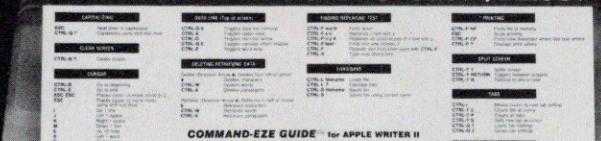
Capacity: 50 5 1/4" diskettes with index dividers and labels. Built-in carrying handle for ease in transporting. Unit has smoke color lid, beige base. 4-color single box.

### Wholesale Disk

**MAXELL**

5 1/4" SSDD—\$1.69 ea.  
3 1/2" DSDD—\$2.20 ea.  
5 1/4" SSDD—\$3.50 ea.  
3 1/2" DSDD—\$5.75 ea.

### Apple Owners...Triple the Usefulness of Your Favorite Software with COMMAND-EZE GUIDES. Just \$12.95!



COMMAND-EZE GUIDE for APPLE WRITER II



Now, eliminate the need to constantly look up software commands. Plus discover all those "special" commands buried in the manuals. **COMMAND-EZE GUIDES™** save time—and increase the value of software. Get the guides used by businesses, colleges, professionals!

- Puts all the software commands at your fingertips
- Rests above keyboard for perfect viewing
- Primary commands on front, special-purpose commands on back
- Organized alphabetically for instant use
- Uncluttered design enhances readability
- Compare—the easiest guides to understand!
- Stores easily, only 4" x 13"
- Highest quality non-glare laminated vinyl

**APPLEWORKS II/IIc**

**APPLE WRITER II**

**QUICK FILE II**

**APPLE WRITER II**

**VISICALC**

Order Today!  
No Risk  
15-day  
Money Back  
Guarantee!

### PHONE TOLL FREE to ORDER

**1-800-634-2248**

in North Dakota—280-0121

Corporate & School POs Accepted



**SOFTWARE  
SERVICES**

1323 23rd St. S., Suite C9 Fargo, ND 58103

CIRCLE 316 ON READER SERVICE CARD

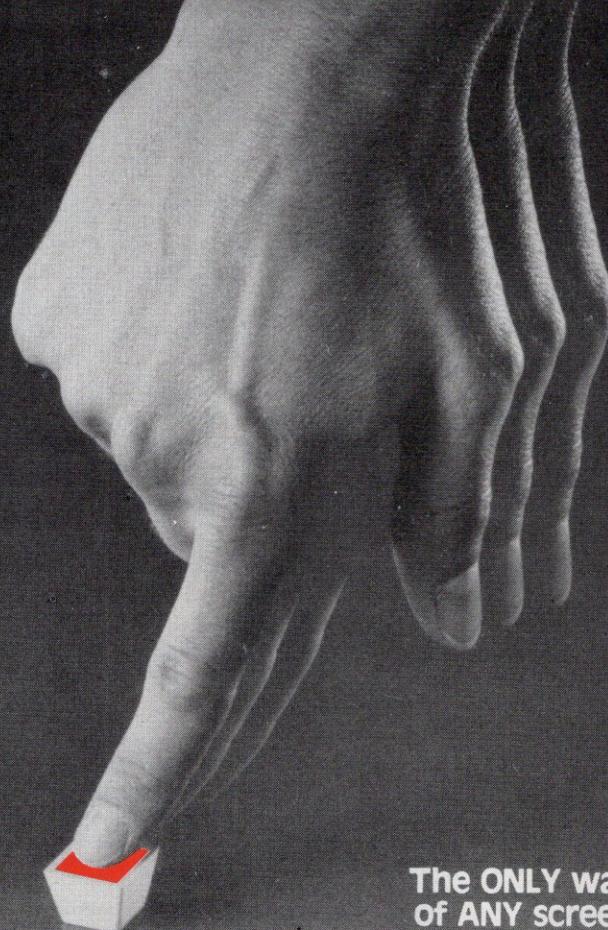
To order, send your name, address, check or money order for \$12.95 for each **COMMAND-EZE GUIDE**, plus \$1.95 shipping per order. Or charge to your VISA/MC by sending complete card number and expiration date.



Round Lake Studios, Inc. Dept. A5  
131 Round Lake Road, Ridgefield, CT 06877  
(203) 431-9676



THE NEW APPLE\* COMPATIBLE SERIAL AND PARALLEL PRINTER INTERFACE



Go  
From Screen  
to Paper  
at the Touch  
of a Button!

The ONLY way to get fast, easy printouts  
of ANY screen, at ANY time,  
with ANY program.

Push the red button that comes with PRINT-IT! - Your program pauses instantly; touch RETURN and whatever is on your screen - text, graphics or both - is printed in color or black & white.

Whether your Apple II, II+, //e<sup>①</sup> or "look-alike" is for business or pleasure, you'll want the ability to pause and take snapshots of your screen displays and then continue from exactly where you paused, all at the touch of a button - games, business data, menus, educational instructions, graphics - even CP/M<sup>②</sup>. PRINT-IT! will print your screen at any time no matter what program you're running, as well as perform every function you expect of an intelligent printer card.

PRINT-IT! supports:

- Graphics - Low, high, double low, and double high resolution
- Text - 40 column as well as Apple //e and Videx<sup>③</sup> 80 column cards including the new Apple 80 column RGB card
- Software - Prints from ALL software, even allows any printer to be used directly from Apple MousePaint
- Printers - All of the most popular printers,<sup>④</sup> including color, are easily selected with a dip switch.

PRINT-IT!, complete with cable (serial or parallel), is available at your local computer store now! If they don't have it in stock, ask them to get it for you.

Can't find a local dealer? PRINT-IT! is available for \$199 directly from Texprint<sup>①</sup>. Qualified educational and dealer discounts available.

**TEXPRINT**

Subsidiary of Computer Products Inc.  
220 Reservoir Street  
Needham Heights Ma. 02194  
Tel. (617) 449-5808

**For information call Toll Free 1-800-255-1510**

① Visa, MC, AMX accepted. Add \$4 shipping and handling within USA. Mass res. add 5% tax

② Apple II, II+, //e, and MousePaint are registered trademarks of Apple Computer, Inc.

③ CP/M is a registered trademark of Digital Research

④ Videx is a registered trademark of Videx, Inc.

⑤ Apple DMP/IMAGewriter/SCRIBE, BMC, C, Itoh, Canon, Epson, Dataproducts, IDS, Tally, NEC, Okidata, Quadram, Panasonic, Radio Shack, Star Gemini, Transtar, Diablo plus many others.



## RESCUE SQUAD BY MICHAEL CALLERY

Questions from our readers

### ► CATALOGING DISKS

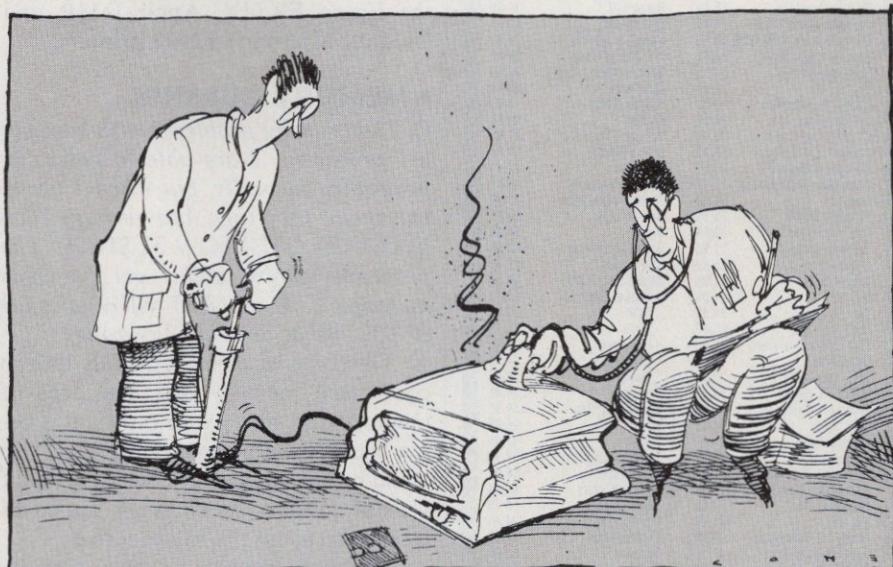
**Q.** I use Apple Writer IIe to write many short pieces that I need to refer back to. Is there a way to print out a catalog list so that I can have hard copy of the filenames?

**A.** Sounds like you are a victim of Apple's new documentation policy. It's simple to get hard copy of the catalog of unprotected disks under either DOS 3.3 or ProDOS.

First, boot the DOS 3.3 System Master, the ProDOS User's Disk, or the Apple IIc System Utilities Disk, depending on the operating system your program uses. Apple Writer IIe uses DOS 3.3, and Apple Writer 2.0 uses ProDOS. Then you must enter BASIC. The DOS 3.3 System Master puts you into BASIC; from the menus of ProDOS disks, you'll have to choose to enter BASIC. You know you've entered BASIC when the Applesoft prompt (a square bracket) and cursor appear.

At this point, remove the DOS System Master or ProDOS User's or Utility disk and insert into the drive the disk you wish to catalog. Activate the printer by typing PR#1. (If your printer card is in another slot, use the correct slot number instead of 1.) Then type CATALOG, after which the printer will print the catalog listing. The printer will pause after it's printed a screenful of information; press any key to continue the listing. You may have to press the key a couple of times until the Applesoft prompt is printed on the printer. Deactivate the printer with a PR#0 (or PR#3 if the Apple is in the 80-column mode.)

If you are using ProDOS and you—or your application program—have created subdirectories, this procedure will not display the files in the subdirectories. The catalog listing shows subdirectories as files of the type DIR. To



obtain subdirectory listings, issue a PREFIX/diskname/subdirname command at the Applesoft prompt, where /diskname represents the name of the disk (it will be shown at the top of the catalog listing) and /subdirname represents the name of the file with type DIR. Return to the main catalog after printing the subdirectory by typing a lone slash and pressing Return after issuing the PREFIX command.

This technique is useful with data disks from AppleWorks, VisiCalc, or any other application program.

### ► IMAGEWRITER QUALITY PRINT

**Q.** I have an Apple IIe and an ImageWriter connected via an Apple Super Serial Card. How can I obtain near-letter-quality or correspondence-quality printing, how can I get subscripts and superscripts, and how can I create custom fonts to print with the ImageWriter?

**A.** The ImageWriter has a large selection of fonts, all accessible by printer-

control codes. The best-looking fonts—of correspondence quality—are the proportional fonts: Elite (12 characters to the inch) and Pica (10 characters to the inch). How you direct the ImageWriter to use these fonts depends on what you are printing from. From BASIC, PR#1 (or the number of your printer-card slot other than 1) followed by PRINT CHR\$(27);"*p*" turns on Pica proportional, and PRINT CHR\$(27);"*P*" turns on Elite proportional.

In Apple Writer, the commands are Control-V Escape p Control-V and Control-V Escape P Control-V (Escape means pressing the Esc key). In AppleWorks, choose P1 or P2 from the Print Options menu (open-apple O). Consult the documentation of your application program if it isn't one of these.

As for your second question, there are no subscript or superscript command sequences for the ImageWriter. Some programs do create subscripts and superscripts by using reverse line feeds, though. AppleWorks is such a program.



# SILICON EXPRESS

CALL We have hundreds of other programs in stock at fantastic savings!

|                       |        |                         |         |
|-----------------------|--------|-------------------------|---------|
| Add'l Fonts & Chars   | 13.95  | PFS: Access             | 45.95   |
| Alphabet Zoo          | 18.95  | PFS: Write              | 74.95   |
| Alpha Plot            | 24.89  | PFS: File               | 74.95   |
| Amazon                | 27.49  | PFS: Report             | 74.95   |
| Apple Mechanic        | 18.95  | PFS: Graph              | 74.95   |
| Arcade Boot Camp      | 20.95  | Pinball Construction    | 28.89   |
| Archon                | 29.89  | Pixit                   | 34.95   |
| ASC II Pro            | 80.89  | Planetfall              | 25.89   |
| Axis Assassin         | 14.89  | Practical II            | 48.95   |
| Bag of Tricks         | 25.89  | Print Shop              | 34.95   |
| Bank Street Writer    | 43.95  | Print Shop Gr. #1       | 17.95   |
| Bank Street Speller   | 45.95  | Pronto DOS              | 18.49   |
| Baron                 | 34.95  | Quest                   | 24.95   |
| Beagle Bag            | 18.49  | Rendezvous w/Rama       | 27.49   |
| Beagle Basic          | 21.89  | Rescue Raiders          | 24.95   |
| Beagle Graphics       | 35.49  | Sargon III              | 31.89   |
| Beneath Apple DOS     | 13.95  | Seastalker              | 23.95   |
| Beneath Apple PRO DOS | 13.95  | Sensible Speller        | 78.89   |
| Beyond Cast. Wall.    | 24.89  | 7 Cities of Gold        | 28.89   |
| Blazing paddles       | 34.95  | Shadowkeep              | 27.49   |
| Bruce Lee             | 24.95  | Sideways                | 36.89   |
| Castle Wolfenstein    | 19.89  | Silicon Salad           | 15.49   |
| Cat Graphics          | 20.95  | Skyfox                  | 28.89   |
| Chpsh Load Runner     | 23.95  | Snooper Trps 1 or 2     | 27.95   |
| Complete Graphics     | 55.95  | Solo Flight             | 24.95   |
| Computer Baseball     | 25.89  | Sorcerer                | 27.89   |
| Computer Quarterback  | 27.95  | Speed Reader II         | 44.95   |
| Copy II+              | 21.89  | Spitfire Simulator      | 25.89   |
| Coveted Mirror        | 21.95  | Spy vs. spy             | 24.95   |
| Crossword Magic       | 33.95  | Squire                  | 34.95   |
| Crypt of Medea        | 21.95  | Standing Stones         | 28.89   |
| Cut & Paste           | 35.89  | Starcross               | 29.95   |
| Dazzle Draw           | 41.95  | Sticky Bear ABC         | 24.95   |
| D-Code                | 24.89  | Basket Bounce           | 24.95   |
| Deadline              | 29.89  | BOP                     | 24.95   |
| Disk Arranger         | 20.95  | Math                    | 24.95   |
| Disk Drive Analyzer   | 21.95  | Numbers                 | 24.95   |
| DiskQuick             | 18.49  | Opposites               | 24.95   |
| Disk Repair Kit       | 20.95  | Reading                 | 24.95   |
| Dollars & Sense       | 67.95  | Shapes                  | 24.95   |
| Dollars & Sense IIIC  | 78.95  | Super-Text Pro          | 119.95  |
| DOS Boss              | 14.49  | Suspect                 | 26.89   |
| Double-Take           | 21.49  | Take 1                  | 41.95   |
| Enchanter             | 24.89  | Terrain Logo            | 62.95   |
| Essential Data Dup    | 47.89  | Think Tank              | 98.95   |
| Expedition Amazon     | 24.95  | Time is Money           | 62.89   |
| Fahrenheit 451        | 27.49  | Tip Disk #1             | 13.89   |
| Fat Cat               | 21.89  | Transylvania            | 24.95   |
| Financial Cookbook    | 35.89  | Triple-Dump             | 24.89   |
| First Class Mail      | 69.95  | Tycoon                  | 34.95   |
| Flex Type             | 18.89  | Typefaces               | 13.89   |
| Flashcalc             | 69.96  | Typing Tutor III        | 33.95   |
| Flight Sim II         | 33.89  | Ultima II               | 41.95   |
| Fontrix               | 44.95  | Ultima III              | 35.89   |
| Fontpaks 1 thru 11 ea | 11.95  | Ultimate City           | 18.89   |
| Format II             | 94.95  | Visible 6502            | 31.89   |
| Frame-Up              | 18.89  | Witness                 | 23.95   |
| General Manager II    | 144.95 | Wizardry                | 31.89   |
| Graphics Magician     | 36.89  | Word Attack             | 32.45   |
| GPLE                  | 29.89  | Xyphus                  | 24.95   |
| Hard Hat Mack         | 24.89  | Zaxxon                  | 24.89   |
| Hitchhiker's Guide    | 26.89  | Zork I                  | 23.89   |
| Home Accountant       | 47.95  | Zork II or III          | 26.95   |
| Infidel               | 27.89  | 80 Col. 64K Card        | 99.95   |
| I.O. Silver           | 19.89  | Apple Cat II            | 223.95  |
| Karatika              | 24.95  | Cricket                 | 125.95  |
| King's Quest          | 34.95  | Echo +                  | 107.95  |
| Knight of Diamonds    | 21.89  | Grappler +              | 99.95   |
| Last Legacy           | 14.89  | Buffered Grappler +     | 182.95  |
| Legacy of Liygamyn    | 25.89  | Koala Pad               | 79.95   |
| Magic Paint Brush     | 24.95  | Hayes Joysticks         | CALL    |
| Magic Window II       | 93.95  | Micromodem IIE          | 234.95  |
| Map Pack              | 13.95  | Microsci A2 Drive       | 1899.89 |
| Master Type           | 25.95  | Microsci IIC Drive      | 229.89  |
| Math Blaster          | 32.45  | Mockingboards           | CALL    |
| Mico Bokbook          | 25.95  | Networker               | 99.95   |
| Millionaire           | 34.95  | Orange Interface        | 64.95   |
| Multiplan             | 129.95 | 16K Ram Card            | 64.85   |
| Murder on the Zind.   | 28.89  | System Saver Fan        | 63.89   |
| Music Construction    | 23.89  | Wildcard 2              | 98.89   |
| NATO Commander        | 24.95  | Gemini-10X              | 249.95  |
| Objective Kurk        | 25.89  | Colored printer ribbons | CALL    |
| One-On-One            | 28.89  | Okidata Printers        | CALL    |
| Paper Graphics        | 34.95  | Amdek Monitors          | CALL    |
| Pensate               | 20.95  |                         |         |

## SILICON EXPRESS

4555-11 Groves Road  
Columbus, Ohio 43232  
614/868-5007

Your Toll Free Access Outside Ohio

**1-800-228-0755**

Prices are subject to change without notice. We accept Visa & MasterCard. Please 3% for handling. Personal checks allow 3 weeks. Shipping charges are \$3.00 for software & \$10.00 for printers & monitors. Outside U.S. write: Ohio residents add 5 1/2% Ohio sales tax.

CIRCLE 231 ON READER SERVICE CARD

Finally, the Imagewriter supports up to 175 custom-designed characters—anything from a new font to Greek characters to math symbols. Designing your own characters and downloading them to the Imagewriter RAM is not simple, and Apple's documentation in Part 1 of the Imagewriter users' manual is opaque. If you need only one or two characters, you may get by with this information, but if you need a whole character set, your best bet is to purchase a commercial font downloader. One such program is Font Downloader from Micro-W Distributing, P.O. Box 113, Pompton Plains, NJ 07405; (201) 838-9027. Incidentally, versions of this program also support the Epson FX/JX, Apple DMP, and Okidata Microline 92/93 printers.

### ► MEMORY CLASHES

*Q. I am having problems with some of my programs. I am able to enter the programs normally, but when I try to run them, they turn into garbage such as USR LET OVERFLOW 32 STORE. The program bombs, and I get an error message such as NEXT WITHOUT FOR ERROR. What am I doing wrong?*

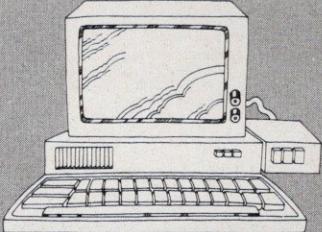
A. This type of error is usually due to conflicting memory use. The area of memory that stores your program is being overwritten by something else. You could be loading a shape table on top of your program or, more likely, you could merely be using the hi-res screen.

Applesoft programs are normally stored at memory location 2049 and up. Directly above your program in memory, BASIC stores your variable names and pointers to their actual location in memory. The hi-res screen starts at location 8192, giving you a grand total of 6144 bytes for your program and its variable table. If your program's variable table extends into the hi-res-screen area, the variables will be set to 0 when an HGR command is executed. If your program also extends into the hi-res-screen area, the end of the program will turn to garbage.

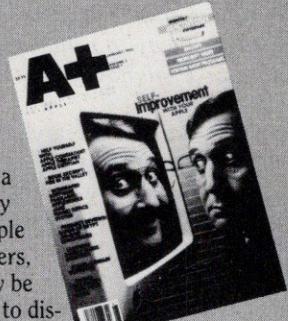
There are three ways to solve this conflict. The first, and simplest, solution is to use hi-res page 2. Replace all HGR instructions with HGR2, and you'll gain an additional 8K for your program and its variable table. If your program uses the text area at the bottom of the hi-res screen, or if you are using both hi-res pages for graphics, this solution will not work. The four-line text area below hi-res page 2 is not easily accessible from BASIC.

The second solution is to relocate

If You Work  
With An  
Apple Computer...



...You May Be Entitled  
To A Corporate  
Discount On



If you work in a company with Apple computers, you may be entitled to discounts up to 50% on A+, The Independent Guide for Apple Computing.

You need the professional advice and in-depth information from Apple experts you'll find every month in A+. You'll discover new business applications and products for your Apple—whether it's the Apple II, II+, IIe, IIc, III, Lisa or Macintosh.

For more information about the Corporate Subscription Program, complete and mail this coupon. For faster service, call Daniel Rosensweig collect at 212-503-5354.

**THE MORE YOU ORDER  
THE MORE YOU SAVE!**

ZIFF-DAVIS Computer Publications  
Corporate Subscription Program  
One Park Avenue, 4th Floor  
New York, NY 10016

Attn: Daniel Rosensweig

YES, I want more information on saving money through the ZIFF-DAVIS Corporate Subscription Plan.

Please have Dan Rosensweig call me at ( )

Name \_\_\_\_\_

Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ Zip \_\_\_\_\_

FG9C

your program above the hi-res page or pages. If you use this method, the BASIC work space can extend from 16384 (if your program uses only one hi-res page) or 24576 (if it uses both) to 38400, the beginning of DOS. You'll have 21.5K or 13.5K, respectively. If you move your program, you may have problems with string variables, as most string manipulations cause BASIC to create a copy of the string in high memory, starting at 38400 and building down. You can deal with them by making extra-careful use of string manipulation.

To move your program, use the following code as the Hello program on your disk (or as a start-up program for your actual program):

```
10 LOC = 16384
20 HA = LOC/256: LA = LOC-HA*256
30 POKE LOC-1, 0
40 POKE 103, LA: POKE 104, HA
50 PRINT CHR$(4); "RUN your
program"
```

Change LOC to 24576 if you are using both hi-res pages, and change your program in line 50 to the name of your program. Save this program before running it, because it self-destructs after running once. Locations 103 and 104 are the pointers BASIC uses to determine where a program starts. Once you change them, BASIC loses track of this program and loads and runs the program specified in line 50 at the location specified in line 10.

Your final option is to compress the program so that it is smaller or to split the program so that it surrounds the hi-res pages. These options are more difficult to work with, as your programs will effectively be uneditable once they are compressed or split. You'll also have to purchase the utilities to perform the compression or splitting. (Beagle Bros. has such utilities).

#### ► RGBLUES

**Q.** I have a Taxan RGB Vision 1 and a Taxan 410-64 interface card in my Apple IIe. The card works perfectly for 80-column text and normal graphics, but when I use a double-hi-res program, such as Beagle Graphics, I don't get the extra colors—only the usual violet, green, orange, and blue. What's wrong?

**A.** Apple's double-hi-res mode requires that the video signal be handled very differently from the way it is in the standard hi-res mode. (Technically, the clock rate on the double-hi-res video signal is twice as fast as it is on the nor-

# Replace 19 floppies with 1 diskette?

## TeamMate does it!

Now your Apple IIe can have high capacity data storage like a Winchester while you still enjoy the convenience and familiarity of a standard floppy.

TeamMate's flexible disk drive from **Eastman Kodak** gives you 2.78 megabytes of data storage on one rugged diskette. You get unlimited expandable storage and access to Winchester capabilities...at a very low cost.

Installation takes only minutes, thanks to TeamMate's software transparency with ProDOS. No software drivers or modifications are needed.

Here are the TeamMate subsystems available now:

**TM 2203**...A single Kodak flexible disk drive giving you 2.78MB on one diskette.

**TM 2206**...Two Kodak drives for a total of 5.56MB of online, expandable storage.

**TM 2210**...10MB of Winchester storage, with the option of later adding a Kodak flexible drive.

**TM 2213**...A 10MB Winchester combined with the Kodak 2.78MB flexible drive for built-in backup.

**TM 2232**...32MB of Winchester storage—the ultimate in high performance mass storage.

| TeamMate Model  | Quantity 1-2 | Quantity 3-9 | Quantity 10+ |
|-----------------|--------------|--------------|--------------|
| TM 2203         | \$ 895       | \$ 761       | \$ 671       |
| TM 2206         | \$1295       | \$1101       | \$ 971       |
| TM 2210         | \$1295       | \$1101       | \$ 971       |
| TM 2213         | \$1695       | \$1441       | \$1271       |
| TM 2232         | \$2195       | \$1866       | \$1646       |
| Kodak Diskettes | \$ 15        | \$ 14        | \$ 12        |

All TeamMate subsystems include drive(s), controller, TeamMate chassis, power supply, necessary cabling, and manual. Kodak subsystems include a Kodak diskette.



Price includes UPS surface shipping.  
Allow 3-4 weeks delivery.



Yes, I want to expand data storage on my Apple IIe. Please send me the following:

Quantity:

\_\_\_\_\_ TeamMate 2203 @ \_\_\_\_\_ ea.  
\_\_\_\_\_ TeamMate 2206 @ \_\_\_\_\_ ea.  
\_\_\_\_\_ TeamMate 2210 @ \_\_\_\_\_ ea.  
\_\_\_\_\_ TeamMate 2213 @ \_\_\_\_\_ ea.  
\_\_\_\_\_ TeamMate 2232 @ \_\_\_\_\_ ea.  
\_\_\_\_\_ Kodak diskettes @ \_\_\_\_\_ ea.

Ship To:

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ Zip \_\_\_\_\_

Daytime Phone \_\_\_\_\_

Subtotal \_\_\_\_\_

CA & MA residents,  
add sales tax \_\_\_\_\_

For optional UPS  
Blue Label delivery  
add \$10 per unit \_\_\_\_\_

Total Enclosed \$ \_\_\_\_\_

Payment Enclosed:  
 check  money order  
 cashier's check

Make check payable to:  
Data Technology Corporation  
Dept. TM-1A  
2525 Walsh Avenue  
Santa Clara, CA 95051

For fastest delivery, call:  
In California, call collect:  
408-986-9545

**1-800-824-3724**

CIRCLE 250 ON READER SERVICE CARD

# Sweet Sounds from your Apple

Apple graphics have come a long way, but unless you have a **MOCKINGBOARD**, you're listening to the same old Apple™ sound.

**MOCKINGBOARD™** owners know the thrill of listening to **MOCKINGBOARD** music, sound and speech routines contained in the most popular software. You can enjoy such titles as **Music Construction Set\***, **Sky Fox**, **One on One**, **The Spy Strikes Back**, **Exodus Ultima III**, **Willy Byte**, and **Broadside**, to name a few.

In addition to just listening, you can also program your own music, sound effects and speech. Now, **Sweet Micro Systems** has made programming simpler with the introduction of three new, dynamic utility programs.

With the **SPEECH DEVELOPMENT SYSTEM**, you can easily create customized speech at home using simple bar charts to change speed, volume and even inflection. Retails for \$39.95.

**FOREIGN LANGUAGE RULE TABLES** allow your computer to speak to you in French, German and proper British English. Retails for \$24.95.

**THE DEVELOPERS' TOOLKIT** provides easy-to-use software allowing you to incorporate music, sound and speech into your own **BASIC** programs. In addition, the Toolkit contains numerous other helpful utilities to simplify programming and make learning fun. Retails for \$29.95.

MOCKINGBOARD A is a stereo music and sound synthesizer with six voices. Suggested retail price \$99.00. This model can be upgraded for speech synthesis with the purchase of a **MOCKINGBOARD B** speech upgrade. Suggested retail price \$89.00.

MOCKINGBOARD C is all of the above in one package. Suggested retail price \$179.00. Mockingboard A, B and C are compatible with the Apple II, II+ and Ile.

MOCKINGBOARD D is a stereo music, sound and speech synthesizer for the Apple Ile. Suggested retail price \$195.00.

\*The new Mockingboard D supports Music Construction Set at the time this ad was sent to press. Check with your dealer for new titles that are being written for this Mockingboard.

To hear Mockingboard perform, visit your local dealer or call (401) 941-1130. For the name of your local dealer that carries Mockingboard, call 1 (800) 341-8001.

Apple™ is a registered trademark of the Apple Computer Company.

## MOCKINGBOARD

Sweet Micro Systems, Inc.  
50 Freeway Drive, Cranston, RI 02920

CIRCLE 146 ON READER SERVICE CARD

mal Apple video signal.) Some RGB-interface cards do not catch the accelerated signal and cannot generate the extra colors; double-hi-res graphics have only the standard hi-res colors. The Taxan card, unfortunately, is one of them. Taxan informs us that it is "working on a fix," so by the time you read this issue, you may be able to update the card.

We urge all readers to try out RGB-interface/monitor combinations at your dealer before you buy. A colleague and I have tested many combinations of RGB interfaces and monitors from an aesthetic standpoint. We prefer graphics on standard composite monitors and use a monochrome monitor for 80-column text. Two monitors may not be as convenient as one, but until the RGB technology settles down, using a couple of monitors may be the best way to go.

### ► OVERSTRIKE

**Q. Is it possible to overstrike arbitrary characters with MacWrite?**

**A.** Sorry, no. In MacWrite, you can create all commonly used international diacritical marks. To produce è, for example, type **OPTION** and then type **e**. When you press **e**, the letter with the accent will appear. You can similarly superimpose other accents, the circumflex, and umlaut on any vowel. Experiment a bit with the desk accessory **Keycaps**. All of these marks are produced in the same manner: **OPTION** mark followed by letter. Microsoft Word functions in the same way as MacWrite does in this respect.

If your needs go beyond marks over vowels, you have two options at present. One way to produce overstrike characters is to use **MacPaint**. You can type the overstrike marks separately and then use the lasso to drag them to their proper location over the desired letter. As difficult as this procedure might seem, it does give you complete control over your text.

Another approach is to create new fonts with the desired overstrike characters in place of the other characters. Apple has released the font editor and resource editor to developers, and they are commonly found in users' group Mac libraries. These tools have bugs, but they work. With them, you can design the overstrike characters you require and have them at your beck and call on the font menu of MacWrite. +

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

# Beagle Bros Apple® Software Report

"All the News That Fits"

Ad Number 201

Spring 1985

## Utilities

### D CODE™

**NEW!**

\$39.95 (Compatible with any version of Apple II/DOS 3.3 and ProDOS™)

**PROGRAM PACKER:** D CODE squeezes every wasted and unused byte out of your programs to save valuable memory space and increase program speed and efficiency. Combine lines, shorten variables and/or remove REMarks. Also locate wasted code that can't possibly be executed.

**PROGRAM PROOFREADER:** Errors are caught as you type. Scan entire programs to uncover potential crashes.

**SUPER TRACERS:** When your program stops or crashes, ask to see the last 10 (or up to 10,000) statements that were executed, giving you an instant *history* of your program. "Live" tracing too, with each executing statement and current variable values printed in a sealed-off text window.

**MORE:** Set up de-bugging "breakpoints" so your program stops when you want. Search for strings and variables, *fast*—Almost any program can be searched in about 2 seconds!

### GPLE™

\$49.95 (Compatible with any version of Apple II/DOS 3.3 and ProDOS™)

**GPLE** is Beagle Bros' "GLOBAL PROGRAM LINE EDITOR". It works like a word processor for your Applesoft program lines:

**INSERT AND DELETE** characters and words in your programs. No more awkward "cursor-tracing" to make changes.

**SEARCH AND REPLACE:** Find every occurrence of a string or variable in your programs. Or *replace* any word with any other. For example, change all X's to ABC's, or all "Horses" to "Cows".

**FUNCTION KEYS:** Define your own Apple "function keys". ESC-1 can Catalog drive 1, ESC-N can type your name, etc.

### DOUBLE-TAKE™

\$34.95 (Compatible with any version of Apple II/DOS 3.3 and ProDOS™)

**2-WAY SCROLLING:** Listings and disk Catalogs scroll up and down, making file names and program lines easier and faster to find. Change scroll-direction with the Arrow keys. Machine language listings and Hex-ASCII dumps scroll two-ways too.

**BETTER LIST FORMAT:** Each Applesoft program statement is on a new line for *fast* program tracing and de-bugging.

**AS="ABC" ← VARIABLE-DISPLAY:** Instantly prints all of your program's variables in the order used, with their current values

**X: 3.14159 ← CROSS-REFERENCE:** Alphabetizes every variable your program uses, and displays them with their line numbers

Plus AUTO-LINE-NUMBER, new improved Re-Number, Hex-Dec Converter, Program Stats, eliminate or re-define the cursor...



10 TEXT: HOME: FOR P=0 TO 255: VTAB: 1:

NORMAL: PRINT "POKE 243,;"P: POKE 243,P:

LIST: NEXT: REM Try replacing the 243's with 50's

### BEAGLE BASIC™

\$34.95 (Compatible with Apple IIe or 64K II+/DOS 3.3)

**BETTER APPLE BASIC:** Put Applesoft in RAM so you can change it. Adds new commands like *Else*, *Swap*, *Tone*...

### DOS BOSS™

\$24.00 (Compatible with any version of Apple II/DOS 3.3)

**CHANGE DOS:** Change Catalog command to *Cat*, or "Syntax Error" to "OOPS", or anything you want. **Protect your programs:** An unauthorized Save-attempt can print "Not Copyable". List Prevention, other useful tips and fascinating experiments. DOS Boss will teach you a *ton* about Apple programming!

### SILICON SALAD™

\$24.95 (Compatible with any version of Apple II/DOS 3.3)

**100+ PROGRAMS:** *Program Splitter* makes room for hi-res in big programs, *Disk Scanner* finds bad sectors, *DOS-Killer* adds 2 disk tracks, *2-Track Cat* doubles number of files, *Text Imprinter* converts text to hi-res...

### UTILITY CITY™

\$29.50 (Compatible with any version of Apple II/DOS 3.3)

**21 UTILITIES:** List-formatter puts each statement on a new line, create multi-column catalogs, invisible/trick file names, etc. For the Applesoft programmer; very educational.

## Graphics

### ALPHA PLOT™

\$39.50 (Compatible with any version of Apple II/DOS 3.3)

**HI-RES DRAWING & TYPING:** (6 colors, 280x192 pixels) on both hi-res pages. Draw and manipulate all kinds of images and store on disk. Compress pic to 1/3 disk space.

### APPLE MECHANIC™

\$29.50 (Compatible with any version of Apple II/DOS 3.3)

**SHAPE ANIMATION:** Your drawings are converted into hi-res "shape tables" so your programs can perform animation with Apple's built-in DRAW & XDRAW commands. *List and Learn* disk demos teach you hi-res programming.

**FANCY TYPE:** Six proportionally-spaced large and small fonts are on the Apple Mechanic disk, with 26 more on our *Apple Mechanic Typefaces* disk (sold separately: \$20.00).

### BEAGLE GRAPHICS™

\$59.95 (Compatible with Apple IIc or 128K IIe/DOS 3.3 and ProDOS™)

**DOUBLE HI-RES:** 16 hi-res colors and 192 x 560 pixels (double resolution) on your Apple IIc or 128K Apple IIe.

**AS AN ARTIST:** you can draw, fill and label double hi-res pictures using just the keyboard, or your AppleMouse™, joystick, Koala Pad™ or Graphics Tablet. Easy-to-use icon-assisted *cut & paste* features make graphic manipulations easy. Any image section may be altered or re-located.

**OR, AS A PROGRAMMER:** you get 33 new commands for drawing, filling and manipulating double-res images. You can convert normal programs and pictures to double-res, save and load any image section, compress picture data to 1/3 disk space, produce double-res "slide shows" and more.

**EXCELLENT REVIEWS**—see Jan-85 *A-Plus Magazine*.

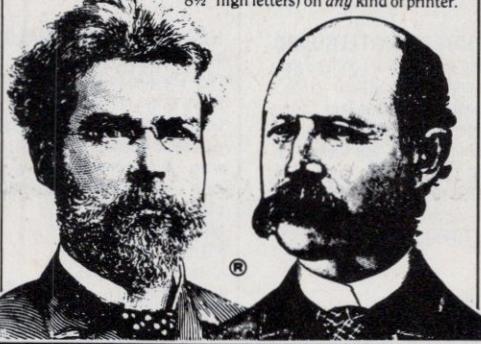


### TRIPLE-DUMP™

\$39.95 (Compatible with any version of Apple II/DOS 3.3 and ProDOS™)

**PRINT ANY IMAGE** on your dot matrix graphics-capable printer: (1) Hi-Res and Double Hi-Res graphics. (2) Lo-Res and Double Lo-Res graphics. (3) 40 and 80-Column text. All print routines can be used with absolutely no programming knowledge. *Or use Triple-Dump's routines in your Applesoft programs.*

**GIANT BANNERS TOO:** Print big signs and messages (with 8½" high letters) on any kind of printer.



**Beagle Bros**  
MICRO SOFTWARE

*The Apple Programmer's Best Friend*

**BEAGLE BROS, INC.**  
3990 OLD TOWN AVENUE, SUITE 102C  
SAN DIEGO, CA 92110  
PHONE 619-296-6400

## Games

### I. O. SILVER™

**NEW!**

\$29.95 (Compatible with any version of Apple II)

**I. O. SILVER** is both a thinking person's strategy game and a fast-action arcade game. Your job is to create a hi-res "Super Computer" while avoiding a pesty gang of computer bugs. Excellent high-speed animation and hi-res action.

**SOURCE CODE:** For interested programmers, we are offering fully-commented *I. O. Silver* Source Code on three 2-sided disks for \$30. Buy the game first; info is included.

### BEAGLE BAG™

\$29.50 (Compatible with any version of Apple II)

**12 GREAT GAMES** voted by software buyers to Softalk's "Most Popular" list. The best Apple game bargain around.



### And...

### FATCAT™

**APPLE DISK ORGANIZER**

\$34.95 (Compatible with any version of Apple II/DOS 3.3 and ProDOS™)

**ORGANIZE YOUR DISK LIBRARY:** Fatcat "reads" all of your DOS 3.3 and ProDOS disk catalogs into one or more "Master Catalog" for fast searching, sorting and printing. Update your library by simply reading new or altered disks.

**ALPHABETIZE FILE NAMES** in catalogs—or re-arrange in any order. *Compare* files too, and find the differences.

### DISKQUIK™

\$29.50 (Compatible with Apple IIc or 128K IIe/DOS 3.3)

**AN EXTRA DRIVE:** Make your IIc or 128K IIe think it has an extra drive connected to Slot 3. It's just like using a super-fast (hard-disk speed), silent drive. Catalog with a "CATALOG,S3" command. Save and load all kinds of files to and from RAM with normal commands (holds about *half* the data of a floppy).

**MANY USES:** For example, load often-used files into memory when you boot up, so they are available when you need them.

### PRONTO-DOS™

\$29.50 (Compatible with any version of Apple II/DOS 3.3)

**TRIPLE SPEED** loading and saving (hi-res pictures load in under 3 seconds!). New *TYPE* command displays text file contents. Move DOS for an extra 10K of usable memory.



Visa/MasterCard or COD, order Toll Free  
ALL 50 STATES/24 HOURS (orders only)

**1-800-227-3800** ext.1607

**BEAGLE SOFTWARE IS ON THE SHELVES  
AT YOUR LOCAL APPLE SOFTWARE STORE.**

We also ship *FAST* via First Class Mail:

|   |             |  |             |
|---|-------------|--|-------------|
| <input type="checkbox"/> Alpha Plot       | ... \$39.50 | <input type="checkbox"/> Fatcat        | ... \$34.95 |
| <input type="checkbox"/> Apple Mechanic   | ... 29.50   | <input type="checkbox"/> Flex Type     | ... 29.50   |
| <input type="checkbox"/> A.Mech.Typefaces | ... 20.00   | <input type="checkbox"/> Frame-Up      | ... 29.50   |
| <input type="checkbox"/> Beagle Bag       | ... 29.50   | <input type="checkbox"/> GPLE          | ... 49.95   |
| <input type="checkbox"/> Beagle Basic     | ... 34.95   | <input type="checkbox"/> I. O. Silver  | ... 29.95   |
| <input type="checkbox"/> Beagle Graphics  | ... 59.95   | <input type="checkbox"/> ProntoDOS     | ... 29.50   |
| <input type="checkbox"/> D Code           | ... 39.95   | <input type="checkbox"/> Silicon Salad | ... 24.95   |
| <input type="checkbox"/> DiskQuik         | ... 29.50   | <input type="checkbox"/> Tip Disk #1   | ... 20.00   |
| <input type="checkbox"/> DOS Boss         | ... 24.00   | <input type="checkbox"/> Triple-Dump   | ... 39.95   |
| <input type="checkbox"/> Double-Take      | ... 34.95   | <input type="checkbox"/> Utility City  | ... 29.50   |

ADD \$1.50 FIRST CLASS SHIPPING (ANY SIZE ORDER).

COD add \$3.00/California add 6% Overseas add \$4.00

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

\_\_\_\_\_

ZIP \_\_\_\_\_

VISA/MCARD# \_\_\_\_\_

EXPIRATION DATE \_\_\_\_\_

\_\_\_\_\_

MAIL TO BEAGLE BROS.

WE PROCESS ALL ORDERS IMMEDIATELY.



## RATES AND INFORMATION

Listings are grouped by category and consist of a bold lead line (23 characters maximum), 7 lines of ad copy (45 characters per line), plus 4 lines of company name, address and telephone number.

Listings are published only on a 3 issue basis at \$150. per issue (\$450. total). Additional lines are available @ \$15.00 per line. Copy will have a set format and remain the same for all 3 months. Enhance the appearance of your ad by including your Logo at an additional cost of \$110. per issue (\$330. minimum extra charge). Pre-payment is required by check, money order, or American Express, Diners Club, MasterCard, Visa credit cards. Closing Date 1st of 2nd month preceding cover date.

Send copy and remittance to A+, APPLE DIRECTORY, 5th FLOOR, 1 PARK AVENUE, NEW YORK, NY 10016. Call (212) 503-5115 to place an order. Call (212) 503-5426 for additional information or assistance.

## HARDWARE/ COMMUNICATIONS

### CABLE TV

Jerrold equipment including new Jerrold Tri-Mode System, Hamlin, SB-3, N-12 Mini-Code, Zenith, Z-Tac and more. All products enable you to pick-up most cable stations. Best prices around! For information, send \$1.00 plus SASE or call (312) 434-6788. SWENSENS ELECTRONICS 6839 So. Maplewood Chicago, IL 60629 NO ILLINOIS ORDERS ACCEPTED!

## HARDWARE/ PERIPHERALS

### APPLE IIc INTERFACE

Now use your Apple IIc with a parallel printer. Our SP-3 receives at BAUD rates from 300 to 19200, all switch selectable. It has a 6ft. cable and connection for another printer. \$74.95 when powered by printer. \$79.95 with wall transformer, plus \$2 shipping. Dealers inquiries invited. CNR ENGINEERING PO Box 492 Piscataway, NJ 08854 (201) 752-0144

### MODEM SYSTEM FOR APPLE II

The "MultiModem IIe" from Multi-Tech Systems provides Apple II, II+ and IIe users with 300 bps dial-up communications. Modem in single pc card that plugs into Apple expansion slot. Includes complete software on diskette, DOS, CP/M, Hayes compatible. Autodial, auto-answ, logon, menu, file transfer, number directory.

## MULTI-TECH SYSTEMS

MULTI TECH SYSTEMS, INC.  
82 Second Avenue S.E.  
New Brighton, Minnesota 55112  
(612) 631-3550. TWX 910 563 3610

## MACINTOSH

### MAC ACCOUNTING

Utilize the capabilities of Multiplan with the Accounting System most useful in Tax Return Preparation (Corp. & Indiv). Instructions and step by step examples included on disks. Financial Statements generated. Indicate Accounting, Tax Return, or A/R Aging. \$29.50 per disk. All for \$75. Multiplan Required.

BAGEANT ACCOUNTING SERVICES  
6200 Beach Blvd.  
Jacksonville, FL 32216  
(904) 398-3003

## SOFTWARE/ ACCOUNTING

### BOOKKEEPING SYSTEM

Introducing HAMS™: The One Accounts Mngt. System for the Home and Small Business. RECONCILES CR. CARD STATEMENTS & Check Books Up to 100 Accounts—Any mix of: INCOME, CHECKING, SAVINGS, CASH, CREDIT, EXPENDITURES. Default entries: HELP screens; Fully audited Del' Rpt.s + X-ref Summaries; Compl User Man Unlocked; Req. 80-col IIe; 2-drives; DM Printer \$59.95 + \$2.50 Ship; NY Res. add Sales Tax.

HILDRETH SOFTWARE, INC.  
Dept. AA  
127 Sannita  
Rochester, NY 14626

## PUBLICATIONS

### APPLE DMP USERS IT'S HERE

Here's the book you've been waiting for. How to program your Dot Matrix printer New 100 page manual gives all printer commands in Applesoft BASIC. Great for beginners. Detailed instructions, examples, and glossary, plus 16 ready-to-run programs. \$9.95 ppd. Money-back guarantee. FREE details. For image writer, too.

TIMBERLINE PRESS  
P.O. Box 211326  
Denver, CO 80221

## SOFTWARE/ BUSINESS

### DIRECT MAIL II

Have a word with your Data Base! A Mail Merge that selects data from your Visifile, PFS, General Manager, DB Master or DIF file and merges it into any format built with your text processor. Fast processing. Easy to use. Builds mailing lists. Performance guaranteed. Apple II+//le compatible. \$99.95 plus shpg.

VENTURE SOFTWARE INC.  
Box 6502-A  
Nashua, NH 03063  
(603) 889-2556

### NOTES FOR APPLEWORKS

A respected reference for serious users. Review, 4 tutorials, 100 tips for efficient use, 12 applications templates, 2 Keyboard templates. Information on custom printers, extended memory, multi-column text, graphics; mailmerge, undocumented problems, VisiCalc, and DIF files. 2nd edition, \$10 postpaid.

ROBERT ERICSON, AICP  
POB 16064  
Rumford, RI 02916

## SOFTWARE/ BUSINESS PROJECT MANAGEMENT

### DISCOVER PROJECT PLANNER

Turn sketchy ideas into actual projects & draw project graphs (in color), schedule & control projects, analyze alternatives with the powerful Critical Path Method. Uniquely visual & intuitive. Available for Apple II/II+/IIe/IIc. DemoKit \$10. Complete product with attractive manual \$150. VISA/MC. Dealer inquiries invited.

APPLITECH SOFTWARE, INC.  
381 Harvard St.  
Cambridge, MA 02183  
(617) 497-8268

### APPLE COMPATIBLE HARDWARES

1/4 HEIGHT FLOPPY DISK DRIVES for II, II+ & IIe-Direct Drive System, automatic DOS selection, with cable .....ONLY \$129.95. 12" GREEN OR AMBER MONITORS—with high resolution .....ONLY \$99.00. VISA, MC, COD/100% Money Back Guarantee.

VIDEO LOGIC CORPORATION  
597 N. Mathilda Avenue  
Sunnyvale, CA 94086  
(408) 245-8622

### 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 pictures of your choice. The possibilities are limitless! Send \$34.95 + \$2 postage and handling (CA residents add \$2.10 sales tax) to:

BRIMARK INNOVATIONS  
9821 Yolanda Ave.  
Northridge, CA 91324

## HARDWARE/ POWER PROTECTION

### MODEM PROTECTION-TELGUARD

Don't risk static discharge or lightning damaging your modem. TELGUARD protects modems against brief high voltage surges. Powerline surge suppressors do not protect against telephone lines; you need TELGUARD. Easy to install. To order TELGUARD, call toll free 1(800)237-6360, ext 307. \$18.95 + \$2 S/H (FL 1(800)282-1152, ext. 307). CIS 70436, 1611.

MICROSAVE  
PO Box 1236  
Kernersville, NC 27285  
(919) 993-4391

### NEW! MINUTE MANUALS for

The Dot Matrix Printer \$12.95  
PFS: File/Report/Graph/Write \$12.95  
Apple Writer (all versions) \$ 9.95

Learn quickly and easily basic and advanced procedures for your printer and software. Step by step instructions, many helpful hints. Send check, MO, Visa/MC + \$2 shipping to:

MinuteWare  
P.O. Box 2392  
Columbia, MD 21045  
(301) 995-1166

## ► SOFTWARE/COMMUNICATIONS

### BULLETIN BOARD SOFTWARE

"A.B.B.S 5.0" the leading Apple BBS can turn your II+/e/c into an online system of unique conferences for your own business, club or hobby. Use most 300/1200 modems, & standard phone lines. Dial-up 703-471-0610 for an A.B.B.S demo. SPRING SPECIAL: \$59—complete system. For orders VISA/MC or info, write or call:

SOFTWARE SORCERY INC.  
8375 Leesburg Pike, Suite 427A  
Vienna, VA 22180  
(703) 471-0572

## ► SOFTWARE/DATA MANAGEMENT

### GOT THE DATABASE BLUES?

Tired of hard-to-use databases? The Data Reporter fits needs of novice users & database professionals alike. Step-by-step customizing feature allows you to create whatever applications you need & to change them as your needs change. Generate reports, labels, graphs, charts & more. It couldn't be easier! \$179.

SOFTWEST PROGRAMMING  
6910 Oslo Circle, Ste. 201  
Buena Park, CA 90620  
(714) 739-1899

## ► SOFTWARE/DENTAL

### DENTIVISION® ON MACINTOSH™

Dentists can now, thanks to modifications on the Mac's System, access detailed information including graphics on their patient's files at the press of the mouse. Files are unlimited (subject to memory available on disk). Requirement Filevision™. \$24.95 (bank check). Airmail shipping software & manual included. (Filevision™ program not included.)

B. MULLER  
P.O. Box 32 Postkantoor Charlottalei  
Antwerp 11, Belgium

## ► SOFTWARE/DEVELOPERS

### SOFTWARE DEVELOPERS

Software consultant looking for programs that run on standard Apple II and Macintosh PC's.

- Rental business management and inventory.
- Librarian software
- Dining room/meeting room scheduling.

Send details and asking price to:

DATAMARK INFORMATION SYSTEMS  
Route 2, Box 31B  
Pocahontas, IL 62275  
(618) 654-3698

## ► SOFTWARE/EDUCATIONAL

### TEACHERS!

THE ASSISTANT TEACHER Handles almost every aspect of test preparation, administration, grading, analysis, curving, averaging and reporting. Includes word processor, optical scanner support, much more! Extremely flexible and easy to use. Satisfaction guaranteed. \$150.00: Manual \$10.00.

OVERDRIVE COMPUTER CORPORATION  
1562 Moorings Dr.  
Reston, VA 22090  
(703) 471-0959

### GRADEBOOK MANAGEMENT

DA POMA GB GradeBook Management for microcomputers—lets a teacher or professor record & calculate grades on a microcomputer. Some of the features are: up to 8 classes per data disk, drop lowest score in a category, trend analysis, & much more! Available for Apple II's, MACINTOSH, & Radio Shack Model 4.

DA POMA INC.  
PO Drawer H  
Hondo, TX 78861-0240  
(512) 426-5932

### TEACHERS/PARENTS

TESTMASTER will allow you to create, administer, keep score & display/print reports for math, spelling fill in the blank, multi choice & true/false type tests. Each data disk can hold 30 tests and names & scores for 40 students. Easy to use. Apple II/II+/IIe. 29.95 \$ (CA add 6% tax)

NOBLE SOFTWARE CO.  
Route 1 Box 958  
Yreka, Ca 96097

### STOP GRADING TESTS!

Let the ASSISTANT TEACHER handle that chore. It will prepare, print administer, & automatically grade your tests, & will record, curve, & analyze all of your course grades. Reports in any format! Includes word processor, optical scanner support, & much more. Only \$150. Manual alone \$10.

OVERDRIVE COMPUTER CORPORATION  
1562 Moorings Dr.  
Reston, VA 22090  
(703) 471-0959

## ► SOFTWARE/ENGINEERING

### BEAM ANALYSIS PROGRAM

This DOS 3.3 program rapidly and accurately calculates the reaction and shear forces, moments, slopes and deflections in beams. Perfect for engrs., students, designers etc. Program guides user through input of data. Only \$50.00: send check or MO; NY add 4%. Money back guarantee. 48k Apple II+, IIe, IIc.

SYLCA CORPORATION  
33-47 14th Street, Dept. A  
Long Island City, NY 11106

## ► SOFTWARE/GAMES

### RENT SOFTWARE FOR APPLE

WE RENT and SELL a large selection of game, educational and utility programs. Club Membership costs only \$50 (Renewal \$15/yr). Rental Period 45 Days. Most Game Rentals Only \$4. No Deposits Required as long as Rentals Don't Exceed \$8. For Full Details Send \$1 to:

DELSON'S COMPUCLUB  
1980 Vanowen St.  
Canoga Park, Ca 91306  
(818) 887-5260

### QUESTBUSTERS™!

Which new adventure should you buy? QUESTBUSTERS, a monthly newsletter, offers in-depth reviews of new adventures MONTHS FASTER than any magazine plus free ads for trading games and clues, and a FREE game contest monthly! 12 ISSUES for \$15.00. Send \$2 for sample.

QUESTBUSTERS™  
202 Elgin Court Dept. A  
Wayne, PA 19087

### KNIGHTS OF WIZARDY!

Frustrated? Rookies and skilled players alike win with our system. Fully detailed maps containing all notes and information needed. \$6.00 each scenario. Master manual has secret tricks and step-by-step guidance to conquer all three scenarios, only \$15.00. All for only \$25.00.

MASTER MAZE SYSTEMS  
P.O. Box 12867 Dept A+  
Gastonia, NC 28053-6867

### WIZARDRY IV AND BEYOND

Why wait for Sir-tech? Conquer the WIZ-gods today! Create your very own death-dealing dungeon w/heating pools, elevators, chutes, pits, etc. Stock it with your pet-monsters, tantalizing treasure chests, & magical armor & weapons. The first COMPLETE scenario editor ever offered to the public. Why settle for just hint sheets/books? Buy Wizards Workbench! Introductory offer: only \$34.99!! (Send check or M.O. now.)

MAGICSOFT  
529 Farragut Place, Dept. A1  
Danville, CA 94526  
(415) 820-0711

### ULTIMA IV AND BEYOND

Why wait for Lord British? Conquer the EXO-gods today! Create your very own perilous planet. Complete with mountains, oceans, lakes, towns, castles, & dungeons. Stock it with menacing monsters, merciful mortals, & devious demons. Probe Exodus from the INSIDE! Our popular "LAVALITE WORLD" scenario included FREE! Whether you want to conquer a new world or create one, Exodus Construction Set is for you! The ONLY complete U3 editor! Send \$28.50 check or MO today!

MAGICSOFT  
529 Farragut Place, Dept. A1  
Danville, CA 94526  
(415) 820-0711

## EAMON ADVENTURES

Choose from units 1, 2, 3, 4 or brand new #5. Each with 18 adventures & utilities on 9 disks for \$35. 2 units/\$60. 3/\$85. 4/\$110. All 90 advs/\$135. Sample adv./\$5. Also Adventure Disk—a monthly double sided disk with hints/solutions to all types of advs. Included: a NEW Eamon adv. per issue. \$9 to start, then \$6/mo. or \$69.95/yr.

ADVENTURE DISK  
Box 216  
Mercer Island, WA 98040  
(206) 232-8272

## ADVENTURE HINT BOOKS

Lost in the maze? Stuck in the swamp? Help is here! We publish all the famous original ADVENTURE HELPERS hint books WITH MAPS—by America's top adventure game expert—for every adventure game, old & new. Send want lists (\$6 per game, postpaid) or write for free catalog—send SASE. Phone anytime.

ADVENTURE HELPERS-Dept. JS  
360 West Pleasantview Ave.  
Hackensack, NJ 07601  
(201) 646-9168

## PSYCHOSPHERE

Interactive space text adventure game. Truly an experience for the enthusiast. As the puzzles are solved, an exciting story of galactic evil unfolds. The mind is essential to defeat the ancient aliens. Who are the PSYCHONIANS, THRALL, and THE WATCHERS? Apple II, IIe, IIc, 64K and single disk drive. SOFTWARE UNLIMITED  
PO Box 6361  
Clearwater, FL 33518  
(813) 797-7815

## ► SOFTWARE/GRAPHICS

### 16-SCREEN DRAWING AREA

CHARTS UNLIMITED provides machine language speed and 16-screen drawing area for creating flowcharts, floor plans, organizational charts, and more for only \$195 on your 64K Apple II+/IIe. Mix 3 kinds of text with the predefined objects and symbols. Replicate, enlarge, shrink, or rearrange objects in only seconds.

GRAPHWARE, INC.  
5084 Mosiman Road  
Middletown, OH 45042  
(513) 424-0633

## PASCAL PROGRAMMERS

Pascal based programs for Apple II series. Full color character set editor, \$15.00. Full color graphics editor (plus above), \$35.00. animator uses 128K add-on memory card to store and show HUNDREDS of pictures (plus above), \$50. Fully compatible with Pascal and Turtle graphics. Send for free descriptions.

MICRO-DATA of CHAPEL HILL  
PO Box 92  
Chapel Hill, NC 27514  
(919) 967-2764

## ► APPLE DIRECTORY

### ► SOFTWARE/HOBBIES

#### THE GARDENER'S ASSISTANT

Have your Apple II+, IIe, or IIC layout your garden, and suggest plant/harvest dates and quantities to buy and plant. Select from over 50 vegetables or add your own. Garden layout is produced on your screen where you may use commands to modify the layout. Optional printer output. Garden(s) may be saved to disk. Apple II with one disk drive \$39.95. (Also available for IBM PC and Commodore 64).

SHANNON SOFTWARE, LTD.  
PO Box 6126  
Falls Church, VA 22046  
(703) 573-9274

### ► SOFTWARE/ONE OF A KIND

#### TEST/IMPROVE YOUR ESP

ESPWARE will test and improve your extrasensory capabilities with numbers, colors, and shapes, rates and records your abilities in remote viewing, clairvoyance, telepathy and psychokinesis. Very easy to use. For Apple II/II+/C/6 & compatibles. Send \$34.95 plus \$2 P&H. (CA res add \$2.25 sales tax) to:

JMG ASSOCIATES  
762 Knoll Dr.  
San Carlos, CA 94070

#### "BEST CHRISTMAS GIFT EVER ....

Megathanks Ray-I loved "A CHRISTMAS ADVENTURE!" All the personal references to me/wonderful humor/surprise action scenes—Even a message from you when I finally found Santa. The whole family agrees—best gift ... "□" A CHRISTMAS ADVENTURE." Super hi-res software gift/all Apple II/customizable vers. \$16.95. Adventure alone (treat yourself!) \$14.95. MC/VISA o.k. 2.25 Sh/Hd. U.S. Inquiries.

BITCARDS  
PO BOX 102 Station "R"  
Montreal, Quebec, Canada  
(514) 274-1103

### ► SOFTWARE/PERSONAL

#### KITCHEN PLANNER

Create a 1-14 day Menu and Shopping List in less than 5 min. The only program available which both composes balanced meals and lets you change them! It's also the fastest and easiest to use. Compact, useable printout. To order send \$29.95 + \$1.50 (handling) or call with VISA/MC. All Apple II's. CA add 6 1/2%.

SAV-SOFT PRODUCTS  
PO Box 24898  
San Jose, Calif. 95154  
(408) 978-1048

### CHECKMATE SAVES YOU TIME AND YOUR TIME IS MONEY!

Step into the Information Age with CHECKMATE 4.0! Now, at last, a User-Friendly checkbook program that does it all... Menu Driven, Auto-Numbering of checks, 5 Search Parameters, and Bank Reconciliation for up to 10 Accounts! The last entry you'll ever write is to order CHECKMATE 4.0! For II, IIe! \$30.00 ppd. Check, MO, MC or Visa! Clip and mail today!

MICROVISIONS  
Otter River Road  
Templeton, MA 01468  
(617) 939-8213

#### FULL SERVICE CHECKING

Relax now because your checkbook is in order! G.D.S. Checking Account System makes it easy! Know where your \$2 go when you categorize check, print/display deposits, check entries and categories. Transfer to/from category, running balance, even reconciled! Easy to use Menu driven. Apple IIe, 64K, DOS/Applesoft, 1-2 disk dr., parr. printer, \$48.95. For more information or to order, write:

GLEN DAVID SYSTEMS CO.  
PO Box 420043  
Houston, TX 77242

### ► SOFTWARE/REAL ESTATE

#### PROPERTY MANAGEMENT

Software for rental income producing properties. Provides cash flow analysis, records expenditures on each unit, and accumulates cost for tax purposes. Prints cash flow report and Summary of Operations report. Provides depreciation and amortization schedules and print outs of each report.

TOMAR PRODUCTIONS  
P.O. Box 740871, Dept. A  
Dallas, TX 75374  
(214) 750-1212

### ► SOFTWARE/SCIENTIFIC

#### STATISTICAL ANALYSIS

AIDA: Apple Interactive Data Analysis. For professional survey or other statistical research. Full range of analysis, from descriptive stats through multiple regression. Handles data transformation, weighting, missing data. Up to 4,000 cases and 254 variables per file. DOS 3.3 and SOS versions. \$235.

ACTION-RESEARCH N.W.  
11442 Marine View Dr., SW  
Seattle, WA 98148  
(206) 241-1645

### DATA ACQUISITION SYSTEM

The ISAAC 41-A and 91-A data acquisition and control systems turn your Apple II+ and IIe into a scientific or industrial workstation. Systems offer modular expansion: 4 to 512 channels of A/D, 4 to 16 channels of D/A, 16 to 128 binary I/O lines. ISAAC LabSoft makes programming easy with real time data acquisition and graphics extensions to Applesoft.

**ISAAC**™

CYBORG CORPORATION DEP. P-4  
55 Chapel Street  
Newton, MA 02158  
(617) 964-9020

### ► SOFTWARE/TRAINING

#### BEGINNER/INTERMEDIATE

Specially designed program helps you get to know your Apple. Entertaining and educational—challenges and expands your knowledge of the Applesoft language. Games, displays, etc. provides hours of learning, fun, and relaxation. Allow 6-8 weeks for delivery. Send check or money-order for \$20 to:  
Lincoln Dahl  
DMD  
Box 93  
Deeth, NV 89823

### ► SOFTWARE/UTILITIES

#### EASY PRINTER SET-UP

PRINTS CHARMING™ makes printer set-up so easy. Select your FONTS, SCRIPTS, MARGINS, LINE SPACING, etc. by Menu Guided Keyboard action. Save set-ups on disk. ONLY \$24.95 (IN res. add 5% tax) Shipping extra outside USA. MC/VISA/CK/MO. For II, II+ or IIe with 1 drive. For EPSON & PANASONIC. Specify make and model of printer and DOS 3.3 or ProDOS.

CARDINAL POINT INCORPORATED  
POB 596  
ELLETTSVILLE, IN 47429  
(812) 876-7811

### ► SOFTWARE/WORD PROCESSING

#### FORM LETTERS; MAILING LISTS AND LABELS

generated quickly and easily with COMPANION Word Processing program: Menu-driven, simple to use. Runs on IIe or IIc. Requires Apple Writer II. \$29.95 + \$1.00 postage. Calif. residents add 6% sales tax. Specify DOS 3.3 or ProDOS version. MC-VISA.

COMPANION SOFTWARE  
1956 McCollum Street  
San Luis Obispo, CA 93401  
(805) 544-4984-Evenings



## THIS AD IS TOO SMALL

To give you more than a hint of how much we can help you be more successful with FRP games—but we'll try! ALL WIZARDRY (R) PLAYERS NEED THE WIZSYSTEM (tm). Huge new manual with complete charts, great tips, step by step help—\$10. Apple (all 3 games \$15). SUPERHEROES \$5 (Sc: 1, 2 or 3). All \$10 (IBM, \$25 (Apple). The WIZMASTER (tm) disk prints/transforms characters from all 3 games AND is but \$17.50. All above + WIZNEWS (tm) only \$47.50 (Apple), \$37.50 (IBM). Ask about Scenario 4!

ULTIMA FANS NOW HAVE QUALITY HELP with the ULTISYSTEM (tm). Manual includes powerful tips, full charts, maps for both II and III—Only \$15! The ULTIMASTER (tm) disk alters/prints for II and III. \$17.50 (Apple, IBM, C-84). Both only \$27.50, with WIZNEWS (tm) \$35! Game IV soon!

ALL FANTASY/ADVENTURE PLAYERS NEED THE WIZNEWS (tm) quarterly! The source for news, articles, gossip, tips, interviews, reviews of your favorite computer games! Subscribe: \$10/4 issues. Sample \$3.

GAME MASTER'S GUIDES (tm) help you creatively design and run FRP games FAST! GM I: Combat tables/Dice/Random Functions/8 more Utilities AND STORAGE for 219 Monsters, 51 Characters, 51 Villains! GM II: Generate Troops (1-20K+), Races, Tournaments, Towns, Tricks, More! GM III: Create NEW Characters and Monsters, each with Name, all Stats/Items! Warring Armies, more! Disks for Apple, IBM, C-84 \$25 each, 2 for \$47.50, all 3 only \$70!

GM ADVENTURE I: RAPMORTH'S HOLLOW: Exciting new concept in computer aided group FRP games! Complete with maps and detailed manual, its creative depth, richness & ease of use will add a new dimension to your gaming enjoyment! Disk for apple, \$35. New scenarios, computers soon!

Available at quality dealers or from Nichols services. Free support! Add 5% of cost + \$1.50 for S&H to US & APO. Payment check, MO, COD, VISA/MC (US funds only-no cash).

nichols services

6901 Buckeye Way, Columbus, GA 31904  
(404) 323-9227

CIRCLE 601 ON READER SERVICE CARD

## P.F.S.\* Users, Time is Money!

Your entire program can run 2½ times faster with our New Speedup System!

\*trademark: Software Pub. Co.



The Lobero Building P.O. Box 2342  
Santa Barbara, Ca. 93120  
(805) 966-1140

CIRCLE 608 ON READER SERVICE CARD

### SUPER Z-80 CARD

- Compatible with all CPIM software.
- Executes Z-80, 8080, 8085 instruction sets and supports Z-80 interrupts.
- Runs on Apple II, II+ or IIIe with or without an 80 column card.
- Low power consumption with fast clock.

BEST OF ALL THE PRICE IS \$89.95

### SUPER RAM CARD

- 64K upgradable to 128K
- 80 col. built in
- Fully apple compatible
- Supports DOS 3.3, PASCAL, Pro Dos and CP/M
- Can be used as an electronic disk drive

Super Ram 64K upgradable — \$149.95  
Super Ram 128K — \$229.95

All boards are made in the USA and carry up to a 7 year warranty C.O.D. or send check or money order to

TRICON INDUSTRIES INC.  
3000 W. MacArthur Blvd. 6th Floor  
Santa Ana, CA 92704  
(714) 966-6711

CIRCLE 610 ON READER SERVICE CARD

## Save on top quality 3M Diskettes



5 1/4" SINGLE SIDE DOUBLE DENSITY SOFT SECTOR \$1.77

5 1/4" DOUBLE SIDE DOUBLE DENSITY SOFT SECTOR \$2.39

SOLD IN BOXES OF TEN ONLY

3 1/2" 3M diskettes are also available

tremendous selection of software books, accessories and supplies

UP TO 50% OFF!

### Software for Apple

|                     |     |                  |     |
|---------------------|-----|------------------|-----|
| dBase II            | 259 | Think Tank Apple | 89  |
| Multiplan Macintosh | 129 | Think Tank Mac   | 89  |
| PFS File Mac        | 79  | Wordstar         | 189 |
| PFS Report Mac      | 79  | Wordstar Pro Pac | 249 |

ABOVE SOFTWARE AVAILABLE IN OTHER FORMATS. CALL FOR AVAILABILITY AND PRICE.

Minimum shipping and handling \$2.00. California residents add 6% sales tax.

Prices subject to change without notice. Write for our free catalog.

### ABC data products

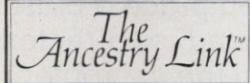
3311 ADAMS AVE, SAN DIEGO, CA 92116

619-283-5488 800-854-1555

CIRCLE 612 ON READER SERVICE CARD

### GENEALOGY

What You've been missing...



Featuring the Innovative  
LINKAGE ANALYZER

An Easy to Use Family History System used around the World. 1000 Ancestors and Descendants. No Generation Limit. Scrolling, 10 Entry Fields per Person, 8 Different Reporting Functions. Automatic Sorting and Indexing. Prod Report, Family Celebrations, and Self-teaching Tutorial Disk. Uses 1 or 2 Disk Drives, 40/80 Cols., and any Printer. Works with Apple II+, II, IIe, II+, and any 100% Compatibles (Franklin, BASIS). Backed by SEVEN Years of Genealogical Computing.

TO ORDER SEND \$69.95 SHIPPING INCL  
FOR MANUAL & 4 DISKS

COD, VISA & MASTERCARD ACCEPTED

(Card Number, Exp. Date, and Signature)

### ACCELERATED LOGIC, INC.

108 East 38th Street Suite 902 New York, N.Y. 10016

(212) 683-7127

TM APPLE

CIRCLE 600 ON READER SERVICE CARD

## Low, Low Prices Apple Peripherals

|  |         |
|--|---------|
| 5A Switching Power Supply              | \$59.95 |
| Z80-CP Card                            | \$49.95 |
| 80-Column Card W/Soft Sw. & Inverse    | \$69.95 |
| Parallel Printer Card                  | \$59.95 |
| Numeric Keypad for Apple IIe           | \$99.95 |
| The FunPad - Graphic Tablet + Joystick | \$69.95 |
| High Quality Joystick                  | \$16.95 |

## FREE CATALOG

Hundreds of MONEY SAVING Software,  
Hardware and Accessories for your

### APPLE II/IIIe

### BETTER PRODUCTS, INC.

765 S. State College Blvd., Suite E  
Fullerton, CA 92631

Tel: (714) 526-7923

Please add 5% for shipping and insurance.

CIRCLE 603 ON READER SERVICE CARD

## McMill

The affordable & expandable 68000 software development system for your Apple II, IIe!



PO Box 2342  
Santa Barbara, CA 93120  
805 569-3132

## NEW! Lower Prices!!

## wabash®

six-year warranted

## DISKETTES!

**\$13.90/box (10)**

5 1/4" single -side, single-density; double-density add \$2/box. Add \$3 per order shipping. In Illinois add 7% sales tax.

**Library Case-\$1.50** (with disk purchase)  
Immediate shipment on VISA, MasterCard or Money order; add 14 days for personal checks.

**CALL TOLL FREE**  
(800) 222-1248

**In Illinois Call (312) 882-8315**

**DEALERS! SCHOOLS! USER GROUPS!**  
Call for our volume discount prices!

## DIGITAL IMAGES

1185 Tower, Schaumburg IL 60195

CIRCLE 602 ON READER SERVICE CARD

## COMPUTER T'SHIRTS

FOR HOME, SCHOOL,  
AND OFFICE!

The ULTIMATE Software!  
A MUST for all computer lovers!

BRIGHT GREEN LCD LETTERS  
CUSTOM BACKSCREEN ON 50/50 BLEND

— HIGH TECH DESIGN! —

Five popular styles to choose from  
Order Today! Only \$8.95 ppd

Simply select Shirt# and Color# below

LET'S SEE PEEK & POKE (#1): White #1 Pink #2 Blue #3

TAKE A BYTE OUT OF ME (#2): Green #4 Grey #5 Red #6

I'M USER FRIENDLY (#3): Black #7

HAPPINESS IS A PROGRAM THAT WORKS (#4):

I ♥ COMPUTERS (#5): CUT

Please send me

Shirt# Color# Size# Shirt# Color# Size#

Use additional sheet if necessary

COMPUTER NOVELTY CORP.  
P.O. BOX 2964  
FREESTPORT, TEXAS 77541  
Enclose \$8.95 ppd each. Tx Res. 6% tax

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

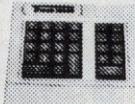
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

©CNC

CIRCLE 604 ON READER SERVICE CARD

**A+ MART**

**IIE KEYPAD**

\*\*\*\*\*  
Our keypad features 4 programmable keys, 4 math function keys (+, -, /, \*), and 4 cursor keys, plus delete and return. **All this for only 149.00.** Non programmable models available for the IIE & II+ for only 129.00 plus 2.50 shipping.

**APPLETECH**



3258 Westheimer  
Houston, Texas 77098

\*\*\*\*\* (713) 523-0444 \*\*\*\*\*

CIRCLE 607 ON READER SERVICE CARD

**BUY DIRECT AND SAVE  
FULLY APPLE COMPATIBLE**

|  |              |
|--|--------------|
| Disk Controller for 2 Drives                               | \$ 39.00     |
| Epson Printer Card (Parallel) w/Cable                      | \$ 39.00     |
| Graphic Printer Card w/Cable (Grappler + comp)             | \$ 54.00     |
| RS 232 Serial Card   | \$ 54.00     |
| 16K RAM Card w/Cable                                       | \$ 48.00     |
| TTL IC Tester Card (for krtown/Unknown TTL IC's)           | \$ 120.00    |
| Z-80 CP/M Card   | \$ 48.00     |
| 80 Column Card w/Inverse (Videx comp)                      | \$ 68.00     |
| Auto Term 80 COL w/Softswitch, w/Inverse (Videx)           | \$ 78.00     |
| Eeprom Writer Card (2716, 2732, 2764)                      | \$ 68.00     |
| Super Serial Card w/Cable & Manual                         | \$ 90.00     |
| Tairtron Card Modern 300 Baud w/Manual & Software          |              |
| Auto Ans & Dial (Hayes Micromodem IIe comp)                | \$ 160.00    |
| RGB Card   | \$ 68.00     |
| Micro Buffer Printer Card 32K                              | \$ 109.00    |
| Diskette Box-w/Lock & Key-Holds 100                        | \$ 16.00     |
| Surge Suppressor Power Center w/6 outlets                  | \$ 21.00     |
| System Saver Fan w/2 outlets, lighted switch, Surge/Filter | \$ 34.00     |
| Monitor Stand w/Tilt & Swivel                              | \$ 18.00     |
| Fun Pad (Compact Koala Pad comp) Specify IIe/IIe           | \$ 60.00     |
| Disk Notcher w/Guide, Square Cut (doubles disk)            | \$ 10.00     |
| Slim Disk Drive-Direct Drive/Elec Sensor Super Quiet       |              |
| 1 Yr. Warranty Apple IIe \$185.00                          | IIe \$195.00 |
| RF Mod w/Sound \$18.00, w/o Sound \$12.00                  |              |
| Shipping & Handling: Under \$100 - 10% Over \$100 - 5%     |              |
| All Items Warranted 6 Months                               |              |

**COMPUTER SUPPLY**  
P.O. BOX 164, VALLEY STREAM, NY 11582  
(516) 239-1855  
Hours: M-F 9-6 • Sun 10-4 EST

CIRCLE 605 ON READER SERVICE CARD

**THE \$3.95 PERIPHERAL  
THAT CAN SAVE YOU  
HUNDREDS OF DOLLARS**

Before you shop, consult the **CREATIVE COMPUTING 1985 BUYER'S GUIDE TO PERSONAL COMPUTERS & PERIPHERALS**—the complete hardware sourcebook with in-depth product listings, comparative charts and evaluations of hundreds of new microcomputers and peripherals. It will connect you to the best values in new computer equipment.

Available at your local newsstand  
and computer store.

**REACH  
OUT TO  
YOUR BEST  
PROSPECTS  
FOR LESS!**

Whether you're a retailer, manufacturer, dealer or distributor, you need current microcomputer mail-order prospects on a regular basis, month after month. And you can have them at reasonable cost—when you place a classified ad and/or directory listing in the computer publications below.

**A+ • Creative Computing • Digital Review • PC • PC Tech Journal**

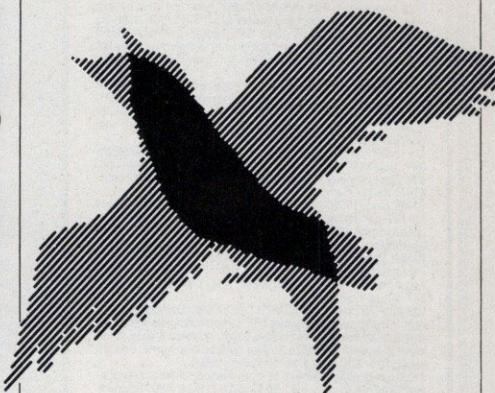
**Pinpoint the microcomputer mail-order market you want with any one or a combination of our magazines!**

Your ads are seen in high quality editorial environment, and benefit from extensive pass-along readership resulting in top-notch responses! Phone us now for rates, sizes, and ad options by title, and insert your ad in time for the next issue!

**Classified Advertising**  
**ZIFF-DAVIS PUBLISHING COMPANY**  
Computer Publications Division

**CALL 212-503-5115**

**COMING UP**



**Ergonomics:  
Computer Furniture**

**Software:  
Perfect Series  
Adventure Games**

**Programming:  
PostScript Tutorial, Part I  
ProDOS Tutorial, Part II**

**Entertainment:  
Star League Baseball  
Mr. Robot  
Archon  
Skyfox  
The Last Gladiator**

**Macintosh Coverage:  
Mouse Mates  
Public-Domain Software  
Front Desk Review  
Database Roundup  
MacTips: Animation**

## ► INDEX TO ADVERTISERS

| READER<br>SERVICE<br>NO. | ADVERTISERS                               | PAGE       | READER<br>SERVICE<br>NO. | ADVERTISERS                          | PAGE    | READER<br>SERVICE<br>NO. | ADVERTISERS                             | PAGE  |
|--------------------------|---|------------|--------------------------|--------------------------------------|---------|--------------------------|---|-------|
| 173                      | Accessories Plus                          | 145        | 216                      | Hanzon                               | 129     | 282                      | Programming Tech. Corp.                 | 71    |
| 172                      | Action Research                           | 186        | 297                      | Hayden Software                      | 108-109 | 122                      | Prometheus Products                     | 52    |
| *                        | ALF Products                              | 170        | 130                      | Hayes Microcomputer<br>Products Inc. | 151     | 165                      | Pro/Pac                                 | 170   |
| 259                      | Alpha Logic Business Systems              | 191        | *                        | Hayes Microcomputer<br>Products Inc. | 150     | 309                      | Quark, Inc.                             | 43    |
| 174                      | Amdek Corp                                | 51         | 197                      | Hippopotamus Software                | 130     | 223                      | Quorum International<br>Unlimited       | 74    |
| 170                      | Ampex Corporation                         | 156-157    | *                        | Howard Soft                          | C-3     | 118                      | R.C. Systems                            | 178   |
| *                        | Applied Engineering                       | 23         | 224                      | Infocom                              | 80      | 215                      | Ring King Visables, Inc.                | 75    |
| *                        | Applied Engineering                       | 37         | 286                      | Infotek, Inc.                        | 144     | *                        | Round Lake Studios                      | 195   |
| *                        | Applied Engineering                       | 21         | 131                      | Integral Design Systems              | 163     | 206                      | Scarborough Systems, Inc.               | 30    |
| *                        | Applied Engineering                       | 83         | 144                      | Interactive Microware                | 208     | 151                      | Secure-It                               | 208   |
| *                        | Applied Engineering                       | 87         | 141                      | I/O Video                            | 142     | 227                      | Sensible Software                       | 58    |
| 123                      | Applied Software Technology               | 19         | 124                      | Iomega Corporation                   | 120     | 231                      | Silicon Express                         | 198   |
| 294                      | Artificial Intelligence                   | 88         | 279                      | Jameco Electronics                   | 84      | 260                      | Sir Tech                                | 182   |
| 212                      | Assimilation Process                      | 172-173    | 167                      | JDR Microdevices                     | 64      | 114                      | Soft Design                             | C-4   |
| 323                      | AST Research                              | 1          | 132                      | Kapstrom, Inc.                       | 66      | 136                      | Soft Key Publishing                     | 59-61 |
| 153                      | BASF                                      | 118        | 134                      | Kensington Microware                 | 16      | 177                      | Softech Microsystems                    | 95    |
| 157                      | BASF                                      | 54         | 277                      | Kensington Microware                 | 165     | 164                      | Softronics                              | 162   |
| 156                      | Baudville                                 | 45         | 161                      | Kyan                                 | 179     | 155                      | Software Discounters<br>of America      | 192   |
| 249                      | Beagle Brothers                           | 199        | 287                      | Legend Industries, Ltd.              | 208     | 196                      | Software Masters                        | 167   |
| 162                      | Bible Research Systems                    | 65         | 133                      | M.C.T.                               | 166     | 316                      | Software Service                        | 195   |
| 160                      | Black Sun                                 | 174        | 213                      | Magnum Software                      | 155     | 179                      | Sorcim/IUSMicro<br>Software             | 12-13 |
| 112                      | Blue Chip Software                        | 158        | 288                      | Manhattan Graphics Corp.             | 140     | 135                      | Space Coast Systems                     | 167   |
| 116                      | Boston Software Publishing                | 97         | 181                      | Mannesman Tally                      | 62      | 107                      | Spectralgraphics Software               | 208   |
| *                        | Business Computers of<br>Peterborough     | 31         | 189                      | Manx Software Systems                | 123     | 109                      | Spectralgraphics Software               | 22    |
| 306                      | The Byte General                          | 18         | 178                      | Maxell Computer Products             | 180     | 233                      | Spectrum Holobyte                       | 111   |
| 296                      | C. Itoh Digital Products                  | 135        | 242                      | Megamax                              | 130     | 187                      | Street Electronics                      | 5     |
| 149                      | Caribbean Computer Sales, Inc.            | 86         | 219                      | Micro Analyst                        | 168     | 110                      | Sublogic                                | 4     |
| 292                      | CDA Computer Sales                        | 70         | 115                      | Micro City                           | 125     | 146                      | Sweet Microsystems, Inc.                | 200   |
| 184                      | Central Point Software                    | 129        | 111                      | Microprose Software                  | 29      | 267                      | Systems Control                         | 136   |
| 185                      | Central Point Software                    | 66         | 320                      | Microsoft                            | 100-101 | 250                      | TeamMate                                | 199   |
| 128                      | Checkmate Technologies                    | 187        | 319                      | Microsoft                            | 138-139 | 168                      | TMQ Software, Inc.                      | 160   |
| 230                      | Cir Tech                                  | 184        | 321                      | Microsoft                            | 6-7     | 137                      | TAB Books                               | 161   |
| 238                      | Columbia Software                         | 175        | 175                      | Microsoft                            | 115     | 205                      | Tecmar, Inc.                            | 90    |
| 291                      | Comark, Inc.                              | 128        | 239                      | Modulus Design                       | 160     | 350                      | Telemex                                 | 190   |
| 303                      | Companion Software                        | 65         | 108                      | New Image Technology                 | 99      | 301                      | Telos Software Products                 | 137   |
| 271                      | Compuserve                                | 79         | 263                      | Nibble Notch                         | 44      | 283                      | Texprint                                | 196   |
| 163                      | Computer Cover Company                    | 134        | 237                      | Nibble Notch                         | 179     | 202                      | The Source                              | 72    |
| 290                      | Computer Discount Products                | 159        | 125                      | Nonagon Software                     | 28      | 289                      | 3M Recording<br>Products                | 56-57 |
| 136                      | Computer Learning<br>Center               | 59, 60, 61 | 330                      | Northeastern Software                | 67      | 228                      | Thunderware                             | 132   |
| 129                      | Conroy-La Pointe and<br>Computer Exchange | 24         | 176                      | Optimum Computer Luggage             | 105     | 226                      | Thunderware                             | 181   |
| 236                      | Core Concepts                             | 82         | *                        | Paladin Software                     | 188-189 | 255                      | Track House                             | 193   |
| 102                      | Dennison Computer Supplies                | 10         | 140                      | PBI Software                         | 146     | 120                      | Triad Software Products                 | 194   |
| 139                      | Desktop Software Center                   | 131        | 143                      | PBI Software                         | 147     | 158                      | Triple Play                             | 175   |
| 225                      | Dow Jones Software                        | 126, 127   | 315                      | PC Network                           | 116-117 | 190                      | Utilico Software                        | 53    |
| 278                      | Expertelligence                           | 98         | 119                      | PDS Sports                           | 185     | 195                      | Video-7, Inc.                           | 32-33 |
| 105                      | First Class Peripherals                   | 89         | 318                      | Peachtree Software                   | 171     | 117                      | Viking Data Based<br>Technologies, Inc. | 39    |
| 154                      | Funk Software                             | 176        | 147                      | Penguin Software                     | 8       | 244                      | Vilberg Brothers                        | 88    |
| 265                      | Garden of Eden                            | 20         | 150                      | PM Software                          | 63      | 193                      | Warner Software                         | 107   |
| 169                      | Grolier Electronic<br>Publishing, Inc.    | 46         | 229                      | Precision Data Products              | 86      | 152                      | Witt's End                              | 163   |
| *                        | H & E Computronics                        | C-2        | 30                       | Precision Software                   | 103     |                          |   |       |
|                          |   |            | 148                      | Professor Jones                      | 175     |                          |   |       |
|                          |   |            | 299                      | Program Plus                         | 148     |                          |   |       |

# The Legend E' Card For Your Apple //e

**64K to 1 Megabyte**  
**RGB Video**  
**16 Levels of Gray Video**  
**730K Appleworks Desk Top**

**NOW ALL ON ONE CARD!!!**

Turning Apples into Legends since 1981.

CALL or WRITE:

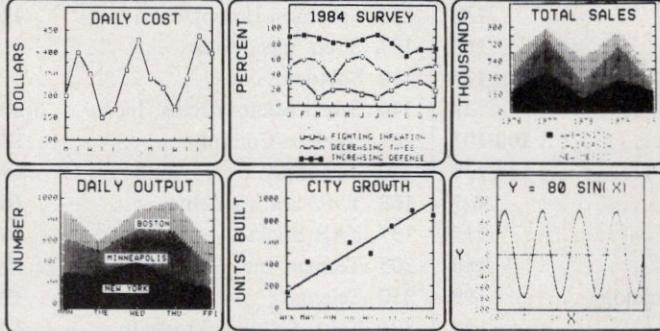
**LEGEND INDUSTRIES, INC.**

2220 Scott Lake Rd.  
 Pontiac, MI 48054

**(313) 674-0953**

CIRCLE 287 ON READER SERVICE CARD

## CurvePlotter!



ONLY \$29.95! Don't pay more for less! For APPLE II+//IIC//IIC/II and APPLE-compatibles. CurvePlotter! is an extremely sophisticated chart program. It plots line charts, area charts, best-fit trend charts, and mathematical functions. Up to 100 keyboard-entered data points may be entered, stored to disk, and plotted on screen or printer. Data may be edited at any time. All labelling and scaling is automatic or user-defined. The LINE CHART, AREA CHART, and TREND CHART programs permit numerical entry versus month, year, day, or any other horizontal label the user wishes. These programs also permit entry of x-y numerical data pairs, which is perfectly suited for scientific work. The TREND CHART program is an indispensable business and scientific tool. It finds the "best fit" to a set of data, and then draws the best straight line among the data. Also on the CurvePlotter! disk is our unsurpassed SCIENCE/MATH CHART program. Just type in any mathematical function you can think of and this program will plot it!

Send a check or purchase order for \$29.95 to SPECTRAL GRAPHICS SOFTWARE, 6333 Pacific Avenue, Suite 256-A, Stockton, California 95207. We ship immediately! Satisfaction or your money will be immediately refunded (really). Call (209) 474-1212 for C.O.D. orders. CurvePlotter! is not sold in most stores.

CIRCLE 107 ON READER SERVICE CARD

## Prevent Computer Theft! Dedicated System for the Apple IIc

### Käblit Systems

Unique Käblit fasteners attach to equipment without drilling, using existing screws. Cable passes through fasteners preventing removal. Cable is then locked. When ordering multiples, specify locks keyed differently or alike. Installs in 10 min. Over 80 college installations.



Heavy duty  
10' steel cable  
secures computer,  
other equipment,  
up to 4 units.

**Käblit works with:**

- Computers
- Printers
- Disk Drives
- Typewriters
- Stereos
- Monitors
- Lab Equip.
- Televisions
- Other

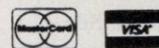


**\$54.95 postage paid.** Quantity pricing also avail. for schools, institutions, businesses, etc. Send P.O. Money back if returned in 30 days.

**SECURE-IT Inc.** 10 Center Square • E. Longmeadow, MA 01028  
 Phone orders 413-525-7039  
 Dealer Inquiries Invited

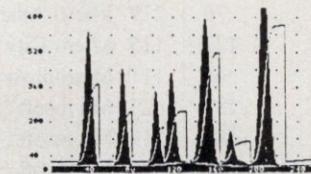


**EXCLUSIVE!**  
 Proprietary components prevent removal  
 of mounting screws.  
 (Pat. Pend.)



CIRCLE 151 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

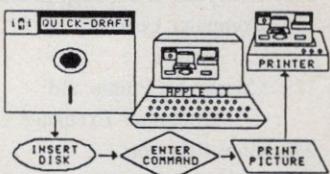
**QUICK-SHAPE**—Create shape tables from any hi-res picture, edit enlarged images. Includes 18 shape tables for large text, different fonts, math, music and electronic symbols ..... \$ 25

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.

**IMI** **INTERACTIVE MICROWARE, INC.**  
 P.O. Box 139, Dept. 209  
 State College, PA 16804  
 Phone: (814) 238-8294 • Telex: 705250



**QUICK-DRAFT**

CIRCLE 144 ON READER SERVICE CARD

Use  
IRS  
label  
the  
use  
please  
print  
or type.

Your first name and initial (if joint return, also give spouse's name and initial)

Last name

Your social security number

Present home address Number and street, including apartment number, if applicable

Spouse's social security number

City, town or post office, State, and ZIP code

Your occupation

Spouse's occupation

Presidential  
Election Campaign

Do you want \$1 to go to this fund? . . . . .  
If joint return, does your spouse want \$1 to go to this fund? . . . . .

Yes

Yes

No

No

Note: Checking "Yes" will  
not change your tax or  
reduce your refund.

**Filing Status**

1 Single

2 Married filing joint return (even if only one had income)

3 Married filing separate return. Enter spouse's social security no. above and full name here. . . . .

4 Head of household (with qualifying person). (See page 5 of Instructions.) If the qualifying person is your unmarried child but not your dependent, write child's name here. . . . .

5 Qualifying widow with dependent child (Year spouse died ► 19 . . . . .). (See page 6 of Instructions.)

For Privacy Act and Paperwork Reduction Act Notice, see Instructions.

**Exemptions**

Always check  
the box labeled  
Yourself.  
Check other  
boxes if they  
apply.

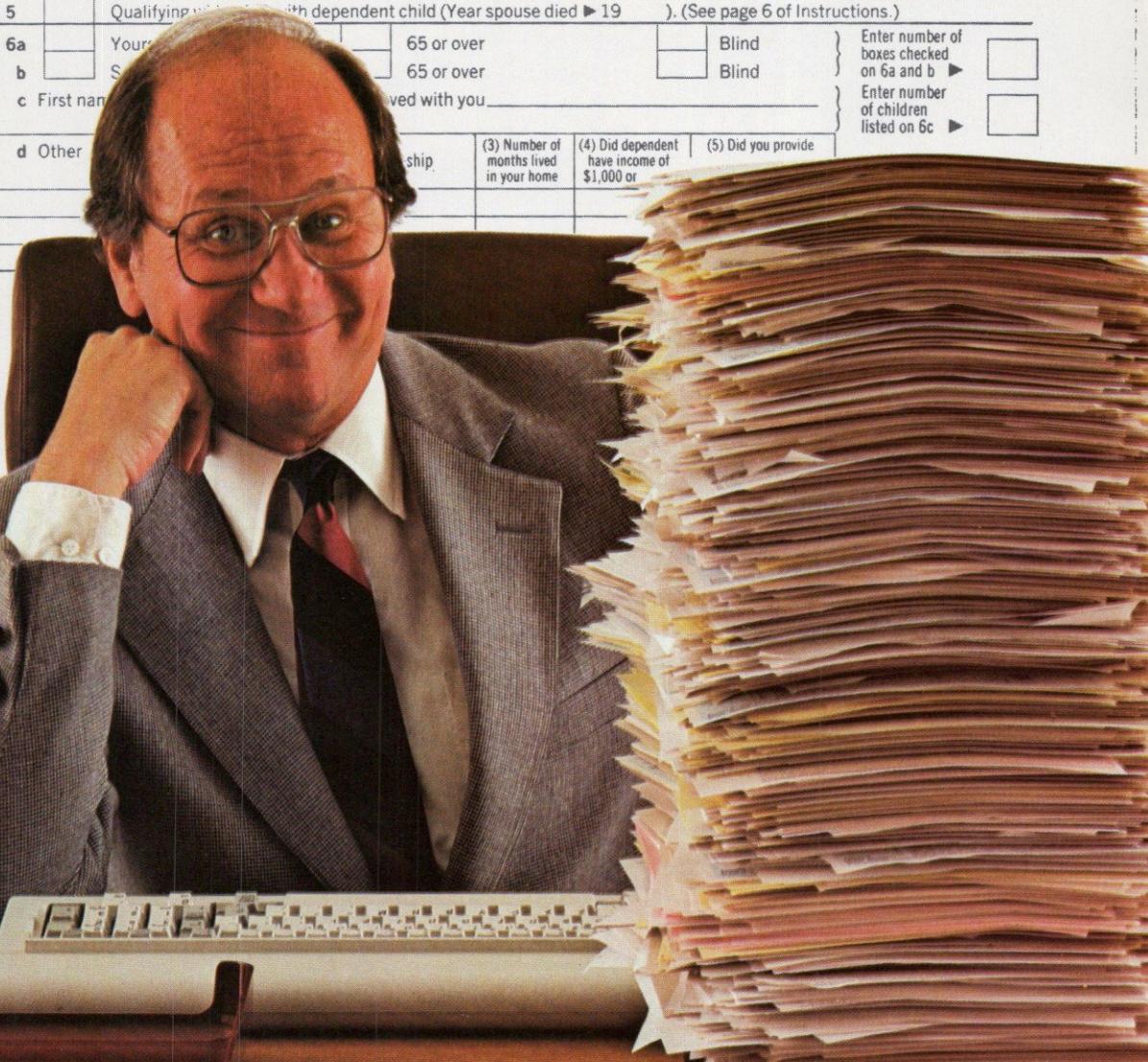
|    |           |               |   |   |                     |
|----|-----------|---------------|---|---|---------------------|
| 6a | Your      | 65 or over    | Blind   | Enter number of<br>boxes checked<br>on 6a and b ►         |                     |
| b  | S         | 65 or over    | Blind   | Enter number<br>of children<br>listed on 6c ►             |                     |
| c  | First nam | ived with you |   |   |                     |
| d  | Other     | ship,         | (3) Number of<br>months lived<br>in your home | (4) Did dependent<br>have income of<br>\$1,000 or<br>more | (5) Did you provide |

## Income

Please attach  
Copy B of your  
Forms W-2, W-2G,  
and W-2P here.

If you do not have  
a W-2, see  
page 4 of  
Instructions.

Please  
attach  
one  
or more  
order



## Put your trust in the software the professionals use.

Taxes are serious business, and they're more complicated than most people realize. Computers can help . . . but only if you choose the right software. And you may not know until you take it home that the tax software you've chosen doesn't have the important ifs and buts of the tax code built-in, or doesn't produce IRS-accepted printouts for the *entire* return, including supporting statements, or doesn't show you all the

tax breaks you deserve because it's not complete, or doesn't save you time because it's not fully automatic, or doesn't give you unlimited itemizing and year-round record-keeping, and then requires you to be a computer whiz!

But there's one tax software that stands out because it does the job right. And that's probably why it's been the #1 seller in tax software with both professionals and indi-

viduals for the past three years. Tax Preparer by HowardSoft. For the professional . . . and everyone else who takes taxes seriously.

### Tax Preparer™

by

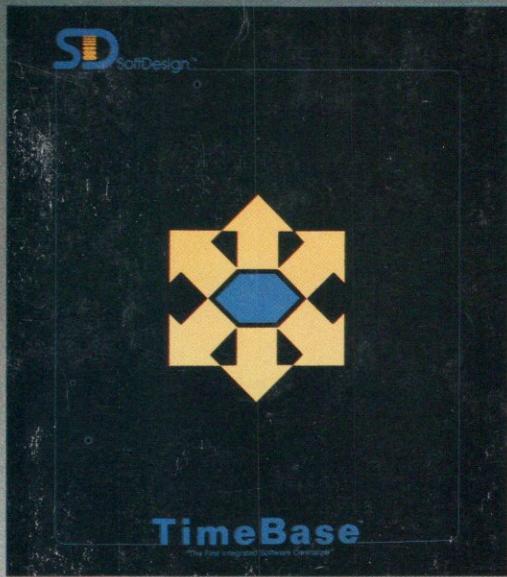
### HowardSoft™

The software investment  
you can count on.

# TimeBase™

An interactive time and information management system for Macintosh

## Baseball & Hotdogs Stocks & Bonds Bogie & Bacall . . . Time & Information



TimeBase™ manages your two greatest assets – time and information – in a whole new way.

It allows you to create and maintain unlimited schedules with a powerful **Time Manager** that thinks, and acts, like a database! Interact documents and files from another application with any schedule you have created.

“Link” letters, records, reports or any other type of file directly to your schedule. Put information where you need it, when you need it. TimeBase also integrates its own **Database and Project Manager**.

The Database is called the File Cabinet, and its only limit is the amount of disk space you

have available. The Project Manager tracks deadlines and events quickly and easily. TimeBase even comes with a variety of **Forms & Letters** that can be reproduced and used in your business. So if managing your two greatest assets – time and information – has become the chore of managing stacks of paper and mounds of disks . . . let TimeBase do it for you.

**TimeBase**

14145 S.W. 142 Avenue, Miami, FL 33186 Telephone (305) 253-5521



**14145 S.W. 142 Avenue, Miami, Florida 33186 (305) 253-5521**

Macintosh is a trademark licensed to Apple Computer Inc. SoftDesign, TimeBase and TMP are registered trademarks of SoftDesign.

CIRCLE 114 ON READER SERVICE CARD