

\$2.95

A+

OCTOBER 1984

VOLUME 2
ISSUE 10

THE INDEPENDENT GUIDE
FOR APPLE COMPUTING

Downloaded from www.Apple2Online.com

INCLUDING **MACINTOSH** COVERAGE

Linking Apples To Mainframes

SCALING THE HEIGHTS

LETTER-QUALITY
MAC OUTPUT

ROAMING THE
JUNGLE

APPLES
RESTORE
ARTIFACTS

MAC CLIP-ART
PROGRAMS

INFORMATION:
THE FINAL
FRONTIER

APPLE LOGO II

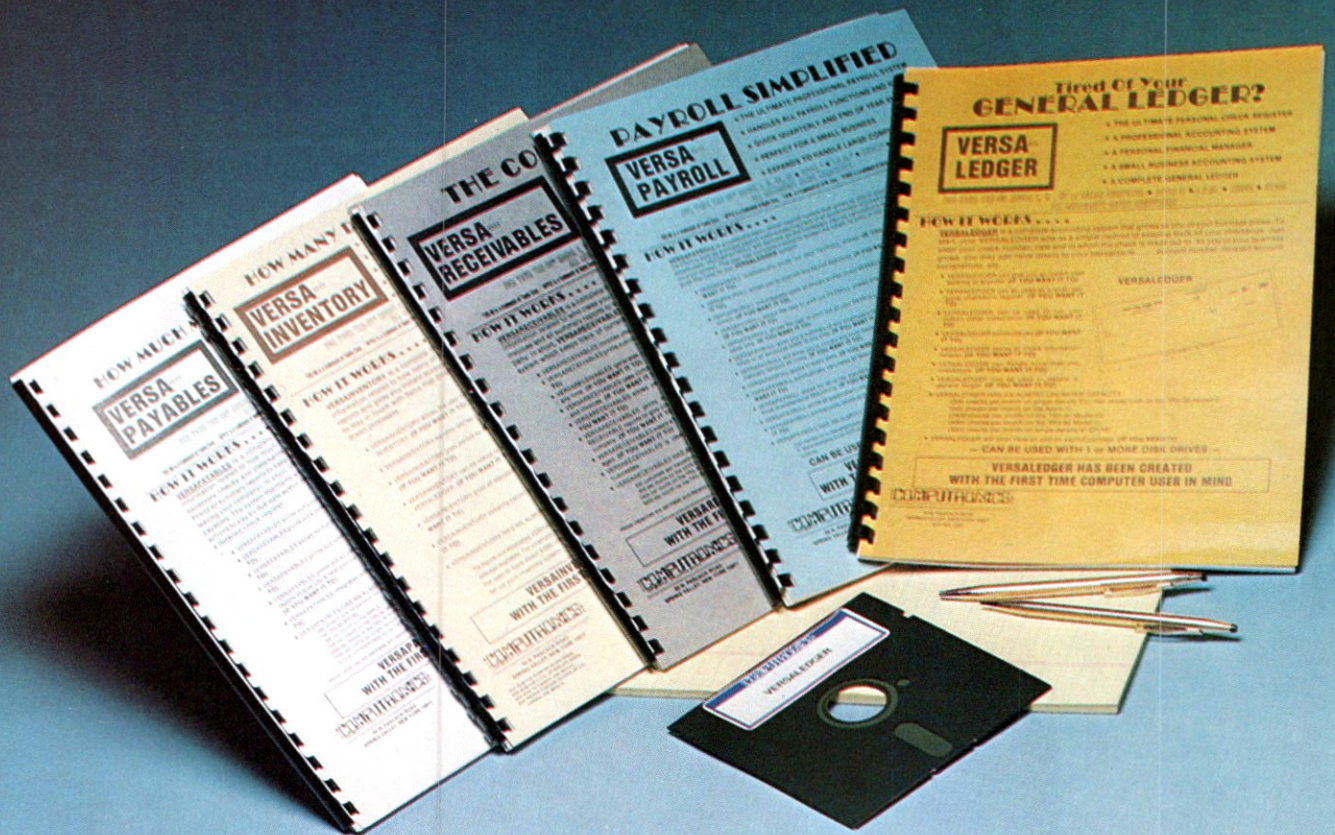
MUSICAL
GRAB BAG

REVIEWS:
JOB MASTER
TITAN EMPIRE
JURY TRIAL II



Introducing the Most Powerful Business Software Ever!

TRS-80™ (Model I, II, III, or 16) • APPLE™ • IBM™ • OSBORNE™ • CP/M™ • XEROX™



The VERSABUSINESS™ Series

Each VERSABUSINESS module can be purchased and used independently, or can be linked in any combination to form a complete, coordinated business system.

VERSARECEIVABLES™ \$99.95
VERSARECEIVABLES™ is a complete menu-driven accounts receivable, invoicing, and monthly statement-generating system. It keeps track of all information related to who owes you or your company money, and can provide automatic billing for past due accounts. VERSARECEIVABLES™ prints all necessary statements, invoices, and summary reports and can be linked with VERSALEDGER II™ and VERSAINVENTORY™.

VERSAPAYABLES™ \$99.95
VERSAPAYABLES™ is designed to keep track of current and aged payables, keeping you in touch with all information regarding how much money your company owes, and to whom. VERSAPAYABLES™ maintains a complete record on each vendor, prints checks, check registers, vouchers, transaction reports, aged payables reports, vendor reports, and more. With VERSAPAYABLES™, you can even let your computer automatically select which vouchers are to be paid.

VERSAPAYROLL™ \$99.95
VERSAPAYROLL™ is a powerful and sophisticated, but easy to use payroll system that keeps track of all government-required payroll information. Complete employee records are maintained, and all necessary payroll calculations are performed automatically, with totals displayed on screen for operator approval. A payroll can be run totally, automatically, or the operator can intervene to prevent a check from being printed, or to alter information on it. If desired, totals may be posted to the VERSALEDGER II™ system.

VERSAINVENTORY™ \$99.95
VERSAINVENTORY™ is a complete inventory control system that gives you instant access to data on any item. VERSAINVENTORY™ keeps track of all information related to what items are in stock, out of stock, on backorder, etc., stores sales and pricing data, alerts you when an item falls below a preset reorder point, and allows you to enter and print invoices directly or to link with the VERSARECEIVABLES™ system. VERSAINVENTORY™ prints all needed inventory listings, reports of items below reorder point, inventory value reports, period and year-to-date sales reports, price lists, inventory checklists, etc.

VERSALEDGER II™ \$149.95
VERSALEDGER II™ is a complete accounting system that grows as your business grows. VERSALEDGER II™ can be used as a simple personal checkbook register, expanded to a small business bookkeeping system or developed into a large corporate general ledger system **without any additional software.**

- VERSALEDGER II™ gives you almost unlimited storage capacity (300 to 10,000 entries per month, depending on the system),
- stores all check and general ledger information forever,
- prints tractor-feed checks,
- handles multiple checkbooks and general ledgers,
- prints 17 customized accounting reports including check registers, balance sheets, income statements, transaction reports, account listings, etc.

VERSALEDGER II™ comes with a professionally-written 160 page manual designed for first-time users. The VERSALEDGER II™ manual will help you become quickly familiar with VERSALEDGER II™, using complete sample data files supplied on diskette and more than 50 pages of sample printouts.

SATISFACTION GUARANTEED!

Every VERSABUSINESS™ module is guaranteed to outperform all other competitive systems, and at a fraction of their cost. If you are not satisfied with any VERSABUSINESS™ module, you may return it within 30 days for a refund. Manuals for any VERSABUSINESS™ module may be purchased for \$25 each, credited toward a later purchase of that module.

To Order: **Write or call Toll-free (800) 431-2818**
(N.Y.S. residents call 914-425-1535)

- * add \$3 for shipping in UPS areas
- * add \$4 for C.O.D. or non-UPS areas
- * add \$5 to CANADA or MEXICO
- * add proper postage elsewhere

DEALER INQUIRIES WELCOME

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

COMPUTRONICS

50 N. PASCACK ROAD, SPRING VALLEY, N.Y. 10977

* TRS-80 is a trademark of the Radio Shack Division of Tandy Corp. • *APPLE is a trademark of Apple Corp. • *IBM is a trademark of IBM Corp. • *OSBORNE is a trademark of Osborne Corp. • *CP/M is a trademark of Digital Research • *XEROX is a trademark of Xerox Corp.

PDQ II PUTS 32 BIT 68000 COPROCESSOR POWER IN YOUR APPLE II

PRODUCTIVITY INCREASE

PDQ II will make your Apple II or IIfx outperform itself. It will fly through tasks which used to take hours. It will perform multiple tasks at the same time. Most Apple software programs will exhibit a 200 to 2,000 percent increase in speed, without reprogramming.

NEXT GENERATION CAPABILITIES

That's not all—when you plug a PDQ II into your Apple, it will provide the advanced features of the 16/32 bit MC68000 microprocessor. Your Apple will be capable of utilizing sophisticated, "next generation" software products.

ONE SIMPLE SOLUTION

PDQ II eliminates the need for numerous add-ons — it includes:

- **Powerful 32 bit processor**
- **High speed solid state disk**
- **Printer/Communications buffer**
- **Memory extension capability**

PDQ II SYSTEM SPECIFICATIONS

Standard Features

- Microprocessor**
- 16/32 bit MC68000
 - 10 MHz

- User Memory**
- 256K Bytes RAM

- Integrated Functionality**
- Multiple printer/communications buffering
 - Pseudo-disk operations
 - Track buffering (p-System)

- ETC Software**
- ETC MC68000 Assembler
 - ETC MC68000 System Monitor
 - ETC p-System (version IV) to Apple DOS Interface Utility

- Languages and Software Systems Supported**
- Applesoft BASIC Compatibility & Speed up
 - Apple DOS 3.3

Optional Features

- Hardware**
- 1 Megabyte RAM (Fall 1983)
- Software**
- UCSD p-System Development System
 - FORTRAN
 - BASIC
 - Unix-like Operating System
 - Artificial Intelligence Laboratory incorporating a Deductive Reasoning System
 - **CP/M 68K with C Language**
 - UCSD Pascal

INSURANCE FOR THE FUTURE

PDQ II technology makes your current investment in software and training more productive, while providing an almost unlimited growth path.

NOW AVAILABLE FOR \$795

For more information or to place your credit card order call our 24 hour toll free number:

800-633-2252

Extension 190

Or send your check or money order for \$795 (postage included) directly to:

Enhancement Technology Corp.
P.O. Box 1267
Pittsfield, MA 01202

(Mass. residents, please add 5% sales tax)

PDQ II

The Ultimate Peripheral



Apple II and Apple IIfx are registered trademarks of Apple Computer, Inc. UCSD p-System is a registered trademark of the Regents of the University of California. Digital is a registered trademark of Digital Equipment Corporation. IBM is a registered trademark of International Business Machines Corporation.

ETC ENHANCEMENT
TECHNOLOGY
CORPORATION

CIRCLE 170 ON READER SERVICE CARD

A+

THE INDEPENDENT GUIDE FOR APPLE COMPUTING

▶ LINKING APPLES TO MAINFRAMES

34 THE BEST OF TWO WORLDS
By W. Charles Doherty
Apples meet the mainframes.

39 CONTINUUM
By Frederic E. Davis and Ruth Ramberg
Mainframe software for distributed data processing

45 DAVID TALKS TO GOLIATH
By Robert Cowart and Steve Rosenthal
Through a variety of software

57 THE APPLE CONNECTION
By Steve Rosenthal
It takes the right hardware.

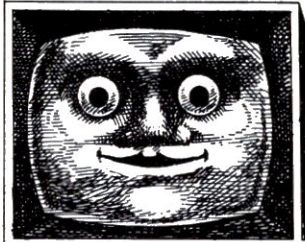
▶ APPLES AT WORK

62 SALVAGING HISTORY'S TREASURES
By Elizabeth Weal
Apples help restore artifacts from Davy Jones' locker.

▶ CONTENTS

▶ EDUCATION

66 APPLE LOGO II
By Greg Stone
A new version of Logo provides help for beginners and additional features for advanced users.



▶ MUSIC

72 SOUNDS
By Freff
You can orchestrate a partnership between your Apple and a variety of hardware and software, with harmonious results.

▶ SOFTWARE REVIEW

153 ELECTRONIC FILE CABINET
By Jill Morgan
The fourth version of DB Master combines large capacity with ease of use.

▶ PROGRAMMING

165 A+ PROGRAMMING CONTEST WINNER
Marc Bisho
IntelliCalc turns your Apple into a calculator with capabilities beyond those of ordinary calculators.



COVER PHOTO
PHOTOGRAPHIC COMMUNICATIONS
CLIMBING EQUIPMENT COURTESY
THE NORTH FACE
CAMPBELL, CA





TUTORIAL

167 HOW TO
dBASE II

By Robert Cowart
Part XII in a tutorial series
on dBASE II



DEPARTMENTS

9 EDITORIAL

11 LETTERS

14 DISPATCHES

By Vanessa Schnatmeier and
Michael Wiesenberg

21 THOUGHTWARE

By Steve Rosenthal
Getting along together: Can
personal-computer users and
data-processing departments
see eye to eye?

79 TELECOM-
MUNICATIONS

By Russ Lockwood
Information: the final
frontier

133 MONEY
MATTERS

By Kenneth M. Landis
TIGRs and CATS in the
bond jungle: Calculating
your return on zero coupon
bonds

139 THAT'S
ENTERTAINMENT

Reviews of Titan Empire and
Jury Trial II

149 NEWS+

By Frederic E. Davis
Your inside source for
developments and trends in
the personal-computer
industry

175 RESCUE
SQUAD

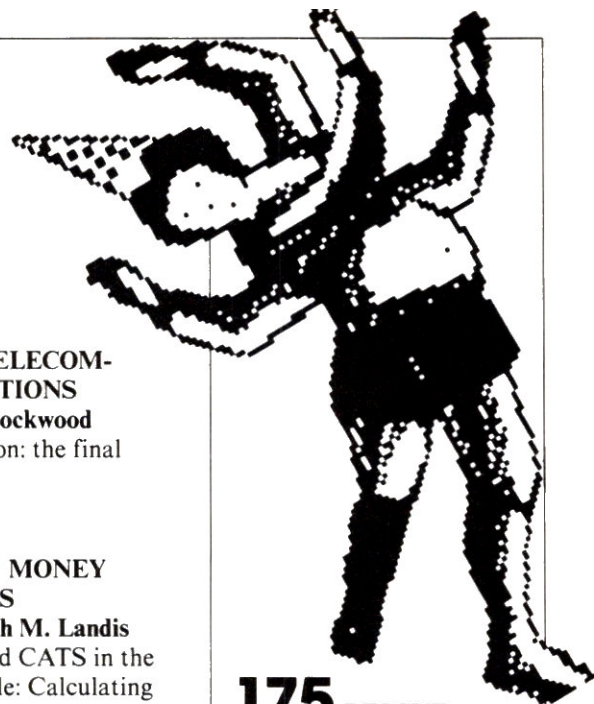
By Frederic E. Davis
Questions from our readers

176 PRODUCT
NEWS

By Ruth Ramberg

195 COMING UP

195 INDEX TO
ADVERTISERS



THE Macintosh SECTION

88 THE DAISY
CHAIN

By Sue Crissman
Letter-quality printing
with the Macintosh

117 PIPELINE

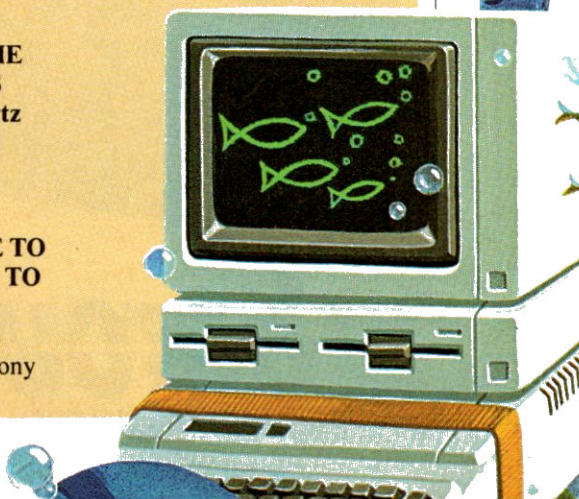
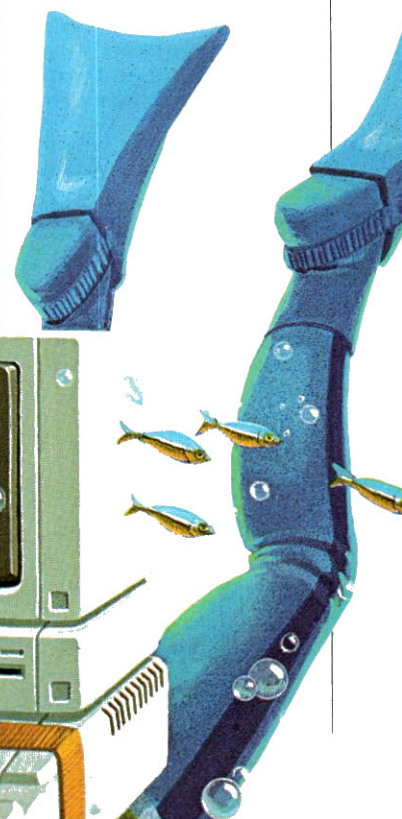
By Jonathan Neher
A look at new products to
complement your Macintosh
or Lisa

98 LEAVE THE
DRAWING TO US

By Roberta Schwartz
Electronic clip art

110 I'D LIKE TO
TEACH MY MAC TO
SING...

By Dennis Brothers
... in perfect harmony



Net Worth

Your Personal

Its only business is managing your home finances. No program does it more quickly, more easily, more directly.

Your Personal Net Worth systematizes the management of your household income, expenses, credit cards and check books — using methods tested for accuracy by Touche Ross, one of the nation's leading accounting firms.

Your Personal Net Worth puts your computer to work, keeps your records straight, including your personal inventory of valuables and stock portfolio, tells you where and how you're spending your money or if you're making a shambles of your budget. And does it all

in less time than it takes you to balance your check book.

Nothing else — no other program at twice the price — makes handling your personal money matters simpler, faster and more direct than **Your Personal Net Worth**.

You'll find it at your favorite software retailer in the silver box with the real silver dollar on the front. It could be the single most valuable purchase you'll ever make.

Record all banking and any credit card transactions, reconcile bank statements instantly (up to 10 separate bank accounts can be handled), — print checks, too.

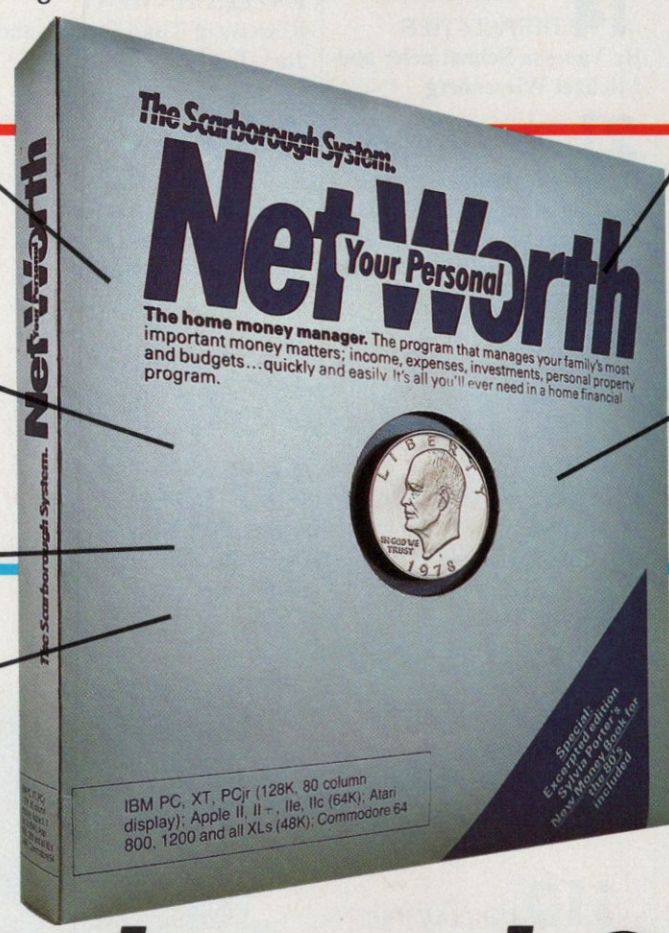
Set up a budget (as many as 350 categories) — and then compare your actual income and expenses to the budget.

Never forget a tax-deductible item. Today or at tax return time.

Display or print every financial report you'll ever need.

Record stock, bond and other investment transactions. Inventory household valuables, collectibles and important papers for insurance and other purposes.

Your Personal Net Worth works fast because it's in machine language. Documentation in plain English is referenced for easy use. "Help" functions on screen at all times.



Available for:

- IBM-PC/XT/PCjr (128K)
 - Apple II + /IIe/IIc (64K)
 - Commodore 64
 - Atari (48K)
- The Program comes with two disks, one of which has accounts already set up for entry. However, only one disk drive is necessary.

The Scarborough System.

You'll grow with us.



Publisher
Sydney H. Rogers

Editor
Maggie Canon

Technical Editor
Frederic E. Davis

Senior Copy Editor
Eva Langfeldt

Managing Editor
Leslie Steere

Senior Staff Editor
Jane Willson

Assistant Editor
Ruth Ramberg

Office Manager
Marjorie Gae Brandon

Editorial Assistant
Candace De Santis

Consulting Editors
Micheal Callery, Steve Rosenthal,
Roberta Schwartz

Contributing Editors
Dennis Brothers, Sue Crissman, Robert Cowart,
Chuck Doherty, Thom Hogan, Ken Landis,
Russ Lockwood, Vanessa Schnatmeier,
John Zussman

Art Director
Peter A. Tucker

Associate Art Director
Fabian Cooperman

Art Assistant
Peter Archer Phillips

Mechanical Artist
Kyle Houbolt

Advertising Office

Ziff-Davis Publishing Company, One Park Avenue, New York, NY 10016,
(212) 503-5142

Advertising Manager

Advertising Coordinator

East Coast Manager

Mid-West Advertising Manager

West Coast Manager

Media Manager

Telemarketing Manager

Account Representatives

Ted M. Welch

Holly Cooperstein

Suzanne M. Zellner

Thomas Lutzke

Deanna D'Zamba

Ann Pichette

Karen Tuckman

EAST COAST Annie G. Freeman

MID-WEST Kathryn J. Cumberlander

WEST COAST Thomas E. Richardson,

Cindy M. Silverman

Mary Bennett

Chet Klimusko

Eric A. Bernhard

Shane Boel

Daniel Rosensweig

COMPUTER PUBLICATIONS DIVISION

President

Vice-President Marketing

Vice-President Circulation

Vice-President General Manager

Vice-President, Licensing and Special Projects

Vice-President, Creative Services

Creative Director

Editorial Director

Marketing Manager

Larry Sporn

J. Scott Briggs

Carole Mandel

Eileen G. Markowitz

Jerry Schneider

Herbert Stern

Peter J. Blank

Jonathan D. Lazarus

Ronnie Sonnenberg

ZIFF DAVIS PUBLISHING

President Richard P. Friese; President Consumer Magazine Division Albert S. Traina; Executive Vice President, Marketing and Circulation Paul H. Chook; Senior Vice President Phillip T. Heffernan; Senior Vice President Sidney Holtz; Senior Vice President Edward D. Muhfeld; Senior Vice President Philip Sine; Vice President Baird Davis; Vice President George Morrissey; Vice President Rory Parisi; Vice President William L. Phillips; Treasurer Selwyn Taubman; Secretary Bertram A. Abrams.

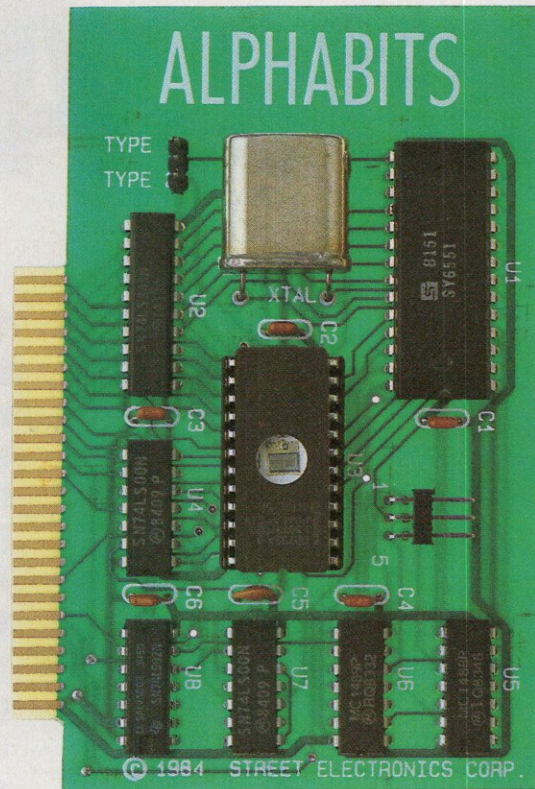
A+: The Independent Guide for Apple Computing ISSN (#0740-1590) is published for \$24.97 one year, \$43.97 two years, and \$57.97 three years. Additional postage \$12 for Canada, \$12 other foreign by Ziff-Davis Publishing Co., One Park Ave., New York, NY 10016. Second-Class pending at New York, NY 10016 and at additional mailing offices. POSTMASTER: Send address changes to A+, P.O. Box 2965, Boulder, CO 80321. BPA membership (SMA Division) applied for October 1983.

Editorial Office: 11 Davis Drive, Belmont, CA 94002; Business Office: One Park Avenue, New York, NY 10016. Editorial (415) 598-2290, Advertising (212) 503-5142. For subscription inquiries and service, write to A+, P.O. Box 2965, Boulder, CO 80322.

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 © 1984 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, Thoughtware, 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 Lamendorf, Manager, Reprints/Rights and Permissions, Ziff-Davis Publishing Company, 1 Park Ave., New York, NY 10016.

This is a Picture of the Only Interface You Will Ever Need.



Street Electronics set the design standard for parallel printer interfaces nearly three years ago when they designed the GRAPPLER™, for Orange Micro, Inc.

The new ALPHABITS™ serial interface with bundled software establishes a new standard for serial interfaces.

The ALPHABITS™ allows you to run the Apple® Imagewriter™, Apple Modem™, and other popular IIe and IIc serial peripherals on the IIe.

The GRAPHICBITS™ software package is bundled in to give your IIe easy-to-use, yet advanced screenprinting and drawing capability.



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

Grappler™ is a trademark of Orange Micro, Inc.
Apple® is a registered trademark of Apple Computer, Inc.
Imagewriter™ is a trademark of Apple Computer, Inc.
Apple Modem™ is a trademark of Apple Computer, Inc.

Take our education home. And be a



America's schools need your help!

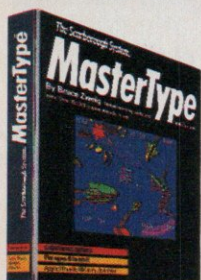
The publishers of America's number one educational program make you this unusual offer: Take any of our educational programs home and be a hero once, because kids love the fun we bring to learning. As a bonus we'll send the program of your choice to your school, free**, including a gift card in your name. You'll help meet the acute need for superior software in our schools. You'll be a hero twice!

The Scarborough System has a complete range of programs to stimulate, challenge and help you or your children be more productive—including Your Personal Net Worth, that makes handling home finances fast and easy, Make Millions, an adult business simulation game, and PictureWriter,* a program that makes drawing on the computer fun. At your dealer's now.

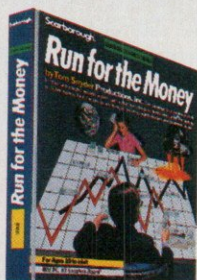
The Scarborough

©Scarborough Systems, Inc., 25 N. Broadway, Tarrytown, New York 10591

ional software hero twice!



MasterType™* Sharpen typing skills and increase computer facility. MasterType is the nation's best-selling educational program. It's an entertaining game that teaches typing as it increases the keyboard skills needed to be at home with a computer. And there's a bonus on top of this bonus: when we send a copy to your local school, at your request, your child will become even more proficient with a computer.



Run for the Money™ Learn to pursue profits in the real world by escaping from an alien planet. Here's an excitingly different, action-packed game of business strategy for two players. Your children will have fun as they learn a lot about business.



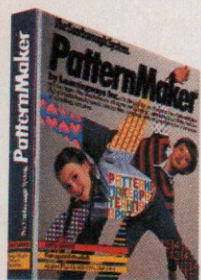
Phi Beta Filer™* New for children and adults. Organizes lists of addresses, dates, insurance and medical records, hobbies and collections—even school work—structures quizzes on any subject, quickly and easily. (Not available for Atari.)



Songwriter™* Kids and adults will love making music at the computer. Just press a key to listen, press a key to record, and you've started your own composition. It's a fun way to learn about music. And Songwriter can be played through your stereo or computer.

MasterType **GUIDE**
Phi Beta Filer **GUIDE**
BOOK OF THE MONTH CLUB
BEST COMPUTER BOOKS & SOFTWARE

*National Education Association
Teacher Certified Software.



PatternMaker™ An amazing software program. It's geometry. It's art. It's great fun. Kids can build dazzling patterns and learn a lot. PatternMaker builds a foundation that can be applied to many professions and crafts. It challenges creativity and effectively teaches symmetry, color and design, and it's just as much fun for grown-ups, too.

Our programs are available for: IBM-PC/
PCjr, Apple II family, Commodore 64, Atari.

**System
System.** You'll grow with us.
CIRCLE 206 ON READER SERVICE CARD

Yes! I want to software a school!

**Enclosed is the completed warranty card and sales receipt for the purchase of a Scarborough product. I am enclosing my check for \$3.50 to cover handling, shipping and postage required to send a free copy of a Scarborough program to the school listed below. A gift card with my name will be enclosed.



Your Name (for gift card) _____

Name of Principal _____

Name of School _____

Address (school address only) _____

City _____ State _____ Zip _____

Software will be sent only to verifiable school addresses.

Offer Expires Dec. 15, 1984

Check computer used in school:

Comm. 64 Atari Apple II family IBM

Check product to be sent to school:

MasterType Songwriter Phi Beta Filer

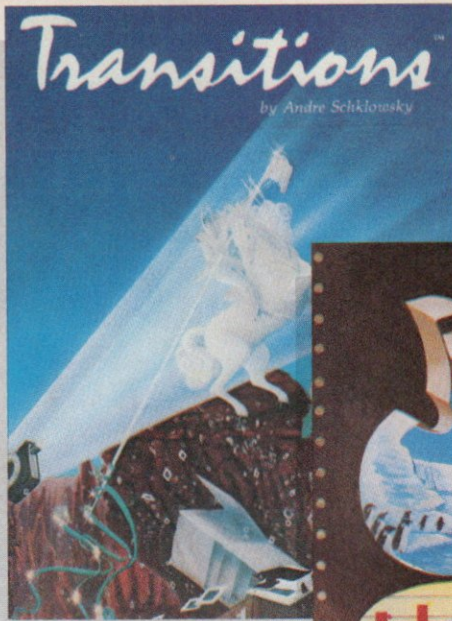
PatternMaker PictureWriter† Run for the Money

† Apple only.

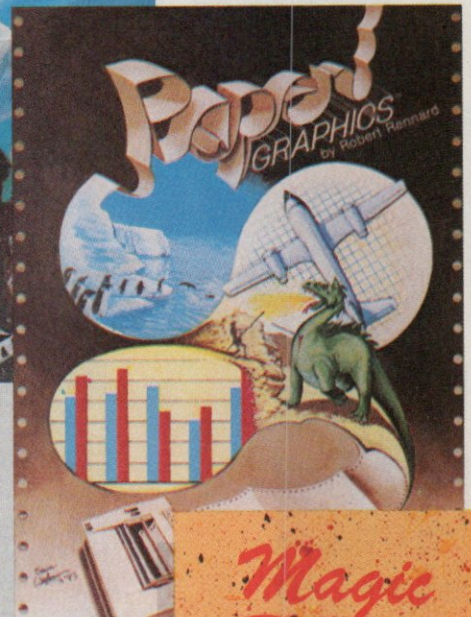
Make check payable and mail to:

Scarborough Systems, 25 N. Broadway, Tarrytown, N.Y. 10591

STATE OF THE art



Transitions
Dynamic slide show editor allows you to pack, arrange, and display pictures, using 44 different screen transitions.



Paper Graphics
Print screen images on virtually any printer, using almost any interface card. Advanced cropping, annotating, and magnify features.

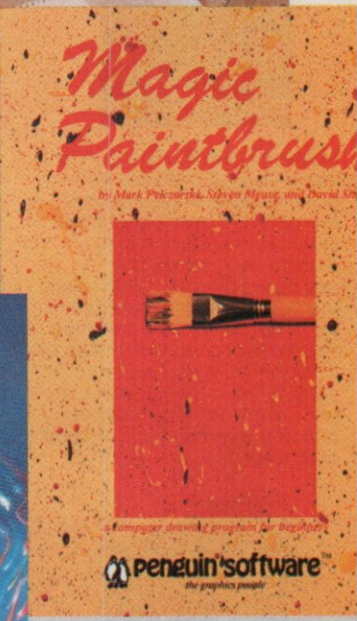


Cat Graphics
For the programmer. Adds 55 new graphics and sound commands to BASIC, such as Circle, Fill, Magnify, and others.



Complete Graphics System
The most complete set of graphics and design tools available for anyone. Drawing, 3-D, Text, Shapes, Tricks, and more.

Magic Paintbrush
Draw and paint with over 100 colors. So straightforward and simple that a child can use it.



Graphics Magician
The developer's tool, used by over 50 publishers for producing extremely compact graphics and smooth animation.

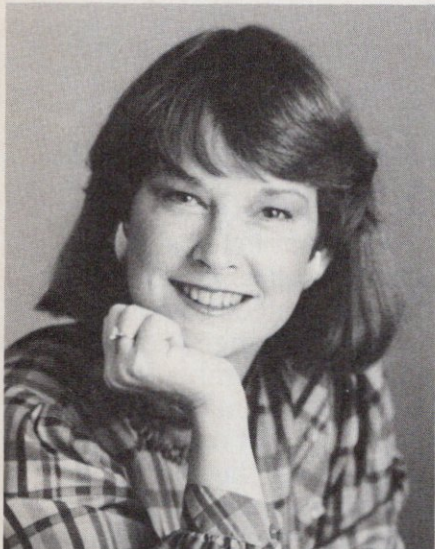
We don't strive for State of the Art . . . We define it! Software that works on a 48K Apple OR takes full advantage of the double-resolution capabilities of the 128K Apples . . . all in a single package.* Use the Apple Mouse, Apple Graphics Tablet, Houston Instruments HiPad, Koala touch pad, joysticks, trackballs, paddles, or your keyboard to create graphics in over 100 colors. Write or call for a free catalog.

CIRCLE 133 ON READER SERVICE CARD



*Magic Paintbrush, & Cat Graphics.
**Graphics Magician Picture Painter available in Double-Res.
Apple is a registered trademark of Apple Computer, Inc. Koala is a trademark of Koala Technologies Corporation. HiPad is a trademark of Houston Instruments.

EDITORIAL A MESSAGE FROM MAGGIE



Are you a new Macintosh owner and worried about the lack of software and hardware peripherals? If so, put your fears to rest. New and innovative products are now available, and more are in the making.

Getting working products for the Mac out the door has been much more difficult than third-party vendors anticipated. To prepare the product chart that ran in our June issue, we asked third-party developers when their products would be available. Unfortunately, very few met their own projected release dates, and we received several letters from readers asking us how we had arrived at the dates we printed. I can now tell you with pleasure, that through perseverance—and with help from Apple—software and hardware vendors are shipping all sorts of interesting products. I saw some of these products in July at the National Computer Conference in Las Vegas, where Apple featured a virtual parade of new products each day in its booth.

One of the most impressive offerings, a filing system called Filevision, is from a company called Telos, in Santa Monica, California. Using Filevision with the Macintosh's tremendous graphics and object-oriented drawing

abilities, you can make visual representations of your data. Since not many of us are artists, Filevision provides several templates (a map of the U.S., for example), and more are in development. According to Telos, Filevision will be available by the time you read this.

In addition, an array of familiar hits has made the transition to the Macintosh screen. These include Microsoft BASIC and Multiplan, Stoneware's DB Master, MegaFiler from Megahaus, Tax Planner from Aardvark/McGraw-Hill, Software Publishing's popular PFS:File and PFS:Report, Dollars and Sense from Monogram, and ThinkTank from Living Videotext.

Whole new genres of software for the Macintosh are emerging. Two distinct ones are graphics diskettes (sometimes referred to as clip art) and desk accessories, both of which take advantage of the Mac's "user interface."

Graphics diskettes are ready-made art and other images, such as maps, arrows, borders, cartoons, and a diagram of a typical home. Mac the Knife from Miles Computing and CLIP 1 from Frazier, Peper & Associates are two examples of graphics diskettes. (See "Leave the Drawing to Us" in this issue.)

By pulling down the Mac's Accessory menu, you can select desk accessories such as an alarm clock, a calculator, and a puzzle. Videx, recognizing the power and convenience of these desk accessories, has developed Desktop Calendar. Because it runs as part of the desk accessories in the background, Desktop Calendar does not interfere with application programs. Thus, by pulling down the Accessory menu, you can look at your calendar without having to load in a program. Megahaus offers a collection of three desk accessories in a package called MegaDesk.

The Mac elicits creativity by the very nature of its design, and nowhere is this ability to inspire more apparent

than in Koala Technologies' MacVision, an image digitizer. Bill Atkinson, author of MacPaint, wrote the MacVision software, which augurs well for its quality.

Two other products illustrated the spirit of the Macintosh—Oberon International's Omni-Reader, a hand-held optical character reader, and the MacPhone from Intermatrix (the Artsci folks), a telemanagement system. Omni-Reader reads text into your computer, bypassing the data-entry stage. Applications include inputting typewritten pages into the Mac, transferring text between incompatible computers, inputting tables of data, storing and editing documents for electronic filing, and so on.

MacPhone finally brings together the phone and the computer. MacPhone dials your phone for you; logs in phone calls you receive, with name, date, and duration; and provides a

The Mac elicits creativity by the very nature of its design.

built-in calendar with three-month display, including appointment book and notepad, a memo writer—which is MacWrite-compatible—and a billing feature.

As you can see, plenty of interesting and useful products to use with your Macintosh are on the scene. By the time you read this, even more will have materialized. With more than 500 companies currently working on Macintosh products, we'll soon have an abundant wealth of Mac software and hardware. Meanwhile, don't forget to write to us with tips for using the Macintosh. +

Maggie Connor

GUARANTEED

LOWEST APPLE PRICES

What's the catch?

Yes, there is a catch. The guaranteed lowest prices in America on hardware and software for your Apple computer are now available only to members of The Micro ExchangeSM. But, the good news is it costs only \$25 to join, and you can earn that back *plus much more!*

Computerized Bidding

The Micro ExchangeSM is linked by computer with a nationwide network of suppliers who are eager to bid on your order. Through bidding, we're able to purchase products for you at prices which are guaranteed to be the lowest in America. Simply call the toll-free number, available to members only, with the makes and model numbers of the items you wish to purchase. We'll handle the transaction and arrange for the delivery of your merchandise right to your doorstep. All done quickly and efficiently so we keep you as a satisfied member of The Micro ExchangeSM.

OUR INCREDIBLE GUARANTEE

If you find that any item you purchased through The Micro ExchangeSM was available at the time of your purchase at a lower nationally advertised price, send us appropriate proof of the lower price, including sales tax, shipping, and other charges, within 21 days of your purchase, and we will refund the purchase price and the merchandise is yours!

Call toll-free today to join...

THE MICRO EXCHANGESM

A Service of MicroVision, Inc.

Also serving the IBM community.

1-800-34M-ICRO
(In Florida Call: 1-800-35M-ICRO)

Ask for operator 27

Earn More Than You Spend

You'll want to tell all your friends and associates about the guaranteed savings at The Micro ExchangeSM. And for every new member you refer, we'll thank you by paying you \$10 cash! Not only will you easily cover the cost of your membership, but you can even earn hundreds of dollars more through this unlimited offer.

Hardware, Software, You Name It.

We'll furnish you with virtually everything you need for your Apple system, including products from these leading manufacturers:

- Amdek • Apple • Ashton-Tate • BPI • Broderbund
- Digital Research • Dow Jones • Epson • Hayden
- Hayes • IUS • MicroPro
- Microsoft • NEC • Peachtree
- Quadram • Rana • Software Publishing • Teac • Tecmar
- Visicorp

Yes, I want to be guaranteed that I'm purchasing my hardware and software at the absolute lowest prices in America.

Charge my Visa Master Card Check or Money Order enclosed

Credit Card No. _____ Expiration Date _____

Name _____

Address _____

City _____ State _____ Zip _____

Telephone (_____) _____

Signature _____

MicroVision, Inc.
8663 Baypine Road, Dept 27
Jacksonville, Florida 32216
904 737-8400

▶ WHERE THE ANSWERS ARE

Dear *A+*,

First let me say that I think *A+* is one of the finest magazines for information regarding the Apple line of computers. I enjoy all of your articles and look forward each month to new and exciting tips, helpful programming advice, and information on new hardware and software products.

I have learned a great deal about my Apple IIe from reading articles in *A+* and other computer magazines. I have found out that once you purchase your system, the salespeople in some of the computer stores seem to lose interest in you.

It seems they are too busy or don't know the answer to questions I have. So, I turn to *A+* for answers, and many times *A+* has the answer to the question I had regarding software or a modem or almost any new product.

So keep up the good work so people like myself, a beginner when it comes to computers, will have somewhere to turn to for some answers.

Michael R. Iacono
Medford, MA

▶ ALUMINUM TRANSPORT

Dear *A+*,

Your article on traveling with an Apple computer omitted what I considered to be an obvious choice. For several years, I have been transporting my Apple II Plus in a pair of Zero-Halliburton aluminum cases. These cases were designed for transporting photographic equipment and contain foam rubber that can be cut to allow insertion of the gear to be moved. Once the case is closed, my computer equipment is fully cushioned by a minimum of one inch of high-density foam on each side.

I use two cases. One contains the Apple plus numeric keypad; the other holds two disk drives, a Silentype printer, and assorted cables and cords and a tool kit. The monitor is handled separately.

I've seen what some computer cases have looked like after being manhandled (conveyor-handled?) and have relied on the Halliburton cases for transporting delicate equipment for some time. They are available through photographic-supply houses.

Bruce Appelbaum
White Plains, NY

▶ APPLE WRITER AID

Dear *A+*,

The Gila Valley Apple Growers Association maintains an AWIIe voice help line for Apple Writer IIe users at (602) 428-4073.

There is no cost for this service, except for the usual phone charges. Best calling times are 8-5 weekdays, Mountain Standard Time.

The group also has an AWIIe toolkit package consisting of eight crammed-full diskette sides. Included are such goodies as patches for NULL, "shortline," and IIc detrashing; answers to hundreds of most-asked help-line questions; microjustify and proportional space, camera-ready secrets; a complete disassembly script; source-code-capturing information; self-prompting glossary secrets; and bunches more.

Individual NULL, "shortline," and "IIc De-Trashing" patches are available free on written or phone help-line request. The association's mailing address is Box 809, Thatcher AZ, 85552.

Don Lancaster
Thatcher, AZ

▶ WHAT PRICE MAC SOFTWARE?

Dear *A+*,

There are many graphics packages for the Apple II family of computers, such as high-resolution character generators, shape editors, drawing and painting utilities that create and manipulate images. Some of these programs are enhanced by supplementary disks such as a disk of fonts. Fontpak

from Data Transforms, Typefaces from Beagle Bros., and Additional Typesets from Penguin Graphics are a few examples. These supplementary data disks are priced, on the average, at about \$20.

The Macintosh is different from the Apple II line of computers. It contains all the routines you need for generating graphics. MacPaint and MacWrite provide the programs for using these routines. Some software for the Mac, such as the recent crop of clip-art packages, contain no programs—you can't use them unless you have MacPaint.

So what are we being asked to pay \$49.95 for? What is an appropriate price for software that requires no programming efforts, no routines, and no innovation?

I recently looked at another new program for the Macintosh, an electronic telephone directory. Instead of using your fingers, you can let your mouse do the walking—for \$200.

Currently, the great demand for Macintosh software is sure to send us scurrying to the stores for any new applications for our Macs. Will we get more selective when supply exceeds demand?

Roberta Schwartz
Brooklyn, NY

▶ CORRECTIONS**Typing-Instruction Program Name**

In our June and August issues (pages 139 and 96, respectively), we listed a typing-instruction program from Roger Wagner Publishing as Typing Tutor. Typing Tutor is actually a trademark of Kriya Systems, Inc., and Roger Wagner Publishing's typing-instruction program was not yet named at press time.

Computer Politics

The telephone number for Aristotle Industries on page 13 of our August 1984 issue (under "Computers in Politics") is incorrect. The correct number is (203) 854-5463.

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 Apple® II, III or Macintosh™.



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**[®] you to design and build The High Performance Software custom spreadsheets for Budget Analysis or Financial Statement Analysis in minutes. Not hours.

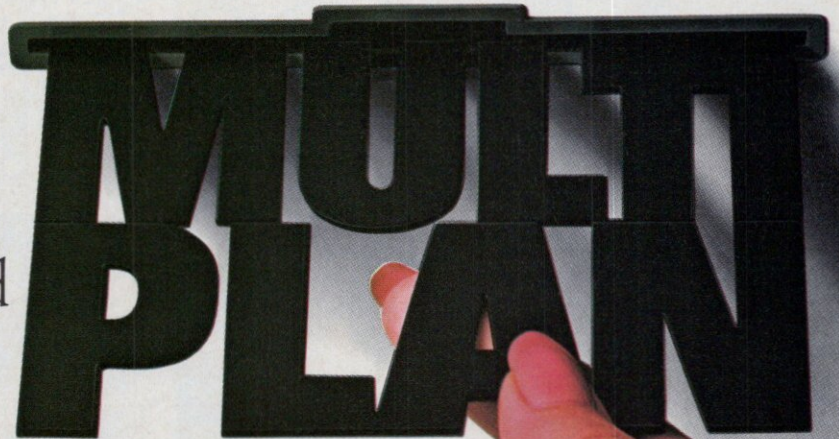
Not days.

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 call 206-828-8088) for your nearest Microsoft dealer. Now featuring Multiplan at a reduced price: **\$195.**

CIRCLE 319 ON READER SERVICE CARD

Suggested list price shown for Multiplan. Microsoft and Multiplan are registered trademarks and MS is a trademark of Microsoft Corporation. Apple is a registered trademark and Macintosh is a trademark licensed to Apple Computer, Inc. IBM is a registered trademark of International Business Machines Corporation. VisiCalc is a registered trademark of Visicorp.



MULTIPLAN

▶ CLEANING THE CEREAL PORT

Isn't it always the little things that trip you and your computer up? The cat hairs in the disk drive, the cable you stumble over at night on your way back from the bathroom, the incomprehensible and ink-smudged labels on your diskettes?

Or maybe you're the picture of efficiency and a veritable model of cleanliness, but your favorite hacker leaves overturned bowls of cereal in the computer room for weeks?

Keeping in mind that Christmas isn't too far away, you may want to dig your way out of your office and buy yourself a computer cleanup kit. It all comes in one package called Computer C.A.R.E., which

is billed as "a maintenance and management system for micro and personal computers."

Translation: this kit contains a lot of the tiny accessories you need to clean your computer and keep your files straight.

A Computer C.A.R.E. kit costs \$49.95 and includes a head-cleaning kit, a disk-storage system, diskette-index cards, an aerosol air blower, the Basic Quality Bus Buffer (a packaged eraser), diskette labels, diskette write-protect labels, cable ties, self-adhesive cable mounts, a Disk-writer felt-tipped pen, a users' guide and maintenance record, a no-smoking sign, keyboard cleaner and swabs, a CRT cleaner, disposable lint-free wipes, and a computer dictionary.

You could assemble

these items more cheaply yourself—but it would take time, work, and money you might want to apply to chipping the encrusted Kix from the top of your hard disk.

Computer C.A.R.E. is available from Basic Quality Computer Products, 10315 West Jefferson Blvd., Culver City, CA 90230; telephone (213) 837-1881.

If you don't want to get down on your fingertips and knuckles to clean your machine, there's yet another option: Mini-Vac, a miniature hand-held vacuum cleaner that inhales the dust and debris that is clogging your computer's contacts. This version of preventive medicine is available by mail order from Pine-Cone, Inc., P.O. Box 1378, Gilroy, CA 95021. Remember, a clean disk is a happy disk.



▶ THOSE DARNED COMPUTERS

Computers. You can't live with 'em, and you can't live without 'em. But maybe you'd still like to lean over and give your Apple a good, swift kick. In that case, you might want to investigate two publications that aren't afraid to view computer/human relations with a jaundiced eye.

Computer Cursers of America publishes the bi-monthly @*&!!%# Computers! (pronounced Expletive Computers), reprinting horror stories of computer woes sent in by members. Club founder Patrick Leonard says that computer addicts "put so much time into the thing that they tend to slip up sometimes . . . They need an outlet for frustration, and that's where we come in." Contact Leonard at P.O. Box 553, Mount Freedom, NJ 07970.



For the truly disaffected, we recommend *Processed World*, "the magazine with a bad attitude." With biting wit, collages of computer ads, cartoons, and scathing articles on the disappointments of the computer age, it's perfect evening reading after a terrible day at the office. Contact its perpetrators at 55 Sutter Street, #829, San Francisco, CA 94104.

▶ I RAISE TWO BITS

The most unusual participant in the Fifteenth Annual World Series of Poker held last summer at Binion's Horseshoe Hotel and Casino in Las Vegas was an Apple II Plus computer programmed by Mike "The Mad Genius of Poker" Caro.

The World's First Computer Poker Challenge was two winner-take-all freeze-out matches of no-limit Texas hold 'em poker, the same game that annually determines the world's champion poker player.

The computer held its own for 43 minutes against Tom "Grand Rapids" McEvoy, a young former accountant who last year parlayed \$100 into the



world championship and \$540,000 cash. The Apple went broke after it started a hand with the best two cards but lost when McEvoy's hand improved more than the computer's did.

The contestants used real cards in the challenges, the computer's cards being read by an optical scanner similar to those found at many supermarket check-out stands.

The second challenger was two-time world cham-

pion Doyle "Texas Dolly" Brunson, who bet all his chips on the first hand. The computer called and lost, and that match was over in less than one minute. Brunson offered a rematch, and he and the computer traded bets for 50 minutes, at which point they called it a draw, with the computer ahead by 58 chips.

Although the computer lost twice, once in a "bad beat," at least it didn't have any hard-luck stories to tell afterwards.

▶ THE ULTIMATE SPELLING CHECKER

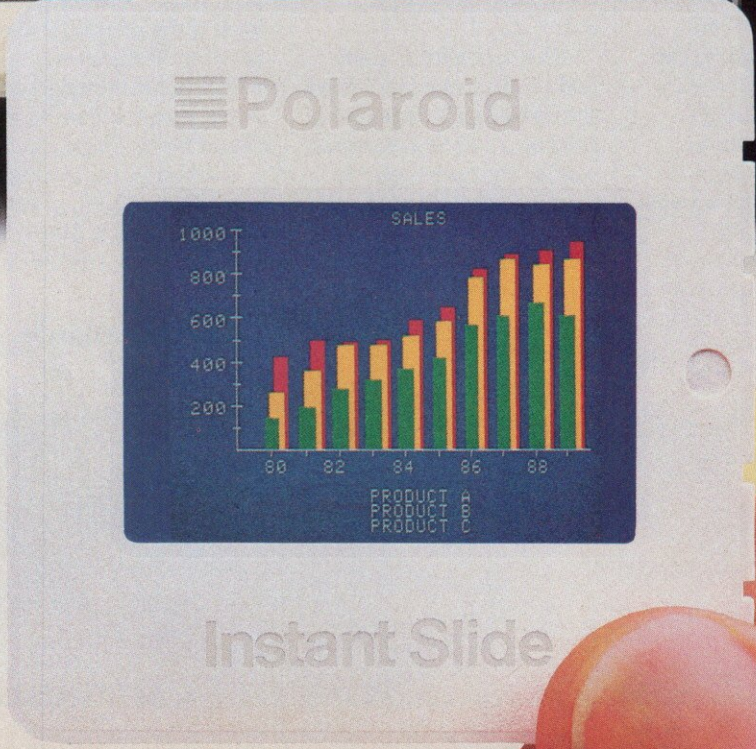
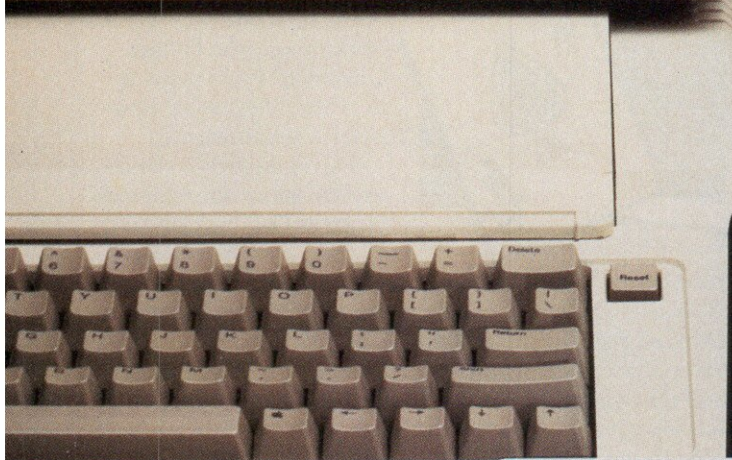
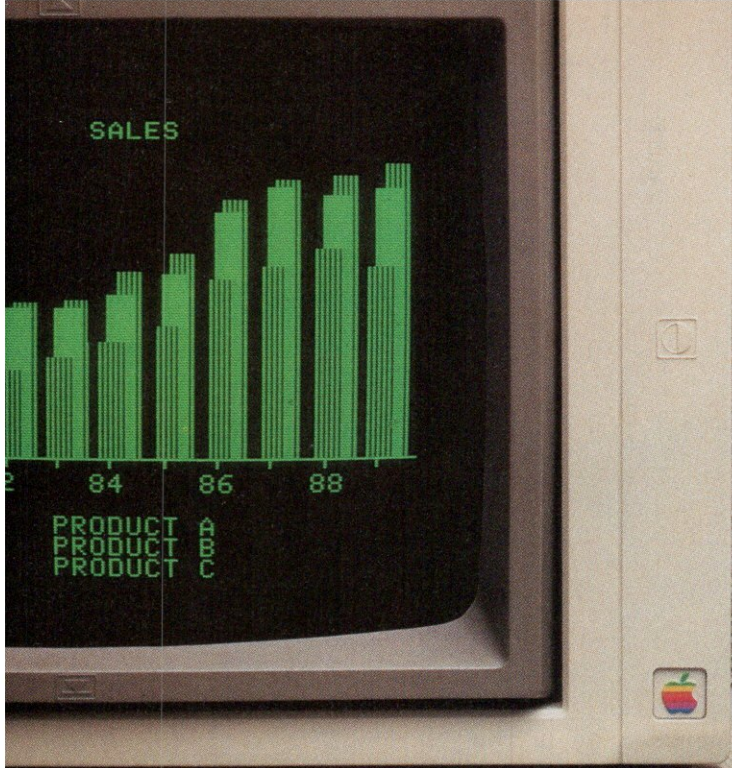
In late-night literary bull sessions when questions come up about a word's spelling or meaning, the final authority is usually the *Oxford English Dictionary*—if you have access to its 13 volumes of specialized terms, word etymology, and quotations.

Now, in an attempt to bring the dictionary into the modern age, the Oxford University Press plans to turn the *OED* into a computerized database.

David Attwooll, the executive editor for reference books at Oxford University Press in New York, says that with the computer version of the *OED*, the dictionary can become not only a lexicon of British English, but "the international dictionary of the English language," with input from the United States, Australia, Canada, and other English-speaking nations from around the world.

The project has already begun, with donations of funds from the British government, funds and a mainframe computer from IBM, and a staff of 120 to complete entering the massive





Now last minute presentations can be made from your personal computer. In color. In house. In minutes.

Introducing Polaroid Palette.

Whether your presentation is in 30 minutes or 30 days, the new Polaroid Palette Computer Image Recorder will make it easier. Priced at under \$1500*, it lets you make Polaroid instant 35mm slides or prints from personal computer-generated data. Right at your desk. So now you can create a presentation in minutes. Without sending out for processing, paying premiums for rush service or risking the security of your confidential information.

Works with the graphics packages of the IBM PC or XT, DEC Rainbow, Apple IIe and II+ as well as other pcs.

The Polaroid Palette is designed to work with many graphics software packages. In fact, when using such popular programs as Graphwriter, Chart-Master, Sign-Master, DR Draw and DR Graph, Palette can virtually double both the horizontal and vertical resolution of your monitor. Plus, a

"backfill" feature reduces raster lines for a smoother, more finished appearance. The result—presentation quality slides. On-the-spot.

Color 35mm slides, even from a black and white CRT

Think of it as an artist's palette. Because Palette "paints" your graphs, charts and text. You're choosing from up to 72 colors. If you don't want red, press a few keys—it's green. And if you're not the artistic-type, Polaroid has developed a menu of color sets: combinations of colors that have been specially coordinated to complement your presentations. And all of this is yours, even if you have a black and white monitor.

Lets you make last minute changes or add up-to-the-minute information.

The Polaroid Palette is the fast, convenient, low-cost way to prepare slides for your presentation. And perhaps

even more important, Palette allows you to keep confidential information confidential. You won't have to send your work out to anyone again.

So why wait until the last minute to find out about Polaroid Palette? Call this toll-free number or return this coupon. Because with Palette you'll make your deadlines, in no time.

For a demonstration, call toll-free, or mail the coupon to Polaroid Corp., E.I. Marketing, Dept. 604, 575 Technology Sq., Cambridge, MA 02139.

CALL 1-800-225-1618

Send information. Have representative call.

A-10/84

Name _____ Title _____

Company _____

Address _____

City _____ State _____ Zip _____

Telephone (____) _____

PC make and model _____

 **Polaroid**

*Suggested list price. Polaroid®

amounts of data into the data banks.

First on the list, says Attwooll, will be an integrated version of existing *OED* volumes and their four supplements. Within four to five years, we'll be able to read a new version of the dictionary, on paper rather than disk.

Once the data is entered and organized, however, the electronic applications for it are endless, says Attwooll. "A shrewd guess is that it will be on some combination of on-line and optical/laser disk," he said, though no firm plans for distribution have yet been made. Specialized dictionaries and horizontal compilations of word etymologies could also spin off from the project.

Attwooll emphasized that care will be taken to design access to the *OED* so that it won't be machine-specific. Within the next ten years, Apple users will be able to win arguments by showing that *Oxford erat demonstrandum—OED*.

▶ SO YOU WANT TO BE A SOFTWARE WRITER . . . ?

If you plan to get into the software- or computer-book-publishing industry (and more people think they have a good idea for a computer book than there are broken hearts on Broadway), then psst . . . come over here. I've got a conference I want to tell you about. Keep this data encrypted, though, because

there's not much space and it might already be too late.

It's a conference on Computers and Publishing, sponsored by the University of California at San Diego



Extension. Judy Parzen, director of liberal arts and sciences at the UCSD Extension, says she started it after hearing from some New York editors that "you care what we do, but we don't care what you do" (you meaning West Coast writers, editors, and publishers). She vowed she'd make them eat their words.

This conference is scheduled for November 1-4 at the La Jolla Village Inn in San Diego, and Parzen says she's bringing in computer-publishing professionals, writers, editors, and agents to explain every aspect of the computer-book and software business.

Among those attending will be Tom Bell, vice president of marketing for Micromedia; Richard Gollner, agent and packager; Robyn Hartman, senior editor at Prentice-Hall, Inc.; Nahum Stiskin, president of Microsoft Publishing Group; and Barbara Lowenstein, founder of a major New

York literary agency. Acquisitions editors will abound; conference attendees may submit ten pages of manuscript

or software design for review prior to the program.

So, if you want to get an inside look at the business—and only a couple of hundred spaces were open, even at \$395 a pop—check it out with Jean Forsythe at (619) 452-3422. Don't tell them I sent you—I'll just see you there.

▶ TALKING TECH IN AMESLAN

Hearing-impaired computer professionals now have a chance to communicate more clearly with their coworkers, using a new standardized sign language of data-processing terminology.

Steven Jamison, a personnel consultant at IBM's Santa Teresa laboratory, began compiling a dictionary of American Sign Language computer terms back in 1981. During the past ten years he's organized annual summer work programs for deaf college

students and has realized the confusion surrounding computerese for the deaf when he noticed three or four different signs for the word *computer* alone.

Jamison's 600-term glossary, entitled *Signs for Computing Terminology*, was recently published by the National Association for the Deaf in Silver Spring, Maryland. Although hearing-impaired students and computer workers will no doubt find the manual handy, Jamison thinks data-processing managers and others who want better communication with the deaf may benefit the most.

The ability to hear is not as critical in technically ori-



ented jobs such as programming as it is elsewhere, Jamison said. Nevertheless, the glossary eliminates the need for laboriously finger-spelling many technical terms.

All publishing rights and proceeds from the book have been turned over to the National Association for the Deaf. The book reportedly sold more than 2000 copies during its first month of publication. For more information, contact the National Association for the Deaf, 814 Thayer Avenue, Silver Spring, MD 20910.

▶ . . . OFF THE OLD PET ROCK

God help us all, you can start looking for the computer world's answer to the Pet Rock on the shelves of your local stores this summer—CHIP, Your Personal Home Computer.

The manufacturer, Young Enterprises, calls CHIP "user-intimate" and "user-compassionate." With a truly personal-size footprint of only 5 × 6¼ inches, CHIP travels anywhere with you without raising a single eyebrow at the FCC. CHIP buyers receive their very own reproduction of a keyboard and monitor and a genuine integrated circuit for a CPU—the heart of CHIP.

To compute, simply flip your CHIP into the air wherever there's a flat surface for landing—excuse me, I meant *an appropriate computing environment*. If CHIP lands standing up, your answer is Yes; if CHIP lands with legs up in *resting* position, your answer is No.

Don't worry about software compatibility with CHIP. The so-called operating manual defines programs as instructions that tell a computer what to do



and when to do it, and "you will find that CHIP considers 'programs' somewhat beneath its dignity. Please address CHIP with polite requests only."

The puns and word play in CHIP's operating manual bring a new meaning to the term *gag gift*. Will it help to mention that CHIP is descended from the CHIPanzee and CHIPPed Beef (Black CHIP of the family)? I thought not.

Compounding horror upon horror, Young Enterprises, based in Danville, California, plans a Friendly CHIP Club that requires the CHIPPocratic Oath, CHIP T-shirts, and perhaps even formal adoption papers for your CHIP.

It's never too early to start stuffing those Christmas stockings. Meanwhile, this reporter will write about something more, um, chipper.

▶ FLY YOUR FRIENDLY APPLE

One person's business requires her to fly out of state every week; another person flies home to visit relatives only once a year. Both fliers share a common goal, however—*cherchez le* cut-rate airfare.

If you still play telephone tag with your travel agent, you may not know that computer users can now get the inside track on ticket prices via data-bank services such as The Official Airline Guides Electronic Edition.

Many travel agencies use computer services that reportedly are programmed to bring up scheduled flights for particular airlines first, said an OAG spokesperson. OAG, a subsidiary of Dun & Bradstreet Corporation, says its independent service can save us-

ers between 20 and 50%.

This on-line service entails a \$50 one-time installation fee. Thereafter, users are charged 10 cents per minute, 20 cents per schedule screened, and 30 cents per fare. OAG says the average business client spends seven minutes looking up fares.

This service may not come as news to those of you who subscribe to services such as Dialcom, Dow Jones News Retrieval, The Source, or CompuServe. On these and other services, the OAG Electronic Edition is available for an initial premium and billing on an hourly basis. A spokesperson for OAG says that the system is now also available through retail computer stores.

However you use the service, it's one good way to let your fingers do the walking while you do the flying. ✚

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*,sm *CompuServe*[®], and *Dow Jones News/Retrieval*[®]. 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[®], 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.

CIRCLE 162 ON READER SERVICE CARD

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 Softronic, Inc. For more information or to order, call (901) 683-6850.

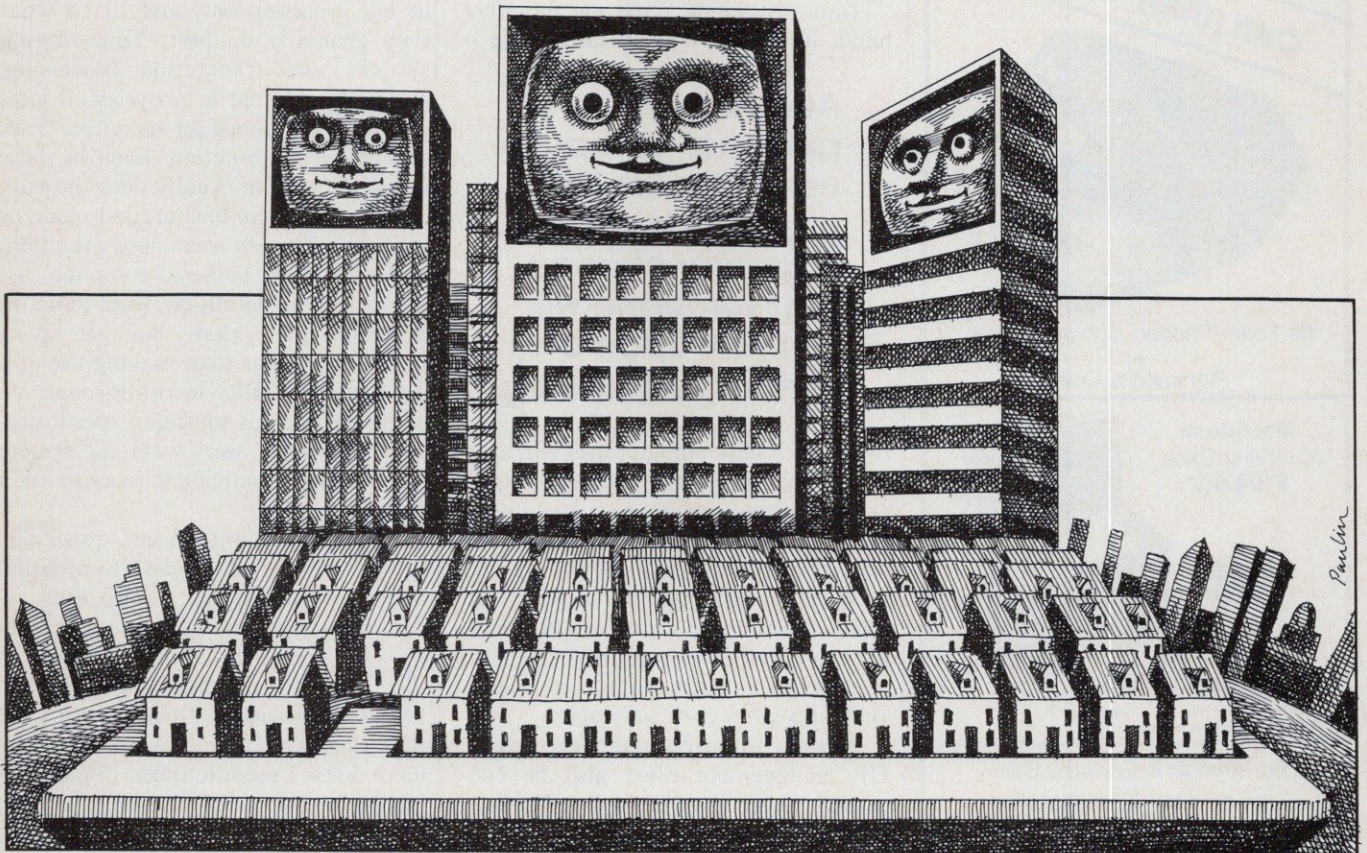
SOFTRONICS

3639 New Getwell Road, Suite 10
Memphis, TN 38118. (901) 683-6850



**THOUGHTWARE
BY STEVE ROSENTHAL**

Can personal-computer users
and data-processing departments
see eye to eye?



GETTING ALONG TOGETHER

The social connection between personal-computer users and mainframe data-processing staffs needs more attention, it seems, than the technology of hooking Apples to mainframes. While the requisite hardware and software connections are already in place or in the wings, many computer systems are just beginning to examine the social and organizational issues.

Bringing Apples and other personal computers into large organizations with big computer systems can cause friction between existing data-processing (DP) departments and personal-computer users. These strains are not merely the inevitable clash of new ways replacing the old. Real issues are involved, and there's right on both sides. Both Apples and big computers promise to be around for many years, however, so both sides need to find ways to work constructively together.

Furthermore, as network technology and personal computers continue to advance, an increasing amount of computer use in organizations with mainframe computers will take place locally. "Distributed processing" and other forms of sharing information be-



Bringing Apples and other personal computers into large organizations with big computer systems can cause friction.

tween mainframe and personal computers promise to give computer users spread throughout an organization better access to information and faster response. The challenge is to keep the

flexibility and responsiveness of desktop computers without interfering with the comprehensiveness and accuracy of the information in the mainframes.

What Users Want

On the Apple users' side, people want easy access to mainframe data. Personal-computer users who develop an expertise and a set of programs on their own find they need data already collected and available on mainframes. In a corporation, for example, departmental users may want to use financial figures from corporate databases as data in their spreadsheet models. At home, investors want financial information from information utilities. Researchers want statistical data from government databases.

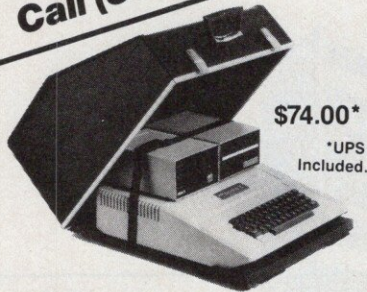
Personal-computer users also want to move data back from their computer to a mainframe. Managers who develop their own departmental budget on a

Pauline

DOUG PAULIN

**Protect
the fruits of
Apple!**

Call (800) 847-4176



IIe Foam Padded Carrying Case
with
Removable Cover

**Macintosh
Carrying Case
\$104.50***



*UPS Shipping Included.

IIc Storage & Carrying Case
(Call Toll Free for information)

**Call for Complete
Computer Case Catalog.**

Apple • Amdek • IBM • Epson
Compaq • DEC • Franklin • HP
Okidata • Televideo • TI • Zenith
and more!

**Fiberbilt will custom-
make cases for any
computer model!**

For
Fast
Service!



CREDIT CARD CUSTOMERS
CALL TOLL FREE
800-847-4176
(outside N.Y. State)



Fiberbilt

Ikelheimer-Ernst, Inc.
601 West 26th Street
New York, New York 10001-1199
(212) 675-5820 (N.Y. State only)
(800) 847-4176 (Toll Free)

CIRCLE 159 ON READER SERVICE CARD

personal computer want to be able to send that information directly into the mainframe for use in their company's overall plan, without the expense and the risk of errors in typing it in on a terminal. Salespeople who download information about prospects want to send in the resulting orders directly from their computers.

Data-processing staffs, on the other hand, worry most about corruption—

**▶ Allowing
personal-computer
users access to a
mainframe means
a greater chance
that someone will
stumble upon a
serious system bug.**

that a personal-computer user will accidentally or purposely damage important information in a corporate or organizational database. Fighting this kind of corruption is one of the primary goals of a well-run computer department in any large organization. Organizations that have invested huge sums to develop and collect data are understandably protective toward it.

Besides worrying about corruption, DP management must also be concerned about availability, efficiency, and the use of resources. When a personal-computer system crashes, only the user or a few users are directly inconvenienced. When a large organizational system goes down, on the other hand, the direct result is often the idling of dozens or hundreds of users. Software for large computers, especially programs meant for use only by skilled staff members, is not always as goof-resistant as it should be. Allowing personal-computer users access to a mainframe means a greater chance that someone will stumble upon a serious system bug.

Using personal computers to access mainframe systems also ties up ports on the system that might otherwise accommodate dedicated terminals. Although an Apple may be more powerful than most minicomputer or mainframe terminals, it wasn't engineered specifically for an optimum relationship with large systems.

Apples are less expensive than many dedicated terminals—but equipment cost is one of the ways that data-processing departments have limited the

number of users who tried to access a system. A proliferation of personal computers emulating terminals can quickly overload the capacity of even a large mainframe system.

Demands by a multitude of personal-computer users can also reduce the efficiency of large computer systems. Big computers are designed for big jobs at big organizations, and that's what they generally do best. Time-sharing systems and transaction processing, seemingly tailored to many small jobs, are really optimized for repetitive cases or fast user interaction. Even in these cases, the system usually does the bulk of its work in the background mode or at night when few users need attention.

In contrast, personal-computer users, almost by definition, want more interaction than they can get at a terminal. Rather than making use of a big system's ability to run through existing routines at lightning speed, personal-computer users want the system to respond to individual requests at a human pace.

Personal-computer users, especially those accustomed to easy-to-program machines such as the Apple, often expect the same individual response from the DP department and its machine as they receive from their small systems. Many Apple users, faced with a need that their existing software or equipment doesn't seem to meet, think nothing of buying a new program or even writing their own. The time you need to make a major system change is usually measured in hours or days.

Big machines don't provide that kind

**▶ A proliferation of
personal computers
emulating
terminals can
quickly overload
the capacity of
even a large
mainframe system.**

of flexibility. Making even the smallest change in the software for a corporate mainframe may require a preliminary study, a project budget, international cooperation, and the cooptation of one or more full-time staff members. Even when the various applications and databases on big machines are not inextricably intertwined, the close linkage between the programs and a necessarily complex operating system can prevent

NONAGON™ HAS THE BEST FOR LESS

SPECIALS

Macintosh:	Apple Education:	Apple Business:	Apple Util/Hard/Access:
3½" Diskettes 48.00	Logo (Krell) 69.95	Jane 135.00	Printshop 38.95
Typing Tutor III 39.95	SAT (Krell) 240.00	New Home Accountant ... 52.50	Essential Data Duplicator . 64.95
Multiplan 155.00	Plato's Cave (Krell) 41.95	Word Handler 36.95	Color Ribbon
Zork I 31.95	Mastering SAT (CBS) 120.00	List Handler 36.95	Apple DotM/C-Otoh 8.00
			MicroSci A2 Drive 199.95

APPLE BUSINESS/UTILITIES

	Retail Price	Your Price
Advanced Logic Systems		
T-Maker (Integrated Software Package)	250.00	205.95
Artsci		
Magic Window II (80 Column)	149.95	104.95
Magicalc	149.95	104.95
Magic Office System	295.00	220.00
Ashton-Tate		
dBase III	695.00	520.00
Framework	695.00	520.00
Beagle Brothers		
Apple Mechanic	29.95	20.95
GPLe	49.95	39.95
Disk Quick	29.95	21.95
Silicon Salad	29.95	21.95
Fat Cat	34.95	24.95
BPI Systems, Inc.		
Job Costing	595.00	446.95
General Accounting	395.00	309.95
Accounts Payable	395.00	309.95
Accounts Receivable	395.00	309.95
Inventory Control	395.00	309.95
Payroll	395.00	309.95
Broderbund		
Bank Street Writer	69.96	49.95
Bank Street Speller	69.95	49.95
Business Solutions		
Incredible Jack	179.00	134.95
Jack Report	99.00	74.95
Central Point Software		
Copy II+	39.95	31.95
Datatransform		
Fontrix	75.00	64.95
Font Disk #1	24.95	18.95
Font Disk #2	24.95	18.95
Font Disk #3	24.95	18.95
Font Disk #4	24.95	18.95
MicroPro		
Wordstar w/Starcard	495.00	395.00
Wordstar Professional w/Starcard	694.95	486.95
Microsoft		
Multiplan (Apple DOS)	195.00	150.00
T.A.S.C. (Applesoft compiler)	195.95	146.95
Micro-Sparc, Inc.		
Ampersoft	49.95	39.95
G.A.L.E.!		
(Global Applesoft Line Editor)	49.95	39.95
Macrosoft	69.95	55.95
The Assembler	69.95	55.95
Key Perfect	29.95	23.95
Penguin Software		
Complete Graphics System	79.95	59.95
The Graphics Magician	59.95	42.95
Paper Graphics	49.95	37.95
Transitions	49.95	37.95
Map Pac	19.95	15.95
Phoenix Software		
Zoom Grafix	49.95	35.95
Sensible Software		
Back-it-Up III	74.95	59.95
Image Printer	49.95	37.95
Sensible Speller	124.95	87.95
Book Ends	124.95	87.95

	Retail Price	Your Price
Silicon Valley Systems		
Spell Handler	59.95	31.95
The Handlers	159.95	84.95
Southwestern Data Systems		
Merlin	64.95	45.95
Printographer	49.95	34.95
Stoneware		
D.B. Master (V4.0)	350.00	262.50
D.B. Master Utility Pak 1	129.95	97.50
D.B. Master Utility Pak 2	129.95	97.50
D.B. Master Stat Pak	129.95	97.50
United Software		
ASCII Express Professional	129.95	103.95

APPLE GAMES

Avant-Garde Creations		
Hi-Res Computer Golf II	39.95	27.95
Blue Chip Software		
Millionaire	59.95	47.95
Broderbund		
Lode Runner	34.95	24.95
Spare Change	34.95	24.95
CBS Software		
Match Wits	29.95	21.95
Goren's Learning Bridge	79.95	55.95
Epyx		
Oil Barons	59.95	48.00
World's Greatest Baseball	39.95	31.95
Electronic Arts		
One-on-One	39.95	31.95
Music Construction Set	39.95	31.95
Hayden Software		
Sargon III	49.95	39.95
Infocom		
Planetfall	49.95	37.95
Infidel	49.95	37.95
Enchanter	49.95	37.95
Sorcerer	49.95	37.95
Sea Stalker	49.95	39.95
MicroLab		
Death in the Caribbean	35.00	25.00
Heist	40.00	30.00
Muse		
Beyond Castle Wolfenstein	39.95	31.95
Sierra On-Line		
Championship Boxing	34.95	27.95
SirTech		
Wizardry: Proving Grounds	49.95	34.95
Wizardry: Knights of Diamonds	34.95	24.50
Wizardry: Legacy of Lylgarn	39.95	27.95
Crypt of Medea	39.95	27.95
Strategic Simulations		
Germany 1985	59.95	43.95
Rails West	39.95	31.95
Questron	49.95	39.95
Sublogic		
Flight Simulator II	49.95	39.95
Night Mission: Pinball	39.95	31.95

APPLE EDUCATION

	Retail Price	Your Price
Advanced Ideas		
Game Show	39.95	31.95
Wizard of Words	39.95	31.95
BrainBank		
The Human Body: An Overview	89.95	72.00
The Skeletal System	70.00	56.00
Conduit		
Algebra Drill I	140.00	112.00
Trigonometry	90.00	72.00
Counter Point		
Matchmaker	29.95	23.95
Music	29.95	23.95
J & S Software		
Chemistry Test Maker	75.00	60.00
Biology Test Maker	75.00	60.00
Apple Grade Book	39.95	31.95
P.D.I.		
Step by Step 1 (Applesoft Tutorial)	79.95	59.95
Scarborough		
Master Type	39.95	31.95
Terrapin		
Terrapin Logo	99.95	79.95
The Learning Company		
Rocky's Boots	49.95	39.95
Reader Rabbit	39.95	31.95

APPLE HARDWARE

Advanced Logic Systems		
Z Card II	169.95	125.00
Apricorn		
Serial Interface Card	99.95	80.95
Hayes Products		
Joystick Mach III (Ile)/II+	59.95	43.95
Kensington Microwave		
System Saver	89.95	64.95
Koala Technologies		
Koala Pad	124.95	84.95
Prometheus		
Promodem 1200	495.00	395.00
Sweet Micro		
Mockingboard - Sound	129.95	104.95
Mockingboard - Sound & Speech	195.00	155.00
TG Products		
Joystick	59.95	41.95
Paddle	39.95	27.95
Select-a-Port	59.95	41.95

APPLE ACCESSORIES

BASF		
Diskettes SSDD	39.95	24.95
Diskettes DSDD	65.00	35.00
Verbatim		
5-1/4" Datalife - Soft Sector (ss/dd)	40.00	25.95
5-1/4" Datalife - Soft Sector (ds/dd)	65.00	40.00
Ribbons		
Star Gemini/Okidata		4.95

For Mail Orders: Include your selection(s), name, address, phone number along with your check, money order or credit card number and expiration date. Please include \$3.00 for shipping & handling (heavy items, hardware and foreign orders extra). California residents add 6½% sales Tax.

ORDER DESK

National: 800-942-2058 Alaska & Hawaii: 415-237-4406
California: 800-223-8327 Hours: 8 a.m. to 6 p.m. PST



For Order Status & Technical

Information Call:

415-237-5283

In Bay Area visit

SOFTWARE SOLUTIONS™

11185 San Pablo Ave., El Cerrito, CA 94530
 (415) 237-5257 Hrs: M-Sat 10 a.m. to 6 p.m.

NONAGON SOFTWARE™

P.O. Box 1486

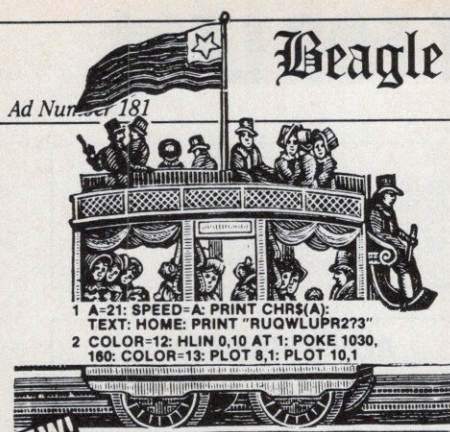
El Cerrito, CA 94530

Beagle Bros Apple Software Report

Ad Number 181

"All the News That Fits"

Fall/Winter 1984



NEW!

BEAGLE GRAPHICS™

16-COLOR DOUBLE HI-RES GRAPHICS
\$59.95 (DOS 3.3 and ProDOS™, requires Apple IIc or 128K IIe)

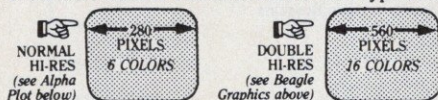
16 colors and 560x192 resolution on your IIc or 128K IIe! Beagle Graphics is packed with features:

As an Artist, you can draw, FILL and label double hi-res pictures using the AppleMouse™, joystick, Koala Pad™, graphics tablet or keyboard.

Icon-assisted "Cut & Paste" features make graphics manipulation easy. Any section of a picture can be stored, moved, inverted or flopped.

As a Programmer, you get 33 new commands for drawing, filling and manipulating double-res images. New utilities let you convert normal programs & 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.

Label your double hi-res pictures with a variety of editable normal-size and double-wide typefaces.



ALPHA PLOT™

STANDARD HI-RES GRAPHICS UTILITY

\$39.50 (DOS 3.3, compatible with any version of Apple II)

Alpha Plot lets you draw in hi-res on both pages using easy keyboard commands. Pre-view lines before plotting. One-keystroke circles, boxes and ellipses, filled (solid/mixed) or not. All pictures are Save-able to disk for access by your programs.

Compress hi-res data to 1/3 disk space, allowing 3 times the number of hi-res pictures per disk.

Superimpose pictures or relocate sections of images anywhere on either hi-res page.

Add variable-size color text to pictures. Type anywhere on the screen, even sideways for graphs.

PRONTO-DOS™

TRIPLE-SPEED DOS 3.3 UTILITY

\$29.50 (DOS 3.3, compatible with any version of Apple II)

ProntoDOS triples the speed of loading and saving pictures and programs. Compare speeds:

Function	Normal	Pronto
BLOAD HI-RES IMAGE	10 sec.	3 sec.
LOAD 60-SECTOR PROGRAM	16 sec.	4 sec.
SAVE 60-SECTOR PROGRAM	24 sec.	9 sec.

(Text files no change)

MOVE DOS 3.3 above main memory to free 10,000 bytes of memory (64K required to move DOS). Get 15 extra free sectors per initialized disk too.

New TYPE command ("TYPE filename") immediately displays your Apple text file contents.

NEW! FATCAT™

DISK LIBRARY ORGANIZER

\$34.95 (compatible with any version of Apple II)

Fatcat reads all of your DOS 3.3 and ProDOS disk catalogs into one or more "Master Catalogs" that can be searched, sorted and printed. Update at any time by simply reading in new or altered disks.

Fatcat also lets you quickly compare any two files and alphabetize file names in your catalogs.

"How can I make my Apple do that?"

You know, you can make your Apple do almost anything you can think of, with just a little help—Beagle Bros software helps make your Apple a more powerful computer, and you a better programmer.

BEAGLE BROS, THE UTILITY LEADERS: Beagle Bros' low-priced unprotected disks dominate the Apple Utility bestseller lists. And Beagle disks were recently voted to FOUR of the TOP-24 spots in Softalk's "Most Popular" poll—that's against all Apple software publishers in all categories.

APPLE'S SECRETS REVEALED: Our authors are always on the lookout for techniques and tips that can be shared with our customers. From our inspectable programs to our informative instructions and Apple Tip Books, you will learn from the experts. And you don't have to be an expert to start. For example, type in this little program, and then type "RUN" **10 HGR: POKE 228,99: HPLLOT 0,99 TO 279,99 A-ha!** You just drew a dotted line on the hi-res screen. A secret technique? Not any more.

APPLE MECHANIC™

HI-RES SHAPE ANIMATION

\$29.50 (DOS 3.3, compatible with any version of Apple II)

Apple Mechanic lets you draw shapes on the screen which are converted into "shape tables" so your programs can perform animation with Apple's built-in Draw & Xdraw commands.

Easy-to-follow "List & Learn" demos on the disk teach how to program in Hi-Res.

Fancy typefaces are another big part of Apple Mechanic. Six proportionally-spaced fonts are included on the disk, with 26 more on our Apple Mechanic TYPEFACES disk, sold separately.



NEW! TRIPLE-DUMP™

"PRINT-ANYTHING" PRINTER UTILITY

\$39.95 (DOS 3.3 and ProDOS™, compatible with any version of Apple II)

Triple-Dump lets you print any kind of image on your dot matrix (graphics-capable) printer:

① Hi-Res & Double Hi-Res graphics. ② Lo-Res & Double Lo-Res graphics. ③ 40 & 80-Column text.

Triple-Dump's print routines can be run directly from the disk, or included in your programs.

Also included is a bonus GIANT BANNER program that makes 8½" high signs on any printer.



The Apple Programmer's Best Friend

BEAGLE BROS, INC.

3990 OLD TOWN AVENUE, SUITE 102C
SAN DIEGO, CALIFORNIA 92110 619-296-6400

The Beagle Bros Catalog

GRAPHICS ■

- ALPHA PLOT (described in this ad) \$39.50
- APPLE MECHANIC (described in this ad) 29.50
- APPLE MECHANIC TYPEFACES 20.00
- BEAGLE GRAPHICS (described in this ad) 59.95
- FLEX TYPE (II+, IIe, IIc, DOS 3.3) 29.50
Variable-width text (wide/normal/condensed) controllable with normal Applesoft commands. No 80-column card reqd.
- FRAME-UP (II+, IIe, IIc, DOS 3.3) 29.50
Make Apple "slide shows". Keyboard controlled or unattended, using your existing hi-res, lo-res and text screens.
- TRIPLE-DUMP (described in this ad) 39.95

ALL-PURPOSE ■

- DISKQUIK (IIe or 128K IIc, DOS 3.3) 29.50
Acts like half a disk drive in slot 3. Silent and fast as a hard disk. Load/save files in memory with normal commands.
- FATCAT (described in this ad) 34.95
- PRONTO-DOS (described in this ad) 29.50

PROGRAMMING ■

- BEAGLE BASIC (IIe or 64K II+, DOS 3.3) 34.95
Puts Applesoft in RAM so you can change it and add enhancements—new commands like if-then-ELSE, SWAP variables, GOTO/GOSUB-a-variable, TONE, HSCRN, etc.
- DOS BOSS (II+, IIe, IIc, DOS 3.3) 20.00
Reword DOS 3.3 commands. Change "Catalog" to "Cat", "Syntax Error" to "Oops" or anything. Includes many meaty tips for altering DOS, including program "save-protection".
- DOUBLE-TAKE (II+, IIe, IIc, 3.3/Pro) 34.95
2-way scroll for Listings & Catalogs. Better List-format, fast variable+line number display, better renumber/append, auto line-numbering, instant hex/dec converter and more.
- GPLE (II+, IIe, IIc, 3.3/Pro) 49.95
Edit Applesoft without cursor-tracing. Features insert & delete and fast search & replace. Make all keys be "function keys" to type anything you like (ESC-1 catalogs disk, etc.). Move DOS 3.3 out of main memory to add 10K of space.
- SILICON SALAD (II+, IIe, IIc, DOS 3.3) 24.95
Over 100 utilities and tricks—hi-res program splitter, DOS killer, disk scanner, hi-res text imprinter, 2-track catalog...
- TIP DISK #1 (II+, IIe, IIc, DOS 3.3) 20.00
100 tips on disk from Tip Books 1-4. Fascinating Apple programming techniques. Includes Apple Command Chart.
- UTILITY CITY (II+, IIe, IIc, DOS 3.3) 29.50
21 utilities—List-formatter puts each statement on a new line, multi-column catalogs, invisible/trick file names, etc.

GAMES ■

- BEAGLE BAG (II+, IIe, IIc) 29.50
12 games on one disk. Voted to 1983's MOST POPULAR list in Softalk poll. The best Apple game bargain on the market.

GOTO your favorite software store. If they are out of a particular Beagle Bros disk, get on their case; they can get it for you immediately from any software distributor.

OR buy directly from Beagle Bros by phone or mail. **PHONE:** Visa/MasterCard/COD orders, phone toll free. **MAIL:** Send check or Visa/MC numbers to Beagle Bros. Add \$1.50 shipping +6% if Calif. We ship immediately.



Toll Free: **1-800-227-3800 ext.1607**

(MasterCard/Visa/COD orders only please.)

For product information, phone 619-296-6400.)

all but full-time experts from making significant changes.

Setting a Standard

Despite these problems, most DP departments and personal-computer users eventually see the logic of working together. Rather than ignoring personal computers completely, most mainframe administrators are now looking for ways to accommodate the burgeoning number of personal-computer users.

As an immediate solution, some "big iron shops" (as the DP departments for large systems are termed) have decided that the best way to treat personal computers is as if they were a special class of terminals. You'll find that most information utilities (such as The Source or CompuServe), for example, rarely provide ways to use a personal computer as more than a terminal. Many private systems act the same way.

Because big systems do best by repeating large numbers of similar transactions, many mainframe and even minicomputer systems have tried to promulgate a single standard for personal-computer use within an organization and then to adapt the mainframe to provide a clearly defined class of service. Over the past year or two, it seemed possible that the IBM Personal

Computer would be the sole system to win the DP department imprimatur at most corporations, but the increasing interest in the Macintosh and the counterattack from other goliaths such as AT&T may yet hold off that hegemony.

In the long term, however, most experts predict that some form of network will provide a better matching of the

▶ **Most DP departments and personal-computer users eventually see the logic of working together.**

strengths of personal computers and large central systems.

One approach is to distribute databases across a network. Some firms already sell software to let big machines accept data from VisiCalc and similar spreadsheet models. A corporate mainframe can thus keep the overall organizational budget, while individual departments hold on to the details that affect only their own area.

Distributed-database technology is still relatively new, so various proposals

abound on how to make sure that information at one end of the network reflects any changes made at the other, who takes responsibility for entering what information, and how to make sure only the proper people have reading access or the right to change selected information.

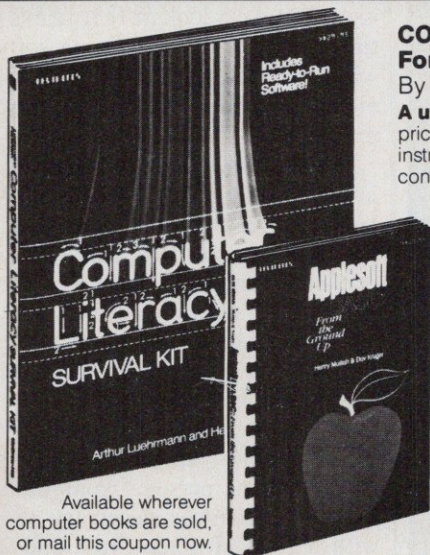
Distributed control, which lets networked systems actually forward requests and instructions to other connected computers, presents even thornier issues. Again, the field is relatively new, so many of the issues are somewhat in flux. Generally, the challenge will be to allow users of Apples or other computers to get services from the mainframe that big machines can do more efficiently while keeping unauthorized users from seizing too much control of resources or accidentally interfering with other users.

What Is Possible Today

Until organizational redefinition and system evolution to distributed processing take place, Apple users can still connect to mainframes in more traditional ways. Using various combinations of hardware and software, you can make an Apple or other personal computer look to a mainframe like one of its own. For example, Apple offers termi-

How to BYTE your Apple.

You've just plugged in your shiny new Apple. Now what do you do? More and more first-time users are turning to McGraw-Hill's BYTE Books for expert answers to their basic questions. Here are two exciting new titles designed to get you started. Try them and discover for yourself why BYTE Books are the hands-on favorites with Apple users.



Available wherever computer books are sold, or mail this coupon now.

COMPUTER LITERACY SURVIVAL KIT For the Apple II, IIe, IIc Family of Computers

By Arthur Luehrmann & Herbert Peckham

A unique "hands-on" package—with ready-to-run software bound right in! Planned—and priced—for family use, this 7¼" x 9¼" package provides a basic introduction, step-by-step instructions for hands-on activities and programming projects, plus a bound-in, ready-to-run diskette containing all programs necessary to start and use the computer. *Illus.* Paperback, \$29.95

APPLESOFT BASIC: From the Ground Up

By Henry Mullish & Dov Kruger

For the absolute beginner—a first course in programming the BASIC language on the Apple II, Apple II+ and Apple IIe computers, with extensive treatment of Applesoft BASIC (Apple's own version of the language). Lie-flat plastic comb binding. *Illus.* Paperback, \$10.95



McGRAW-HILL BOOK COMPANY, Dept. PL, 35th Floor
1221 Avenue of the Americas, New York, N.Y. 10020

Rev. 60

Please send me the following books:

_____ copy(ies) of **Computer Literacy Survival Kit** by Luehrmann & Peckham @ \$29.95 each.

_____ copy(ies) of **Applesoft BASIC** by Mullish & Kruger @ \$10.95 each.

I enclose check or money order totaling \$_____

Name _____

Address _____

City _____

State _____ Zip _____

Please add applicable taxes.

AP10

CIRCLE 207 ON READER SERVICE CARD

UPGRADE get IIe features on your apple II

up to 5 keyboard features with the
REPEATERRRR+™

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

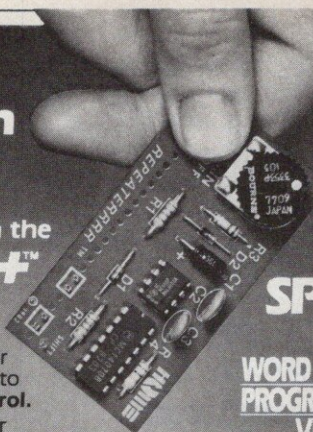
High Speed Cursor: Makes Apple's REPT key a speed control to double the repeat rate of any keypress. Zip through text or across a VisiCalc spreadsheet to get there fast. A must for 80 column displays.

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

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

REPEATERRRR
without SHIFT-key modification **\$27⁹⁵**

REPEATERRRR+
with SHIFT-key modification **\$37⁹⁵**



**SPEED
UP
WORD PROCESSING
PROGRAM EDITING
VISICALC**

TO ORDER: Ask your local dealer or order direct.

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



HIGH ORDER MICRO ELECTRONICS CORP.

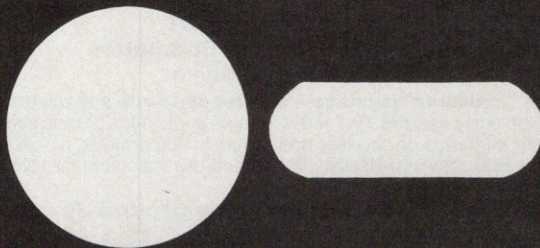
17 RIVER ST. CHAGRIN FALLS OHIO 44022
PHONE 216-247-3110

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

CIRCLE 390 ON READER SERVICE CARD

Using any other brand just doesn't compute.

Verbatim®



BRITCO makes it all possible.

Readily available product.

Introducing nationwide service.

Quantity discounts available for all products.

Visa or Master Charge acceptable.

Dealer inquiries welcome.

Nationwide response,

*** 1-800-643-9029**

in Texas call collect.

*** 214-669-2565**

CIRCLE 227 ON READER SERVICE CARD

nal-emulation software for most of its computers that turn an Apple machine into a DEC VT100 terminal look-alike for connection to minicomputers and dial-up networks. With this software, mainframe programs that expect to communicate with this kind of terminal can use cursor-positioning commands and screen editing to build complex text screens rapidly. In contrast, simple communications packages often support nothing more than TTY (short for Teletype) connections, where the terminal is assumed to know only how to display characters and move down to the next line.

For hooking up to big IBM computers, Apple and others will sell you a protocol converter or even a complete cluster controller (see page 57 in this issue). The IBM mainframe world uses different cables, connection methods, and even character codes, so this additional hardware is vital for making an Apple fit in.

Adapting to mainframe hardware and communications protocols is as far as the Apple or other personal computers can go, however. With the right software, an Apple can send prewritten text to a mainframe or capture the data that comes back down the line. To download and upload nontextual files from the mainframe to the Apple or to add error-checking during transmission, some changes are necessary at the mainframe end. In particular, the mainframe needs software that tells it how to exchange files with personal computers. First Concept Technologies is a company that provides this type of mainframe software. On page 39 of this issue we take a look at that firm's Continuum series of mainframe software, which allows Apples to interact with mainframes in a distributed-processing network.

The coming months should also see important announcements from Apple about its Applebus network and from IBM about how it expects to network personal computers and big machines. With these reference points, software developers should begin to turn out a wide variety of packages for Apple-to-mainframe links.

Given the proven adaptability of Apples and other personal computers, it's clear that the personal computers can make the changes necessary to work with big mainframes. Now, and in the future, the real innovations must come from computer designers and users. After all, interfacing is far too important to be left to machines. +

THE WORLD'S LARGEST COMPUTER MAIL ORDER FIRM

CONROY-LAPOINTESM



Formerly **Computer Exchange**

All Rights Reserved

© 1984 by Conroy-LaPointe, Inc.

LOW PRICES TO PROFESSIONALS WHO KNOW WHAT THEY WANT AND KNOW HOW TO USE IT!

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

SHOWROOMS AT: PORTLAND, OR AND SEATTLE, WA — BOTH OPEN M-SAT 10-6

HARDWARE for your APPLE

Apple
APPLE IIc
APPLE MACINTOSH
APPLE IIc, STARTER SYSTEM BY APPLE
LIMITED WARRANTY = 100% Parts & Labor for 90 days by us.

CALL
 CALL
 CALL

DISK DRIVES

	LIST PRICE	OUR PRICE
AMDEK Amdisk I, 3" Micro-Floppy, 143K	\$299	\$249
* CENTRAL PT., Filer, Utility & Apple DOS	\$20	\$15

CONCORDE

C1214 Dual Drives, 1/2 Height, flat pack (like Apple DuoDisk™)	NEW \$589	\$425
C130 Controller (DOS & PRODOS)	NEW \$89	\$65

μ-SCI

* A2, 143K Disk Drive	\$345	\$219
A2 Controller Card	\$100	\$79
* A40, 160K, Drive	\$449	\$299
* A70, 286K, Drive	\$599	\$299
A40/A70 Controller	\$100	\$79

TEAC

TEAC T40, Direct Drive, 163K	\$349	\$239
TEAC T80, Double Sided, 326K	\$449	\$329
1/2 HIGH Controller Card by ComX	\$110	\$49

Rana

Elite I, 163K, 40 Track	\$379	\$239
Elite 2, 326K, 80 Track	\$649	\$389
Elite 3, 652K, 160 Track	\$849	\$499
Elite Controller	\$145	\$89

RAM EXPANSION

* ComX, 80 col. +64K RAM for 1le, 1 Yr. Wty	\$199	\$99
* RAM Card, 1 Yr. Wty (II+)	16K \$179	\$39
* Microsoft, RAM Card (II+)	16K \$100	\$69
* Titan/Saturn RAM Card (II+)	32K \$249	\$139
* RAM Card (II+)	64K \$425	\$229
* RAM Card (II+)	128K \$599	\$329

VIDEO CARDS

	LIST PRICE	OUR PRICE
* ComX, 80 col. +64K RAM (Ile) 1 yr. wty.	\$199	\$99
* Videx, VideoTerm 80 col. (+ or e)	\$279	\$189
* UltraTerm (+ or e)	\$379	\$279
Soft Video Switch (II+)	\$35	\$25
Enhancer II (II+)	\$149	\$95
Function Strip (II+)	\$39	\$29

We Have Full Videx Line. Call Up to 35% off

MISCELLANEOUS

* ALS, The CP/M Card V3.0 (+ or e) SPECIAL	\$399	\$169
* ASTAR, RF Modulator, to use TV	\$35	\$25
* CCS, Serial Interface 7710 (Set BAUD)	\$150	\$99
* CPS/Eastside, Wild Card 2 (copies, + or e)	\$140	\$99
Chalkboard, Power Pad (Requires Kit)	\$100	\$73
Digital Res., CP/M Gold Card w/64K	\$495	\$359
* Expand 64K Gold Card to 192K	\$325	\$239
Kensington, System Saver	\$90	\$65
* Key Tronic, KB200 Keyboard (II+)	\$298	\$219
Koala, Touch Tablet w/Micro Illustrator	\$125	\$85
Kraft, Joystick (Ap II/II+)	\$65	\$49
Paddle (Ap II/II+)	\$50	\$39
M&R, Sup R fan (+ or e)	\$50	\$30
* Microsoft, Z80 Softcard (+ or e)	\$345	\$235
* Z80 Softcard Plus (+ or e)	\$695	\$465
* Z80 Softcard Premium (Ile)	\$395	\$275
* Orange Micro, Grappler Plus, (e or +)	\$149	\$119
16K Buffer Board for Grappler Plus	\$175	\$119
Buffered Grappler Plus, 16K	\$239	\$179
Paymar, Lower Case Chip, Rev. 7 (II+)	\$50	\$39
* PCPI, Applicard, 14 features	6Mhz \$375	\$275
RH Electronics, Super Fan II	\$75	\$59
* Titan/Saturn, Accelerator II	\$599	\$399
Transend/SSM, AIOII, Serial/Para I/F	\$225	\$169
TG Products, Game Paddles (II+)	\$40	\$29
Joystick (II+)	\$60	\$45
Videx, PSIO I/F Card	\$229	\$169



Bluechip, Millionaire	\$60	\$45
Continental, Home Accountant	\$100	\$75
Human Edge, Sales Edg	\$250	\$188
Kensington, Modem	\$140	\$109
Surge Suppressor	\$50	\$39
Starter Pak	\$90	\$64
Microsoft, File or Word, each	\$195	\$145
Multipan	\$195	\$145
Chart	\$125	\$94
BASIC	\$150	\$113
* BASIC Interpreter	\$150	\$99
Penguin, Graphics Magician	\$50	\$37
Software Publishing, PFS: File	\$125	\$94
PFS: Report	\$125	\$94
PFS: File & Report	\$195	\$145
T/Maker, Clickart	NEW \$89	\$59
Videx, Macalendar	NEW \$89	\$59
FunPak	NEW \$39	\$26

BUSINESS & TRAINING

* ALS/Silicon Valley, Word Handler	\$60	\$39	
List Handler	\$50	\$33	
* Applied Soft Tech., Versaform	\$389	\$259	
Arkitronics, Jane (I or II)	\$295	\$195	
Jane (IIc)	\$179	\$119	
Arkit, Magic Window II	\$150	\$99	
* Ashton-Tate, dBase II (Req CP/M 80)	495	Call	
Friday (Requires CP/M 80)	\$295	\$199	
BPI Systems, GLARAP, PR or INV, each	\$395	\$249	
* Broderbund, Bank S/Writer or Speller, ea	\$70	\$45	
* Business Solutions, Jack 2 (Ile) NEW	\$395	\$265	
Incredible Jack NEW	\$129	\$89	
Continental, GLARAP or PR, each	\$250	\$165	
Home Accountant	\$75	\$49	
CDEX, for Visicalc, Multipan, Apple Ile, each	\$60	\$40	
Dow Jones, Market Analyzer	\$350	\$225	
Market Manager	\$295	\$195	
Market Microscope	\$349	\$289	
Fox & Geller, Quickcode or dGraph, ea	\$295	\$195	
dUtility (for dBase II)	\$95	\$65	
Hayden, Pie Writer	\$150	\$99	
Harvard, Harvard Project Manager	NEW	Call	
* Howard Soft, Tax Preparer, 1984	\$250	\$185	
Knoware, Knoware	NEW \$95	\$64	
LIVING, Letter Perfect, ThankTank	NEW \$150	\$99	
LJ, Videx Text w/Mail Merge	\$150	\$99	
Micro Pro, (all require Z80-CP/M Card)			
* WordStar™ w/Applicard & CP/M SPECIAL	\$495	\$295	
* WordStar Professional, 4 Pak	SPECIAL \$695	\$355	
* WordStar™ Training Manual	\$65	\$39	
* Options Pak, SS/MS/II	SPECIAL \$345	\$155	
* StarStar™ w/MailMerge™, ea	SPECIAL \$250	\$129	
* InfoStar™ w/Applicard & CP/M SPECIAL	\$495	\$295	
* Microsoft, Multi-Plan (Apple DOS or CP/M)	\$195	\$129	
* Osborne/ComX, (Disk and Book) Stat., Bus. & Math			
Some Common Basic Programs (75 ea.)	\$100	\$49	
Practical Basic Programs (40 ea.)	\$100	\$49	
Peachtree, Requires CP/M & MBasic, 64K			
Series 40 GL & AR & AP, all 3	\$395	\$239	
Perfect, Perfect Writer/Spell-2 pak (CP/M)	\$399	\$199	
* Quark, Word Juggler & Lexicheck (Ile)	\$189	\$129	
Sensible, Sen. Speller or Bookends, ea	\$125	\$85	
Sierra/On-Line, ScreenWriter Pro, 2 Pak	\$130	\$85	
ScreenWriter II	\$130	\$85	
The Dictionary	NEW \$100	\$69	
Gen. Manager II NEW	\$230	\$155	
Homeward	\$50	\$34	
* Handler Pak (Word, List & Spell)	\$130	\$85	
Software Arts, TK Solver (for Ile or IIc)	\$229	\$199	
Software Publishing, PFS: File	\$125	\$79	
(specify + or e)	PFS: Report	\$125	\$79
PFS: Graph	\$125	\$79	
PFS: Write (file)	\$125	\$79	
Stoneware, DB Master Version 4.0	\$350	\$229	
DB Utility I or II	\$129	\$87	
Videx, UltraPlan	\$189	\$99	
VisiCorp, Full In Stock	Call		

UTILITY & SYSTEM

	LIST PRICE	OUR PRICE
Beagle, GPLE or Alpha Plot, each	\$35	\$27
Ap. Mechanic, Disquick or Pronto DOS, ea	\$30	\$19
Double Take or Utility City, each	\$30	\$19
Typefaces, Tip Disk #1 or DOS Boss, each	\$20	\$15
Central Point, Filer, DOS 3.3 & Util.	\$20	\$15
Copy II Plus (dot copier)	\$40	\$30
* Epson, Graphics Dump	\$15	\$9
Hayes, Terminal Pro (for Smartmodem)	\$100	\$65
* Insoft, GrafORTH II by Paul Lutus	\$90	\$65
Microsoft, A.L.D.S.	\$125	\$85
Fortran 80	\$195	\$135

COMPLETE MICROSOFT LINE IN STOCK

Penguin, Complete Graphics System II	\$80	\$54
Graphics Magician	\$50	\$41
Phoenix, Zoom Grafix	\$40	\$34
Quality, Bag of Tricks	\$40	\$29
Terrapin, Logo	\$30	\$25
United SWI, ASCII Express-The Pro	\$130	\$87
Utilico, Essential Data Duplicator III	\$80	\$49

HOME & EDUCATIONAL

Atari, Centipede, PacMan or Donkey K, ea.	\$35	\$28
Ms. PacMan, Jungle Hunt	NEW! \$35	\$28
Barrons, Study Program for SAT	\$90	\$60
Beagle Bros., Beagle Bag	\$30	\$19
Bluechip, Millionaire	\$60	\$40
Broderbund, Print Shop	NEW \$50	\$34
Chopper or Lode Runner, each	\$35	\$23
Arcade Machine	\$60	\$40
Apple Panic	\$30	\$20
CBS, (Large Inventory)	35% off list	
* Continental, Home Accountant	\$75	\$49
Datasoft, Aztec or Zaxxon, each	\$40	\$27
Davidson, Speed Reader II	\$70	\$47
Word Attack or Math Blaster, ea	\$50	\$34
Edu-Ware, (Large Inventory)	35% off list	
Harcourt, Computer Prep for SAT	\$80	\$54
Hayden, Sargon III (Chess)	\$50	\$34
Infocom, Zork I, II, III, or Starcross, each	\$40	\$27
* Insoft, 3 Games, Zarg/Spider Raid/Grapple	\$85	\$65
Knoware, Knoware	NEW \$95	\$64
Koala, Full line in stock, CALL	35% off list	
Learning Co., (Large Inventory)	35% off list	
Microsoft, Typing Tutor II	\$25	\$17
Monogram, Dollars and Sense or S.A.M.	\$100	\$69
Origin, Ultima III	\$60	\$40
Penguin, Transylvania	NEW \$35	\$24
Scarborough/Lightning, MasterType	\$40	\$27
Sierra/On-Line, Ultima II	\$60	\$40
Si-Tech, Wizardry	\$50	\$35
Spinaker, Full line in stock, CALL	35% off list	
Sub Logic, Flight Simulator II	\$50	\$37
"Night Mission Pinball"	\$40	\$22
Terrapin, Logo	\$99	\$65

OVERSTOCK SPECIALS

APPLE HARDWARE

	LIST PRICE	OUR PRICE
ALS, The CP/M Card (3.0)	\$399	\$169
TG, Tracball	\$40	\$24
Titan/Saturn, 32K RAM Card (II+)	\$249	\$139

APPLE SOFTWARE

Ashton-Tate, dBase II (CP/M)	\$495	\$269
Broderbund, (Large Inventory)	\$30	Call
Datamost, Snack Attack	\$30	\$19
Hayden, Pie Writer (Ver. 2.2)	\$150	\$89
Quark, Lexicheck (Ile)	\$129	\$79

MISCELLANEOUS

Electronic Protection, Lemon	\$60	\$40
Lime	\$90	\$60
Peach	\$98	\$66
Orange	\$140	\$95
Kensington, PC Saver™ Line Cord w/filer	\$50	\$39
NetworkX, Wiretree, 4 Outlet, w/filer-surge	\$70	\$32

CALCULATORS

hp

41C, Calculator	NEW! \$325	\$275
41C, Calculator	\$195	\$149
41CV, Calculator w/2.2K	\$275	\$219

★ MEANS A BEST BUY

DISKETTES

* CONROY-LAPOINTE™ DISKETTES NEW!

We guarantee these top quality products with the LaPointe name, 3 YEAR LIMITED WARRANTY.

	LIST PRICE	OUR PRICE
ALS, The CP/M Card (3.0)	\$399	\$169
TG, Tracball	\$40	\$24
Titan/Saturn, 32K RAM Card (II+)	\$249	\$139
10 ea. SS/SD, 35 Track (Apple, etc.)	\$149	\$119
1000 ea. SS/SD, 35 Track (Apple, etc.)	\$1245	\$845
10 ea. DS/DD, 40 Track (IBM, H/P)	\$29	\$23
100 ea. DS/DD, 40 Track (IBM, H/P)	\$239	\$169
1000 ea. DS/DD, 40 Track (IBM, H/P)	\$1995	\$1395
10 ea. DS/DD, 40 Track (IBM-PC Pre-formatted) NEW	\$34	\$27
100 ea. DS/DD, 40 Track (IBM-PC Pre-formatted) NEW	\$289	\$219
1000 ea. DS/DD, 40 Track (IBM-PC Pre-formatted) NEW	\$2495	\$1795
AMDEK, 3" Diskettes, Pac-10	\$60	\$49
CDC, 100 ea. SS/DD, 40T (Apple, IBM)	\$550	\$195
100 ea. SS/DD, 40T (Apple, IBM)	\$55	\$21
100 ea. DS/DD, 40T (IBM, H/P)	\$750	\$295
10 ea. DS/DD, 40T (IBM, H/P)	\$75	\$32
DYSAN, 10 ea. SS/DD (Apple, etc.)	\$40	\$27
10 ea. DS/DD 48T (IBM/H/P, etc.)	\$69	\$35
MAXELL, 10 ea. MD1, SS/DD	\$55	\$24
10 ea. MD2, DS/DD	\$75	\$37
VERBATIM, 10 ea. MD15-01, SS/DD	\$49	\$27
10 ea. MD34, DS/DD	\$84	\$32

GENERIK™ DISKETTES

100 ea. SS/SD, 35 Track (Apple, Atari)	\$415	\$130
1000 ea. SS/SD, 35 Track (Apple, Atari)	\$4150	\$995
100 ea. DS/DD, 48T (IBM, H/P)	\$626	\$170
1000 ea. DS/DD, 48T (IBM, H/P)	\$6260	\$1400

MODEMS AND ACCESSORIES

	LIST PRICE	OUR PRICE
ANCHOR, Signalman Mark XII	\$399	\$269
HAYES, IBM-PC Smartmodem 1200B	\$599	\$419
IBM-PC Smartmodem II Software	\$149	\$109
Microdemem Ile w/Smartcom	\$329	\$239
Microdemem 100 (\$-100 bus)	\$399	\$275
Stack Chronograph (RS-232)	\$249	\$189
Stack Smartmodem 300(RS-232)	\$289	\$225
Smartmodem 1200 (RS-232)	\$699	\$535
IBM-PC to Modem Cable	\$9	\$9
KENNINGTON, Modem 1200	NEW \$595	\$385
NOVATION, 103/212 Smart Cat	\$595	\$415
ACCESS I-2-3 (1200B+Crosstalk XV)	\$595	\$399
212 Apple Cat, 1200 BAUD	\$389	\$249
Apple Cat, 1300 BAUD	\$725	\$559
212 Apple Cat, 1200 BAUD	\$189	\$139
J-Cat	\$149	\$104
212 Auto Cat	\$695	\$579
QUADRAM, Quadmodem, Internal IBM	NEW \$595	\$425
Quadmodem, Stand alone	NEW \$695	\$495

MONITORS AND ACCESSORIES

AMDEK, 300, 400, 500, 600, 700	NEW	Call

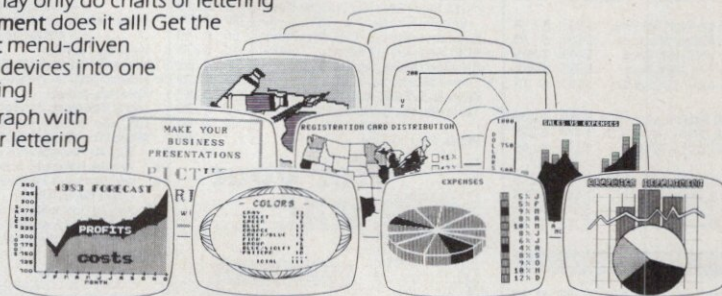
Why settle for one
graphic "artist"
when you can
have the
complete



GRAPHICS DEPARTMENT™

Why handicap yourself with software that may only do charts or lettering or "slide" showing, when Graphics Department does it all! Get the most impact with the Graphics Department menu-driven program which combines the most graphic devices into one friendly package. It has modules for everything!

Build a bar, line, 3-D pie, area, XY, or scatter graph with The Charting Kit. Add titles, labels and other lettering in 30 different fonts with The Lettering Kit. Draw ellipses, points, lines and rectangles or "paint" in 100 colors with The Graphics Tools. Present a "slide show" of up to 32 pictures with The Slide Projector. Even manage your library of picture data with The File Utilities.



All you need to do all this is an Apple II or Apple-compatible computer (//e, //c, Plus, ///, Franklin, Basis, etc.) with 48K of memory, ROM version of Applesoft...and Graphics Department. Available for \$124.95 from your dealer or by mail (add \$1.25 for shipping.) Visa/MasterCard/Check/COD welcome!



Sensible Software, Inc.®

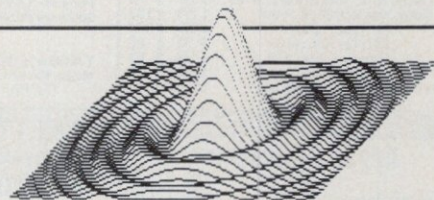
24011 Seneca,
Oak Park, MI 48237
(313) 399-8877

Apple II, //e, //c, /// and Applesoft are registered trademarks of Apple Computer, Inc.

CIRCLE 399 ON READER SERVICE CARD

IMAGE PRINTER II

THE FULL SERVICE PICTURE PRINTER



BEYOND CONVENTIONAL PROGRAMS.

The new, improved IMAGE PRINTER goes beyond the capabilities of conventional picture printing programs for the Apple II. Even owners of graphic printer interface cards will find that IMAGE PRINTER greatly expands their picture printing abilities!

FULL SERVICE MEANS MORE FEATURES.

IMAGE PRINTER starts you out on the fast track by helping you "capture" the HI-RES pictures from your favorite programs—even the copy-protected ones!

IMAGE PRINTER then lets you customize the picture the way you want by adding titles, lines, boxes, color filling portions of the screen, or even scrolling the entire picture in any of four directions.

After you polish your picture, IMAGE PRINTER lets you easily select any portion of it to be printed. The resulting image can be shrunk or expanded and then printed either vertically or horizontally, anywhere on the printed page.

FEATURES

	IMAGE PRINTER	GRAPHIC PRINTER CARDS	OTHER PICTURE PROGRAMS
Capture pictures from programs	X	—	—
Save pictures on diskette	X	—	X
Menu driven for ease of use	X	—	X
Unprotected, modifiable	X	—	—
Add titles, borders, lines & boxes	X	—	—
Color fill portions of picture	X	—	—
Scroll pictures 4 ways	X	—	—
View picture before printing	X	—	X
Print any portion of picture	X	—	X
Select a portion of a picture using a graphic "window"	X	—	—
Print 1/2 to 6x normal size	X	—	—
Print horizontally or vertically	X	X	X
Print anywhere on page	X	—	X

Image Printer works with over 30 different printers and 20 different interface cards.

DON'T SETTLE FOR LESS!

GET THE FULL SERVICE PICTURE PRINTER! \$49.95



Sensible Software, Inc.

24011 Seneca
Oak Park, MI 48237
(313) 399-8877

Visa and Mastercard Welcome Add 1.25 postage and handling per program

CIRCLE 398 ON READER SERVICE CARD

A P P L E S

A N D

MAINFRAMES

► APPLEWORDS BY STEVE ROSENTHAL

A short glossary

COAX, OR COAXIAL CABLE

A type of communications cable used in networks and for connecting terminals to mainframe computers. When an Apple is hooked up to a mainframe through a protocol converter, the converter hooks up to the controller with coax cable. Coax is more expensive than the telephone-style cable often used for hooking up personal computers, but it can carry data at higher rates and is more resistant to electrical interference. Physically, coax is round, with a center conductor surrounded by an outer braid or foil.

CORRUPT

To damage the data in a database, intentionally or accidentally. One of the main reasons that data-processing managers responsible for large computers want to limit access by personal-computer users is that they are afraid that users will corrupt vital databases.

DOWNLOAD

To send a file from a large or remote computer to a small or local one. Downloading requires some way to synchronize the sending of the file by one system with the receiving and storing of the data by the other. Although you can often send

text files with simple software, exchanging programs and numeric data requires more complex error-checking methods.

Currently, software is available for all models of Apple computers to download data from bulletin boards and other personal computers. Software that allows Apples connected to IBM mainframes to download mainframe data, using protocol converters, should become available in the coming months.

EBCDIC

An acronym (pronounced ip-sa-dik) for extended binary-coded decimal interchange code. It is the code that IBM uses for representing characters and control values on its large computers. The EBCDIC uses the 256 possible 8-bit patterns to represent a selection of graphic (printing) and nongraphic (control) codes.

Although the code values are different, both ASCII and EBCDIC have mostly the same graphic (printing) characters, so it is relatively easy to translate from one to the other for simple text. Many of the control codes are different, however.

EMULATION

One computer acting like another computer or terminal.

HOT KEY

On an Apple computer set up to connect to a mainframe computer, a key that lets you switch between the Apple's

function as a local terminal of the large computer and its role as a personal computer. Some, but not all, mainframe communications packages provide this capability, usually as a software-command sequence.

LOCAL

In reference to connections between large computers and their terminals and controllers, this term means connected directly by wire rather than via a communications link and modem. This mode is also called Channel-Attached.

MAINFRAME

A large computer of the type used by businesses, governments, and other large organizations. These computers actually may be less costly per unit of work done than personal computers, but mainframes also are less flexible and require a whole supporting bureaucracy.

PROTOCOL

A set of rules governing the way information is exchanged over a computer network. Personal-computer data networks generally use simple protocols meant originally for teletypewriters, a public-domain protocol called XMODEM, or various protocols included in proprietary software packages.

Large computers use more complex protocols, the best known of which are IBM's BSC and SDLC.

Although they are directly incompatible with mainframes, personal computers can be hooked up to large computers with protocol-converter units.

PROTOCOL CONVERTER

A box that connects between an Apple computer and a mainframe computer that expects to communicate with an IBM 3270-series terminal. The Apple runs software that makes it emulate a terminal (such as MacTerminal or Access 3270), and the protocol converter translates between the emulated terminal and the special requirements of the 3270 series.

The converter matches the asynchronous protocol the Apple uses with the BSC or SDLC protocol the 3270 uses. It also translates between the EBCDIC character code used by the mainframe and the ASCII code used by the Apple, buffers between the mainframe's polled page-at-a-time method and the Apple's asynchronous character-by-character method, converts the cursor-positioning commands for the mainframe terminal to the form understood by the Apple communications program, and translates sequences of keys.

REMOTE

In reference to controllers for data-communications networks, one that connects to its host mainframe via a

MICRO CITY

TO ORDER OR FOR
FREE CATALOG, PHONE
312-355-9726

If you don't see what you need,
call us...we probably have it.

HARDWARE FOR APPLE

	LIST PRICE	OUR PRICE		LIST PRICE	OUR PRICE		LIST PRICE	OUR PRICE
16K Ram Card for II, II+	\$ 79	\$ 42	DIGITAL RESEARCH			QUADRAM		
Z-80 Card for II, II+ and IIe	185	69	Gold Card CP/M 64K	\$ 495	\$ 326	eRam 80-80 Col, 64K for IIe	\$ 135	\$ 115
Cooling Fan w/Two Outlets and Surge Protection	69	35	Gold Card CP/M 192K	775	499	Microfazor MPB Par/Par (8K)	179	149
High Quality Joystick w/Fire Button (specify II+ or IIe)	49	29	HAYES PRODUCTS			SWEET MICRO SYSTEMS		
Switching Power Supply	110	64	Mach II Joystick for II+	39.95	35	Mockingboard A	124.95	92
Computer Case Similar to II+	149	59	Mach III w/Fire Button for II+	49.95	42	Mockingboard B	124.95	92
Replacement Keyboard	159	69	Mach II Joystick for IIe	44.95	38	Mockingboard C	195	155
Computer Case w/Built-in Numeric Keyboard	179	149	Mach III w/Fire Button for IIe	54.95	45	SYNETIX SYSTEMS		
RF Modulator	49	19	INTERACTIVE STRUCTURES			Supersprite w/3 Diskettes	454.95	299
Parallel/Printer Card w/Cable	149	55	Pkaso Card, Universal	175	135	TG PRODUCTS		
Power Strip w/Surge Protection and 6 Outlets	59	20	Shuffle Buffer Parallel/Parallel (32K)	299	234	Select-A-Port	49.95	39.95
ADVANCED LOGIC SYSTEMS			KENSINGTON MICROWARE			Track Ball (Specify II+ or IIe)	39.95	34.95
CPM Card	399	269	System Saver Fan	89.95	69	TITAN SYSTEMS		
Z Card II	169	139	KOALA TECHNOLOGIES			Accelerator II	599	425
Smarterm II	179	149	Koala Pad w/Micro Illustrat tm	124.95	75	64K Ram Card for II/IIe	349	249
Dispatcher Serial Card	139	109	MICROSOFT			128K Ram Card for II/IIe	499	359
CALIFORNIA COMPUTER SYSTEMS			SoftCard Premium System	695	485	64K Ram + 80 Cols. for IIe	249	189
Clock/Calendar	120	95	Premium SoftCard IIe	395	309	128K Ram + 80 Cols. for IIe	399	299
7710-01 Async Serial Interface for Printer	135	119	MICROTEK			TRACK HOUSE		
7710-02 Async Serial Interface for Modem	135	119	Dumpling-Gx	89.95	75	Programmable 10-Key Numeric Keypad for IIe	199	142
CHALKBOARD			64K Ram Card	199	152	10-Key Numeric Keypad for II+ or IIe	149	112
Power Pad for II, II+ and IIe	99.95	79	128K Ram Card	299	219	TRANSECTOR SYSTEMS		
			ORANGE MICRO			Model SL Supreme Surge Protector	99	79
			Grappler +	175	105	VIDEX		
			Buffered Grappler+(w/16K of Buffer) Bufferboard	239	165	Ultraterm	379	259
			PERSONAL COMPUTER PRODUCTS			Videoterm 80 Col. Board	279	179
			Appli-Card 6MHz/64K Memory	375	259	80 Col. + Soft Switch + Inverse Video	319	239
			PRACTICAL PERIPHERALS			Enhancer II	149	115
			16K Microbuffer II	199	145	VisicalPreboot	49	39
			32K Microbuffer II	219	159	Apple Writer II Preboot	19	17
			Graphi-Card (w/6' parallelcable) SeriaLL	159	119			

PRINTERS

Call for prices on DIABLO and IDS

BROTHER			OKIDATA			STAR MICRONICS	
HR-15P	594	459	Microline 82A	549	309	Gemini 10X	399
HR-25P	995	735	Microline 83A	749	565	Gemini 15X	549
MANNESMAN TALLY			Microline 92P	699	439	TRANSTAR	
Sprint 80	399	289	Microline 92S	799	515	T315 Color Printer	599
MT-160L	798	609	Microline 93P	999	695	120P	599
MT-180L	1,098	845	Microline 93S	1,099	795	130P	895

MONITORS

AMDEK			NEC			TAXAN	
V300 12" Green	179	129	JB 1260 12" Green	149.95	115	12" Hi Res Amber	190
V300A 12" Amber	199	145	JB 1205M (A) 12" Amber	210	159	12" Hi Res Green	180
Color II+	399	280	JC 1215 12" Color Comp.	399	265	RGB Vision I	399
Color II+	559	420	JB 902 9" Green	199	152	RGB Vision III	699

MODEMS

ANCHOR AUTOMATION			NOVATION			TRANSEND CORPORATION	
Signalman 300/1200 Baud (RS 232)	399	269	J-CAT	149	99	Transpak I (Transend I/ModemCard/Source/D.J.)	388
Signalman Modem (RS 232)	99	85	103 Smart CAT	249	159	AMC - 300 ModemCard with Source	325
HAYES			103/212 Smart CAT	595	375		
Smartmodem 300	289	199	212 Auto CAT	695	549		
Smartmodem 1200	699	479	Apple CAT II	389	199		
Micromodem IIe w/Smartcomm I	329	239	212 Apple CAT Upgrade	389	240		

DISK DRIVES

Standard Height Apple Compatible (Shugart SA390)	159	AP-100-A 2-in-1	469	AP-100-C Slim Line	236
High Quality Half Height Apple Compatible	185	AP-100-B Full Height	239	Super 5 Direct Slim Drive	189

SOFTWARE

PLEASE CALL FOR COMPLETE LISTING!		BRODERBUND SOFTWARE		SOFTWARE PUBLISHING
		Bank Street Writer	69.95	Pls: File
			54	125
				89

DISKETTES

VERBATIM				
SS DD Box of 10	49	Disk Drive Analyzer for Apple II,IIe	39.95	Disk Drive Head Cleaning Kit
	19.95		29.95	10.95
				8.95

We now carry Microsoft Software for Macintosh!

We accept check, money order, VISA, MasterCard, or American Express (include # and expiration date). Please add 2% for credit card purchase, \$2.50 shipping & handling in continental U.S. (Alaska, Hawaii and foreign add \$5.00 for orders under \$100, 5% for orders over \$100). Illinois residents add 6.25% sales tax. Personal and company checks allow 2 weeks to clear. **School purchase orders accepted.** Prices subject to change without notice. Dealer inquiries invited.



MICRO CITY • P.O. Box 571 • Downers Grove, IL 60515



modem or other data link (as opposed to local controllers, which are wired directly to the mainframe).

SDLC

An abbreviation for Synchronous Data Link Control, a communications protocol used by large IBM computers, especially in networks based on their SNA (Systems Network Architecture)

arrangement. Apples can link up to these networks through protocol converters or the Apple cluster controller. These units communicate with the normal Apple asynchronous method on the Apple side and the SDLC method on the mainframe side.

SNA

The abbreviation for Systems Network Architecture, an IBM system of data communication for large computers.

When an Apple computer is connected to a mainframe by a protocol converter or Apple's cluster controller, the converter or controller follows the SNA scheme, using the SDLC protocol (or the older BSC protocol for some models) for communication. Systems Network Architecture is a complex layered set of rules that govern error checking, addressing, synchronization, and many other communications chores.

UPLOAD

To send a file from a smaller computer or local one to a larger or remote computer. Uploading depends on both the computer at the sending end knowing what to send and how to format the material and the system at the receiving end knowing how to receive and store away the data. So far, popular file-transfer software for the Apple family lets you upload data to bulletin boards or other personal computers. Only a few programs for use with Appleline or similar methods for connecting Apples to IBM mainframes currently allow uploading from the Apple to the mainframe, but more programs in the next round of software products should add this capability.

VT-100

A trademark of Digital Equipment Corporation for one of its terminals. This model is one of the most popular of all terminals for asynchronous connections, and consequently it is the terminal that most communications packages for the Apple simulate to allow the Apple to connect to larger computers and communications networks. Appleline and other Apple products for connecting Apples to IBM mainframes that expect the Apple to run terminal-emulation software assume VT-100 emulation at the Apple end (as do the products of most independent vendors).



LAST NIGHT, COMPU SERVE TURNED THIS COMPUTER INTO A TRAVEL AGENT FOR JENNIE, A STOCK ANALYST FOR RALPH, AND NOW, IT'S SENDING HERBIE TO ANOTHER GALAXY.

No Matter Which Computer You Own, We'll Help You Get The Most Out Of It.

If you've got places to go, CompuServe can save you time and money getting there. Just access the Official Airline Guide Electronic Edition—for current flight schedules and fares. Make reservations through our on-line travel service. Even charter a yacht through "Worldwide Exchange."

If your money's in the market,

CompuServe offers a wealth of prestigious financial data bases. Access Value Line, or Standard and Poor's. Get the latest information on 50,000 stocks, bonds or commodities. All on line with CompuServe.

Or if, like Herbie, intergalactic gamesmanship is your thing, enjoy the best in fantasy, adventure, and space games. Like MegaWars, the ultimate computer conflict.

To get all this and more, you'll need a computer, a modem and

CompuServe. CompuServe connects with almost any personal computer, terminal, or communicating word processor. To buy a Starter Kit, see your nearest computer dealer. To receive our informative brochure or to order direct, call or write:

CompuServe

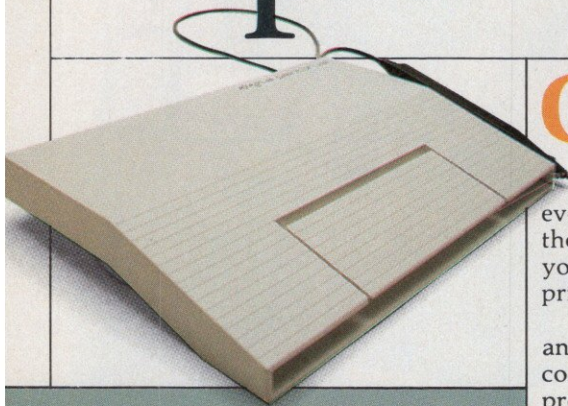
Consumer Information Service
5000 Arlington Centre Blvd., Columbus, OH 43220

800-848-8199

In Ohio call 614-457-0802.

An H&R Block Company

Turn your Apple professional color graphics



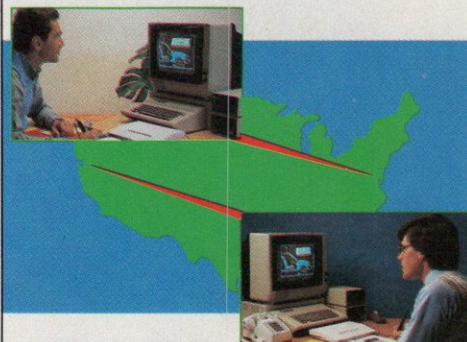
Our system lets you take an idea, draw it on the screen, manipulate the image electronically — even draw interactively with a colleague thousands of miles away — then save your concept on disk or dot matrix printer.

The Digital Paintbrush System is an exciting new way to use your Apple computer to increase your professional productivity. It's the first low-cost system to integrate sophisticated graphics, telecommunications, presentation and printout capabilities.

Draw automatically. Electronically.

Our drawing device is as natural to use as a pencil. And our software helps anyone to be a talented artist. Lines snap taut, circles go perfectly round — even complex multi-point curves smooth themselves out. Erase electronically. Enlarge. Reduce. Trace. Relocate. Reshape. Condense. Expand. Stretch. Flip. Reverse. Copy. Recall. Color. Recolor. Reposition. Repeat. All from a friendly, forgiving menu-driven program.

Draw interactively. Coast-to-coast.



Communicate with your colleagues via the first real-time interactive drawing program ever. We've included a spare diskette you can send your associates. This will let you create drawings in real time over phone lines with a modem. Both of you can work on the same drawing, then save it on disk or dump to printer.

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



computer into a graphics workstation.

Create libraries of special purpose drawings or symbols.

Draw your own symbols or pictures you can later borrow or "grab" by computer. Re-use these images over and over.

You can customize your own drawings or symbol sets or you can order pre-drawn pictures and symbols.

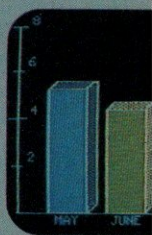
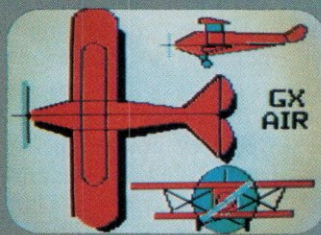
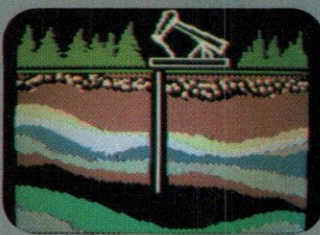
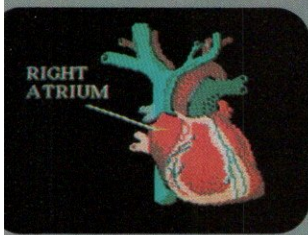
Enhance your drawing ability by

Move whole drawings or single elements at will.

The technical name is "image capture" but you'll call it incredible. Pick up any portion of your drawing and move it or create multiples. Expand or contract. And you are working with thousands of user-mixable color patterns including negative colors. Paint with 37 different brushes. And user-

Complete for only \$299.

The Digital Paintbrush System mimics the sophistication of graphics and CAD systems costing hundreds — even thousands more. Now you can put this powerful tool to work to produce illustrations, diagrams, flow charts, layouts, maps, business graphics, presentations, title slides, symbols, logos, training material and applications we



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

mixing and matching images endlessly.

adjustable grids of any size make scaling exact. Trace and measure areas automatically. Use "micro" mode for the tiniest details.

Label with popular typesetting fonts from headline to text.

AaBbCcDd
AaBbCcDd

Use our built-in typesetting fonts or load in dozens of other fonts. (We're compatible with the Fontrix™ family). Mix in text or label your drawings at the touch of a button.

Convert screen graphics to printer hardcopy.

Our program lets you printout on 37 of the most popular dot matrix printers (upgradable to the coming color inkjet technology). Use 5 powers of magnification for both text or graphics.

Make personalized presentations.

Create and project your own "slides," change and adapt them quickly and easily for each client.

A strikingly effective sales tool.

haven't even thought of.

Available in finer computer stores everywhere. Or order toll free 1 800 874-1888 or in California 415 331-3022.



The Digital Paintbrush System™

CIRCLE 220 ON READER SERVICE CARD

THE COMPUTER COLORWORKS

The Digital Paintbrush System is a registered trademark of The Computer Colorworks, a division of Jandel Corporation, 3030 Bridgeway, Sausalito, California 94965.

The Best of Two Worlds

What can a mainframe do that an Apple can't? Equipped with two standard floppy-disk drives, an Apple II-series computer provides approximately 280K of on-line storage; a single-drive Macintosh gives you about 400K. Although this amount of storage may be fine for many applications, it can sometimes be a severe limitation. One way to get around the problem of insufficient storage is to hook your Apple up to a mainframe computer.

According to Paul Sanroma, a software-engineering consultant in Bristol, Rhode Island, even the smallest mainframes offer storage capacity and computing power far beyond the range of the most exotic micros. Says Sanroma, "It's not uncommon for a modern mainframe system to have from 1 to 5 megabytes of memory in the CPU alone, with 200 to 400 megabytes of on-line disk storage. Many of the larger systems even go into the gigabyte [billions of bytes] range."

In addition to providing ample storage space, mainframes have very fast processors that allow access to programs with processing power that no micro can match.

On the other side of the coin, an Apple computer can perform some tasks more efficiently than a larger system can. When it comes to throwing together a quick letter, a microcomputer can't be beat. Mainframes also lack the personal touch that popular microcomputer spreadsheet programs provide. An Apple devotes all of its attention to a single user.

"If you have ever operated some of the system programming facilities on mainframes, you certainly won't want to do it again," asserts Rick Geiger, manager of Advanced Developments at Apple Computer, Inc., and a specialist in the field of mainframe-to-micro communications. "Those mainframes can be very difficult to use at times, especially when you are competing with many other people for the processor's attention," he adds.

During periods of heavy activity, hundreds of users may be connected to one mainframe computer. This situation often results in delays as long as 15 or 20 seconds before the machine responds to your commands. In a business setting, this extra time quickly adds up and results in poor productivity.

A more serious situation arises if a mainframe goes down completely—not an uncommon occurrence. Every user of that system is left out in the cold, unable to do the simplest task. Again, productivity suffers, sometimes with devastating results to a business that depends on computing. Relying solely on a mainframe can be like putting all your eggs in one basket.

A personal computer, on the other hand, devotes all of its computing power to you, and can respond almost instantaneously. In fact, mainframes spend a great deal of their time doing tasks that personal computers can do more efficiently. Freeing a mainframe from this burden results not only in faster response but also in a much more economical approach in the long run.

Data-processing managers envision an expanding role for microcomputers alongside mainframes, both as stand-alone processors and as data-entry terminals.

Aside from the significant disparity in the hardware costs of mainframes and personal computers (many full-blown mainframe systems cost well over a million dollars), operational time alone can be prohibitively expensive on a mainframe. Most systems bill their users according to the amount of actual processing time—often called CPU time—required of the mainframe. Although many tasks take little of the processor's attention—sometimes less than a second—the cost is still significant. In some larger systems, processor time can be as costly as \$300 to \$400 per *minute*.

To operate any data-processing system efficiently, you first have to take a careful survey of your needs. The needs analysis will help you understand what tasks need to be done and how much computer power is necessary for each task. In some cases, microcomputers can do much of the work currently assigned to mainframes. By delegating certain tasks to smaller machines, a system operator can keep the "heavy artillery" free for the work it does best.

A Happy Medium

Fortunately, you can have the best of both worlds: the high speed and mass storage of a mainframe, along with the convenience and economy of an Apple. Recent developments in hardware and software enable Apples to link with

larger systems to share both data and processing power.

Even if your business does not have an in-house mainframe, you can still use one of these large computers. Most metropolitan areas have several data-processing facilities that make their equipment available to outside users. Charges vary from system to system and are based on the amount of storage you use, the length of time you are connected to the system, and the actual CPU time.

Anyone who stores or requires access to large amounts of data will appreciate an arrangement of this type. For example, if you use an Apple to handle the records of your retail store, you may find that the system lacks the mass storage you need to deal with a 50,000-name mailing list. Renting space and time on a mainframe gives you a convenient, secure place to store this data, as well as an easy way to add or delete names.

What's more, most mainframe systems include high-speed printing facilities. Printing 50,000 mailing labels may be quite an ordeal for a micro-size printer, but larger machines can do the job easily. Many data-processing facilities will do the printing for you, for an additional fee, and deliver the results.

Connecting to a large system also gives you access to huge pools of information in various specialized fields. The computer system of a large insurance company, for example, may store statistical data on thousands of clients—data that an agent in the field



may need in order to design a customized policy. By linking a personal computer with the firm's larger system, the agent can access the necessary information. Just as easily, the agent can send data, such as a daily or weekly report, to the company's machine.

Rather than placing an extra burden on a mainframe, using a microcomputer actually lessens that system's work load and results in better performance all around by distributing some of the processing work load to the microcomputer. Also, adding a micro is not much more expensive than adding an additional terminal, and the investment often pays for itself with the reduction in operating expenses.

Making the Connection

Until recently, mainframes and micros have lived in two separate worlds. The data-transfer techniques most large systems use are completely alien to those microcomputers employ. What's more, mainframes move data at a rate far faster than what most microcomputers will ever be able to read. In order to transfer information successfully, you need both hardware and software.

Apple Computer produces a series of products designed for this purpose. The Apple Protocol Converter and Appleline are hardware devices that let you use Apple products with several popular mainframes. Both convert the mainframes' data-transfer protocol into a form that the smaller machines can understand, letting data flow easily between the two. Apple has also introduced the required software: Access, for the Apple II and III series, and Lisa/MacTerminal, for the company's 32-bit machines.

If a mainframe is located in the same building as your Apple and you can reach it with direct wiring, connecting the equipment is easy. Add the proper protocol converter, run the cables, and you are ready to go. This method of "local operation" is popular among executives who use personal computers in their offices and have a mainframe nearby.

If the two machines are too far apart for local operation, you transfer data back and forth over telephone lines. In addition to the protocol converter and software, this method also requires two modems, one at the micro and the other at the mainframe.

Recently, a third technique has gained popularity. In this system, data is sent to the mainframe on a storage medium, namely magnetic tape. Most

Several hardware manufacturers have promised micro-to-mainframe technology, but Apple is one of the few that has actually delivered.

mainframe computers use nine-inch, half-track tape for data storage and retrieval. Hardware devices are now available that allow a microcomputer or a group of microcomputers to store data directly on such tape. When the job is ready, you load the tape onto the mainframe, which reads in the data and processes it. Data-transfer speed from magnetic tape is hundreds of times faster than the speed of telephone-line transmission.

You don't need a modem or protocol converter, and the storage capacity of the tapes is so great (20 megabytes or more per tape) that a week's worth of work often fits on a single reel.

Operation Modes

Mainframes and microcomputers can interact in several different ways. One popular approach is to use the microcomputer as a "dumb" terminal. With this arrangement, the micro does little actual processing; its main function is to emulate one of the terminals the host computer uses. This type of mainframe/micro link subjects you to many of the drawbacks of larger systems, long response time and high cost being the most serious. An advantage of this arrangement is that a microcomputer, unlike a terminal, has a disk drive for storing data.

A more efficient method is to use a technique called distributed processing. The micro serves as a complete, stand-alone computer—sometimes called a front-end processor—with all of its power available to the operator. You enter and process data on the smaller unit until you're ready to "upload" it to the mainframe.

The reverse is also true: You can download data from the mainframe and process it on the micro. This strategy is particularly helpful when it comes to analyzing or updating small sections of a file—a job that a microcomputer can handle with ease.

By doing a large share of the processing on the micro, you have to use the mainframe only for brief periods. Most work takes place while the two systems are disconnected. This approach insulates you from the mainframe's long response time and wastes less of that system's premium-priced CPU- and connect-time.

Distributed processing also makes life easier for other mainframe users. Since you are not vying for such a large share of the processor's time, you won't have as detrimental an effect on other people's operations. More users can operate from the same mainframe than would be able to, otherwise. A machine that would be taxed to its limits with 200 standard users can, with the help of distributed processing, often operate efficiently with many times that number.

Using microcomputers in a local-area network and transferring data via magnetic tape is the most cost-effective way of using mainframe facilities. Being passive from the mainframe's perspective, the micros are available for use at any time, regardless of the mainframe's current work load. The technique allows finished data to run through the mainframe in a "batch" mode, a less expensive approach than doing the job interactively. What's more, tapes can be batch-processed when the mainframe is the least active, often late at night, resulting in further savings.

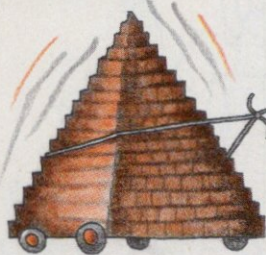
Tape transfer does have its limitations. Since you have to move data from computer to computer physically, you can't interact with the mainframe in "real time." Rush jobs must wait until someone can transfer and load the tape. This system is best suited to tasks such as high-volume data entry, for which time is of less importance.

Both distributed-processing and tape-transfer systems can operate independently of the mainframe. Even if the larger system goes down altogether, you can still work on your microcomputer.

Several hardware manufacturers have promised micro-to-mainframe technology, but Apple is one of the few that has actually delivered. For this reason, many management-information-systems (MIS) managers have already adopted Apple computers in distributed-processing networks and as remote data-entry terminals. They have found that, in many cases, microcomputers are a logical choice over traditional mainframe-access methods. The final result is a system that is more powerful than the sum of its parts. +

You Can Take It With You.

Good News About Mass Storage For Today's Business Pharaoh



Mass storage used to mean a big, expensive unit that wasn't the least bit portable. And guarding against uninvited intruders was a royal pain. Today's business pharaoh can have portability and convenient security in one affordable mass storage system. With 5 or 10 megabyte **removable cartridge** hard disk systems from **Micro-Design**, you can take it with you.

Use hard disk cartridges the same way you use a floppy disk system. Just switch them out as needed — one cartridge for wordprocessing, another for accounting, and another for backup storage. Add additional cartridges whenever you like.

Double duty. With cartridges you get backup capabilities PLUS the benefit of having another full 5 or 10 megabytes of on-line storage added to your Apple® II, II+, or IIe.

Fast. Cartridges run as fast, or faster, than fixed hard disk drives. A 5 megabyte backup takes only a few minutes. Switching out cartridges takes just a few seconds.



Convenient and Secure. It's easy to lock-up sensitive files — just remove the cartridge and put it somewhere safe. If you

share a computer with others, everyone can have their own cartridge.

Apple® Apple Computer.

CP/M® Digital Research

One year warranty.

Unlimited Expansion. No more erasing old data to increase space on your hard disk. Fact is, there's no limit to the amount of off-line storage you can add.

Our **DATA Series** 5 and 10 megabyte cartridge hard disks are external drives available in removable only, or paired with 10, 20, or 33 megabyte fixed drives. Our **SQ Series** features 5 megabyte cartridge drives. All come in Apple-beige cases, ready to plug in and run DOS 3.3. PASCAL and CP/M® drivers are also available.

Get the convenience of portability in a mass storage system. Ask your local computer dealer about Micro-Design's versatile hard disk cartridge units. Or, call us for details on our full product line and ordering information. Dealer inquiries invited.

We have a complete line of mass storage devices including add-on floppy drives for Apples priced from \$179.95. Call for our FREE catalog today!



Micro-Design

Making The Most Of Your Micro.

Call 1-800-531-5002.
In Texas, call 512-441-7890.

6301 B Manchaca Rd., Austin, TX 78745

SCOOTER® SURGE SUPPRESSORS COME OUT ON TOP!



**Feature for feature, dollar for dollar,
there's no better protection for your computer investment.**

By now, just about everybody knows that computers need protection from data-destroying electrical surges and spikes.

But with all the shapes, sizes—even colors—of surge suppressors these days, anybody could get confused.

Fortunately, SCOOTER® Guard-It Control Centers offer a simple solution: the best features at the best prices.

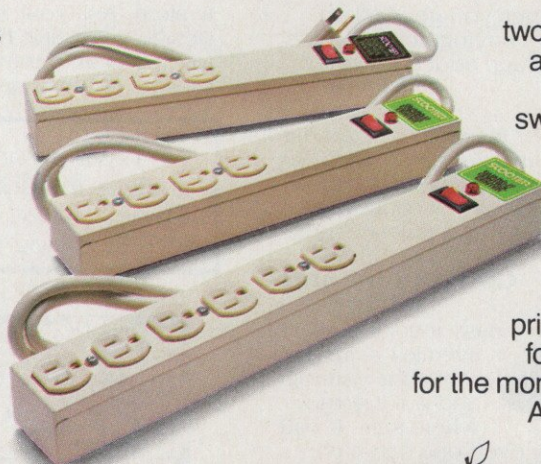
SCOOTER's SP4 and SP6 give you not one, but three MOV's for both normal and common mode surge suppression with a one-year warranty.

The QP4 model offers RFI-EMI noise filtering and a solid state, four-element,

two-stage protection system with a three-year warranty.

All have recommended one-switch power control, our unique surge failure indicator lights and sturdy metal cases. And all are UL listed.

Once you've compared SCOOTER's features, go ahead and compare the prices. Because if you're looking for the most surge suppression for the money, you'll choose SCOOTER. And you'll come out on top.



SCOOTER®
Guard-It Control Centers

ohm/electronics 746 Vermont—Palatine IL 60067 1-800-323-2727 In Illinois: 1-312-359-6040 New Texas stocking location: 1-214-620-2230

CIRCLE 173 ON READER SERVICE CARD

part two

► LINKING APPLES TO MAINFRAMES

BY FREDERIC E. DAVIS AND RUTH RAMBERG

Mainframe Software for Distributed Data Processing:

Continuum



First Concept, of Rochester, New York, an innovative mainframe-software company, is developing a series of mainframe-software products called Continuum. The Continuum series allows most major mainframes to share distributed data processing with Apples and other microcomputers.

First Concept has already released three products in the Continuum series that permit Apples to make extensive use of mainframe resources: Interchange/1, Library/1, and Courier/1. With Interchange/1, the most significant of these software packages, Apple-based application programs can access and update records contained in virtually any mainframe database. The ability of this product to work with almost any database or DBMS (database-management system) is one of its most impressive features. Because Interchange/1 is designed to be totally "transparent" to the Apple, users receive the impression that the mainframe database is resident in the Apple.

Library/1, a utility program for use in conjunction with Interchange/1, provides file-management services on the mainframe for Apple users.

Courier/1 is an electronic-mail program for Apples and other microcomputers and terminals that are using the mainframe.

Interchange/1

Interchange/1 provides Apple users with record-level access to mainframe data and affords database integrity by strictly controlling the Apple's interaction with the mainframe. Various levels

of password protection insure data security. The product also includes excellent facilities for uploading and downloading information. Without any specific knowledge of the mainframe DBMS in use, and without utilizing any microcomputer disk storage, you can program any Apple to treat mainframe data as if it were resident on the microcomputer.

Interchange/1 automatically accepts data-manipulation commands the Apple issues and dynamically translates them into the appropriate mainframe DBMS function, based on the DBMS in use. From a single application program, users can issue calls to an unlimited number of mainframe databases resident on any number of database-management systems. A single application program on the Apple, for example, could be simultaneously accessing two TOTAL files, an IDMS file, two ADABAS files, and a VSAM file. The database commands the Apple uses—Get, Insert, Update, Delete, and so on—remain the same, even though different database-management systems are being used.

Uploading Information

The Interchange/1 Upload utility allows users to transfer data from Apple files into the mainframe database or use the keyboard for direct input. To insure database integrity, the mainframe checks data to validate the fields the Apple is transferring, prior to uploading each record into the DBMS, whenever the database administrator (the person in charge of the database, who is

usually located in the computer center that houses the mainframe) has specified particular access criteria for a field. Data checking occurs only when access criteria are specified. Errors and other data exceptions will cause the mainframe to bypass the update record and send a corresponding error message to the Apple.

Upload enables users uploading records from the Apple to establish search criteria for their validation and selection. Interchange/1 uploads only records that meet these search criteria, allowing partial upload of microcomputer files. As a result, Upload serves as a simple data-entry utility, with data validation by range, type, and so on.

Downloading Information

You can transfer data from a mainframe database directly to an Apple file, the screen, and/or a printer using the Interchange/1 Download utility. Here, too, users can specify search criteria to select records to be downloaded, and Interchange/1 will download only those records that meet the search criteria, allowing partial download of mainframe DBMS files.

Download can also serve as a simple query/report utility, with user-defined record selection and user-defined display and printer formats. Users select the records to be downloaded, indicate the destination (screen, printer, and/or file), and choose the download format (the layout for the screen or printer and the file type and record layout for the file).

Full mainframe security prevails,

because only the fields the database administrator has defined are downloadable to the Apple. If the database administrator has specified Boolean access criteria for a field, only those records that meet the search criteria are transferred.

BASIC and Pascal Support

First Concept has designed Interchange/1 for use in conjunction with various application programs and programming languages. For off-the-shelf application software, it supports the DIF (data-interchange format) file-transfer option. Many popular Apple software products offer the DIF file-transfer option.

For users who wish to develop their own custom Apple software, Interchange/1 supports both BASIC and Pascal. It allows your custom programs to use simple commands such as Get, Insert, Update, or Delete to access the mainframe database. Interchange/1 places the information retrieved from the mainframe into user-declared template fields that vary according to the programming language you are using. The support for both BASIC and Pascal is impressive. To each of the languages, Interchange/1 adds about a dozen new commands that allow the Apple to make extensive use of mainframe databases.

Mainframe Security

Hooking Apples or other micros up to mainframes raises the serious problem of keeping the mainframe database from becoming damaged. Interchange/1 provides complete mainframe security by allowing the database administrator at the central computer center to specify which fields in any record an Apple can access and the passwords for each type of access.

The database administrator can specify a template for each file to be accessed by microcomputer users. Using the Interactive Template Utility program that Interchange/1 provides for this purpose, the database administrator defines the files and fields that the microcomputers are to access. (Although the database administrator can create one or more templates for each file to be accessed, each template can include fields from only one DBMS file.) Apple users, specifying only the name of one template, can simultaneously access multiple templates that the database administrator has linked to the original template. The database administrator uses a system-maintenance password to enter the Interactive Template Utility. This password pre-

First Concept's Continuum series is one of the most powerful ways to use Apples with mainframes in a distributed-data-processing network.

vents unauthorized personnel from accessing the utility.

During the next step in the setup procedure, the database administrator specifies the name of the file to be accessed. The utility then asks for the field names of each field that the Apples are allowed to access. If the database administrator has not specified a particular field, the Apples cannot access it. The database administrator gives a descriptive name to each field he selects. The Apples then use this name in their programs when referring to that field. When the database administrator has specified all fields, the utility asks for the type of file access permitted the Apples. At this point, the database administrator supplies a specific password for each level of access. Interchange/1 subsequently uses the passwords that users give to determine what level of access they are allowed.

When the database administrator has completed the template definition, Interchange/1 stores it in the mainframe database. Subsequent changes do not require the creation of a new template; users can add or delete fields, change passwords, and upgrade or downgrade file access by simply modifying the existing template.

Mainframe Environments

Interchange/1 is very versatile and can run on virtually any mainframe that supports asynchronous or synchronous communication. The mainframe can be an IBM mainframe, a plug-compatible, or a mainframe or minicomputer made by other manufacturers. Contact First Concept to determine whether your mainframe can support Interchange/1.

Any file system supported by the mainframe can constitute a DBMS, providing it is accessible to a mainframe computer program capable of telecommunications.

Library/1

Library/1 is a utility program that provides complete mainframe library-management services for Apple users. It facilitates the creation of mainframe-based public or private libraries and makes them accessible by a password to all users of a remote network. Apple users can store files, programs, and documents in their library, thus freeing local storage on the Apple and making the library entries available to any other user on the distributed system.

Library/1 supports document and program transfer, as well as document and file browsing. Apple users, even if they lack mainframe-programming knowledge, can transfer files in any format into a remote library for distribution or retrieval. The Apples using the system have available full directory capabilities for their private libraries and for those public libraries to which they have access. Users can assign additional passwords and access levels at the document/file level. Data-center allocation and assignment of libraries maintain mainframe security. To guarantee private-library security, users assign passwords and access levels when they create the library entry.

Courier/1

Through Courier/1, complete electronic message facilities are available to users of Apples and other microcomputers or terminals in a distributed-processing mainframe network. Users without any special knowledge of the system can log on from their Apple or any other supported device and transmit and receive mail.

When you ask to transmit a message, Courier/1 automatically prompts for distribution information, and, if you are uncertain about whom you want the message distributed to, Courier/1 will supply you with a complete list of all of its users. You can then select a group of individuals for distribution or optionally enter the names of users you want to send the message to. If you enter the name of an individual who is not currently logged on, Courier/1 automatically stores the message for later forwarding and retrieval.

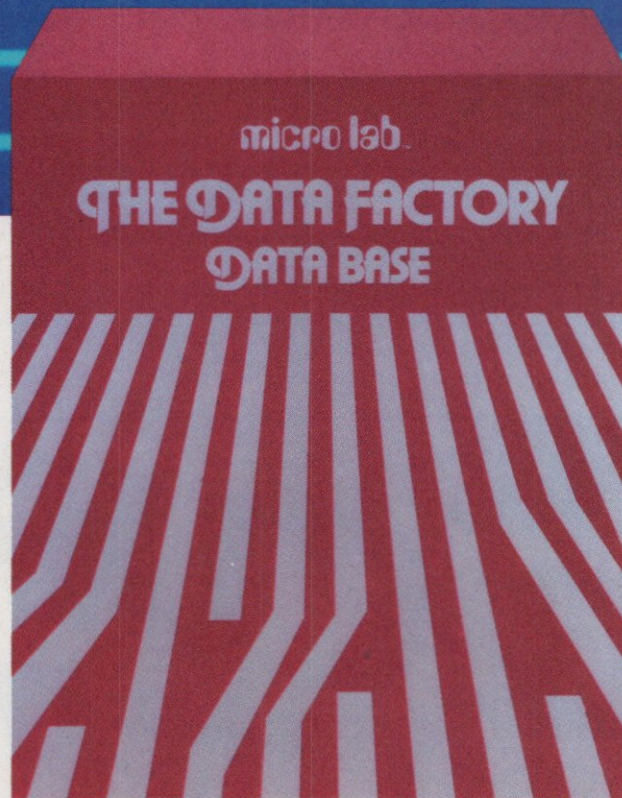
As a user of Courier/1, you can browse through your messages, respond to some, store others for later review, delete upon reading, bypass, and even delete without reading.

Service and Maintenance

First Concept provides 24-hour, 7-day-a-week telephone support for all of its products. To restore your system to fully operational levels, First Concept

THE ONLY DATA BASE YOU'LL EVER NEED

THE DATA FACTORY™



It's Easy

The Data Factory has easy-to-follow, illustrated instructions. Within the hour you can be setting up your own files. Quickly search through your records for any specific file you want. Easily sort them alphabetically... numerically... or by date. Then you can print out the information in any sequence you need. And, only The Data Factory will do all this for you so fast, so easily and with so much flexibility.

Truly, the finest introduction to electronic data management you can find.

It's Powerful

As your needs expand you'll find that The Data Factory is a fast, powerful program that can easily handle the most complex data management demands.

It searches up to 88 levels simultaneously.

Sorts thousands of records in just seconds. Performs mathematical functions. Offers AND, OR, =, <, >, <>, and date selection criteria. Customizes printouts to any format. And, The Data Factory lets you add, delete or restructure fields without any time consuming data re-entry.

It's the only data base you'll ever need!

For Apple II, IIe and IBM.

Data Factory, Apple II, IIe and IBM are registered trademarks of MicroLab, Inc., Apple Computer, Inc., and IBM Corporation, respectively.

micro lab™
Creative computer products since 1980.

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

© MicroLab, Inc., 1984

CIRCLE 150 ON READER SERVICE CARD

guarantees to have technical personnel on your site within 24 hours for software failure and within 4 hours for hardware failure—anywhere in the world.

Technical-support staff at First Concept's corporate headquarters handle all telephone support. All technical-support personnel have access to the source code and, when necessary, the circuit diagrams for the products they support. The original system designers prepare the necessary plans to fix any system. Thus, First Concept identifies the problem and dispatches personnel with the skills and information necessary to resolve it. Should the support staff lack the necessary information to identify the problem, senior R&D and design staff go to the site. This level of support is unprecedented in the microcomputer industry.

Education

Recognizing the complexity of the tasks involved in setting up a powerful distributed-data-processing network, First Concept offers a variety of training courses, which are held either at your company or at First Concept's Technical Support Center in Rochester, New York. These training courses include:

- **The Interchange/1 System**—a half-day overview of the Interchange/1 System and its effective use by Apples and other microcomputers. Emphasis is on the design of generic programs using mainframe data and the requirements for use of the Interchange/1 product in the design of application systems.
- **Interchange/1 for the Sophisticated User**—a one-day course that emphasizes the use of special commands and the direct manipulation of the mainframe database by microcomputer programs using Interchange/1.
- **Database Concepts**—a half-day seminar on the concepts of mainframe database-management systems.
- **Mainframe Database Management Systems for Microcomputer Users**—a one-day course to acquaint users of Apples and other microcomputers with the general concepts of database-management systems. First Concept tailors this course to the database-management system(s) in use at your company and designs it primarily for users of Interchange/1.
- **Database Design**—a one-day seminar in generic database-design concepts. When given at your company, it focuses on the DBMS in use there.

- **Telecommunications Concepts**—a half-day seminar that provides you with an introduction to telecommunications networks, techniques, and the methodology of modems, multiplexers, and other communications devices. The course emphasizes real-world problems and the reduction of telecommunications costs through effective network design.

Power and Flexibility

First Concept's Continuum series is one of the most powerful ways to use Apples with mainframes in a distributed-data-processing network. The system allows for the greatest flexibility of any software product we have seen. Not only does one mainframe handle multiple databases from different vendors, but the network can also encompass more than one mainframe. The Continuum series combines well-thought-out products with an excellent level of support and training. +

▶ CONTACT

First Concept Technologies, Inc.
P.O. Box 23510
Rochester, NY 14692
(716) 334-4746

CIRCLE 512 ON READER SERVICE CARD

BACKUP YOUR DISKS

NOW AVAILABLE
AT YOUR LOCAL
COMPUTER STORE!

\$79⁹⁵

EDD runs on Apple II, II plus (including most compatibles), IIe, and III (in emulation mode), with one or two 3.3 disk drives.

EDD is the most powerful copy program available for backing up your protected Apple software. Since EDD has been preset to copy a broad range of copy-protections, many disks can be copied easily, without changing messy parameters. Even though you rarely need to change them, each parameter is fully described in the operating manual. Unlike the copycards, which only copy single load programs, EDD backs up entire disks. Thus, not only copying single load, but, multi disk access programs as well. We feel on an average, EDD can back up many more protected disks than all other copy programs or copycards put together.

ESSENTIAL DATA DUPLICATOR III™

- Automatically copies most protections.
- Rarely needs parameter changing
- Average duplication time 2½ minutes
- Accurately finds "self-sync" bytes and their lengths
- Can copy ¼ and ¾ tracks
- Updated program lists available
- Unlike copycards, EDD backs up entire disks, not just what's in memory

To order direct; send \$79.95 plus \$2 shipping (\$5 foreign), California residents add 6%. Mastercard/Visa accepted. Prepayment required.

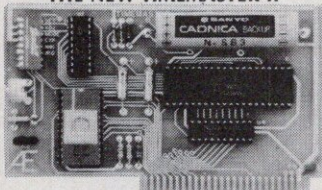
UTILICO MICROWARE

3377 Solano Ave., Suite #352 Napa, CA 94558 (707) 257-2420

Apple Peripherals Are All We Make

That's Why We're So Good At It!

THE NEW TIMEMASTER II



Automatically date stamps files with PRO-DOS

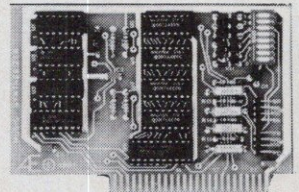
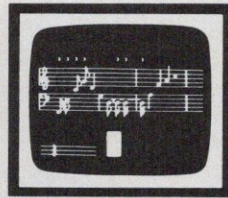
NEW 1984 DESIGN
An official PRO-DOS Clock

- Just plug it in and your programs can read the year, month, date, day, and time to 1 millisecond! The only clock with both year and ms.
- NiCad battery keeps the TIMEMASTER II running for over ten years.
- 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 TIMEMASTER to emulate other clocks, we just drop off features. That's why we can emulate others, but others CAN'T emulate us.
- The TIMEMASTER II will automatically emulate the correct clock card for the software you're using. You can also give the TIMEMASTER II a simple command to tell it which clock to emulate (but you'll like the Timester mode better). This is great for writing programs for those poor unfortunates that bought some other clock card.
- Basic, Machine Code, CP/M and Pascal software on 2 disks!
- Eight software controlled interrupts so you can execute two programs at the same time (many examples are included).
- On-board timer lets you time any interval up to 48 days long down to the nearest millisecond.

The TIMEMASTER II includes 2 disks with some really fantastic time oriented programs (over 40) including appointment book so you'll never forget to do anything again. Enter your appointments up to a year in advance then forget them. Plus DOS dater so it will automatically add the date when disk files are created or modified. The disk is over a \$200.00 value alone—we give the software others sell. All software packages for business, data base management and communications are made to read the TIMEMASTER II. If you want the most powerful and the easiest to use clock for your Apple, you want a TIMEMASTER II.

PRICE \$129.00

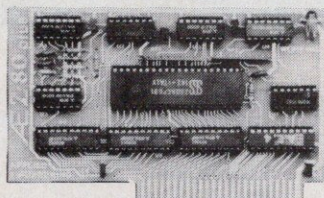
Super Music Synthesizer Improved Hardware and Software



- Complete 16 voice 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 at 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 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.
- Plays music in true stereo as well as true discrete quadraphonic.
- Full control of attack, volume, decay, sustain and release.
- Will play songs written for ALF synthesizer (ALF software will not take advantage of all our card's features. Their software sounds the same in our synthesizer.)
- 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.

PRICE \$159.00

Z-80 PLUS!



- 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, COBOL-80, FORTRAN-80, PEACHTREE and ALL other CP/M software with no pre-boot.
- A semi-custom I.C. and a low parts count allows the Z-80 Plus to fly thru CP/M programs at a very low power level. (We use the Z-80A at fast 4MHZ.)
- Does EVERYTHING the other Z-80 boards do, plus Z-80 interrupts.

Don't confuse the Z-80 Plus with crude copies of the microsoft card. The Z-80 Plus employs a much more sophisticated and reliable design. With the Z-80 Plus you can access the largest body of software in existence. Two computers in one and the advantages of both, all at an unbelievably low price.

PRICE \$139.00

Viewmaster 80

There used to be about a dozen 80 column cards for the Apple, now there's only ONE.

- TOTALLY Videx Compatible.
- 80 characters by 24 lines, with a sharp 7x9 dot matrix.
- On-board 40/80 soft video switch with manual 40 column override
- Fully compatible with ALL Apple languages and software—there are NO exceptions.
- Low power consumption through the use of CMOS devices.
- All connections are made with standard video connectors.
- Both upper and lower case characters are standard.
- All new design (using a new Microprocessor based C.R.T. controller) for a beautiful razor sharp display.
- The VIEWMASTER incorporates all the features of all other 80 column cards, plus many new improvements.

	PRICE	BUILT IN SOFTWARE	SHIFT KEY SUPPORT	LOW POWER DESIGN	80 COLUMN HOME	7x9 DOT MATRIX	LIGHT PEN INPUTS	40 COLUMN OVERRIDE	INVERSE CHARACTERS
VIEWMASTER	179	YES	YES	YES	YES	YES	YES	YES	YES
SUPRTERM	MORE	NO	YES	NO	NO	NO	NO	YES	YES
WIZARD80	MORE	NO	NO	NO	NO	YES	NO	YES	YES
VISION80	MORE	YES	YES	NO	NO	YES	NO	NO	NO
OMNIVISION	MORE	NO	YES	NO	NO	NO	NO	YES	YES
VIEWMAX80	MORE	YES	YES	NO	NO	YES	NO	NO	YES
SMARTERM	MORE	YES	YES	NO	NO	NO	YES	YES	NO
VIDEOTERM	MORE	NO	NO	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 \$179.00

- Expands your Apple IIe to 192K memory.
- Provides an 80 column text display.
- Compatible with all Apple IIe 80 column and extended 80 column card software (same physical size as Apple's 64K card).
- Can be used as a solid state disk drive to make your programs run up to 20 times FASTER (the 64K configuration will act as half a drive).
- Permits your IIe to use the new double high resolution graphics.
- Automatically expands Visicalc to 95 K storage in 80 columns! The 64K config. is all that's needed, 128K can take you even higher.
- PRO-DOS will use the MemoryMaster IIe as a high speed disk drive.

MemoryMaster IIe 128K RAM Card

- Precision software disk emulation for Basic, Pascal and CP/M is available at a very low cost. NOT copy protected.
 - Documentation included, we show you how to use all 192K.
- If you already have Apple's 64K card, just order the MEMORYMASTER IIe with 64K and use the 64K from your old board to give you a full 128K. (The board is fully socketed so you simply plug in more chips.)

MemoryMaster IIe with 128K \$249
Upgradeable MemoryMaster IIe with 64K \$169
Non-Upgradeable MemoryMaster IIe with 64K \$149

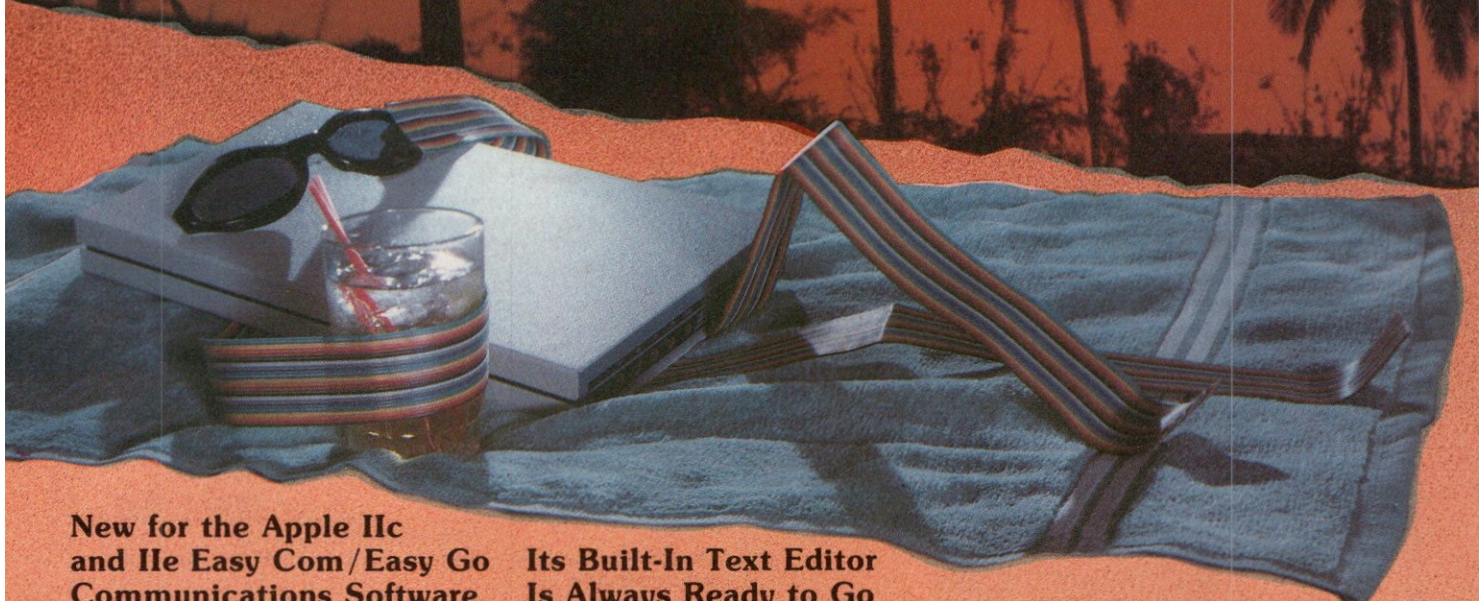
Our boards are far superior to most of the consumer electronics made today. All I.C.'s are in high quality sockets with mil-spec. components used throughout. P.C. boards are glass-epoxy with gold contacts. Made in America to be the best in the world. All products work in the APPLE IIe, II, II+ and Franklin. The MemoryMaster IIe is IIe only. Applied Engineering also manufactures a full line of data acquisition and control products for the Apple; A/D converters and digital I/O cards, etc. Please call for more information. All our products are fully tested with complete documentation and available for immediate delivery. All products are guaranteed with a no hassle THREE YEAR WARRANTY.

Texas Residents Add 5% Sales Tax
 Add \$10.00 If Outside U.S.A.
 Dealer Inquiries Welcome

Send Check or Money Order to:
APPLIED ENGINEERING
 P.O. Box 798
 Carrollton, TX 75006

Call (214) 492-2027
 8 a.m. to 11 p.m. 7 days a week
 MasterCard, Visa & C.O.D. Welcome
 No extra charge for credit cards

Your Modem is on Vacation Unless it's using TRANSEND



New for the Apple IIc and IIe Easy Com/Easy Go Communications Software

Introducing the telecommunications software that will put your modem back to work. If you want to send a letter, chat on the SourceSM, check your financial situation on Dow JonesSM, get flight information on OAG, check the news and sports out on Newsnet, obtain some legal or medical files with the Knowledge index, send an overnight letter through MCI mail or Western Union's Easy Link, or even line yourself up with a date in a city you'll be traveling to, then get your modem back to work with Easy Com/Easy Go, new from TRANSEND.

If you want to swap files, programs, or games, Easy Com/Easy Go will do it in either CP/M, DOS 3.3, PASCAL, or PRODOS — and we'll even verify your transfer to make sure you've got it all and in good order.

Its Built-In Text Editor Is Always Ready to Go

Now with Easy Com/Easy Go you can write or receive information, replace a word or sentence, move a paragraph, or modify the margins. All this is a simple job for Easy Com/Easy Go. Then with just one keystroke you have sent it—and at a speed of over 670,000,000 MPH. Print it, or save it on disk just as easily.

It's Simple But Not Stupid

It knows the basics such as telephone number retention, Auto-Logon, on line printing, has a big Capture Buffer and auto disk save. But that's not all. Easy Com/Easy Go also handles advanced operations including keyboard macros, redefinition of the keyboard, XON/XOFF, verification protocol, and multi-

ple flow control options. It works as well with most modems as it does with Transend's own modem, and at speeds up to 1200 Baud. Compatible with all Apple II's, Easy Com/Easy Go is so simple even a mouse can use it.

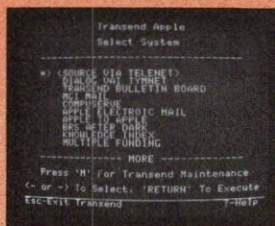
Limited Time Offer

With each purchase, receive offers worth over \$400 from leading information services like Dow Jones News RetrievalSM, The SourceSM, MCI Mail, OAG, Newsnet, Dialog Knowledge Index, and Western Union Easy Link.

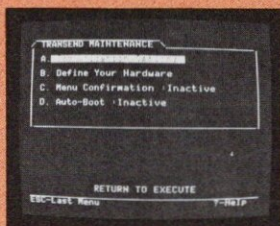
Money Back Guarantee

If Easy Com/Easy Go doesn't put your modem back to work within 30 days, we'll give you your money back.

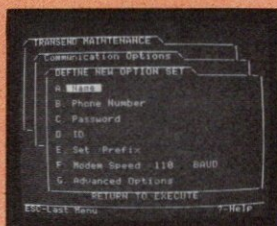
So Easy You'll Think You're on Vacation



The first screen gets you in touch with a service — preprogrammed.



All you do is select, and Easy Com/Easy Go does the rest.



Even in an advanced situation, the screens are easy to use.

CIRCLE 123 ON READER SERVICE CARD

ELECTRONIC COMMUNICATIONS MADE SIMPLE.

TRANSEND CORPORATION
2190 Paragon Drive
San Jose, CA 95131
(408) 946-7400
Telex 1711171
Source ST1422

TRANSEND

part three

► LINKING APPLES TO MAINFRAMES

BY ROBERT COWART AND STEVE ROSENTHAL

David Talks to Goliath through a Variety of

Software



Hardware alone isn't enough to connect Apples and mainframe computers. Once all the wiring and plugging in are finished, the machines on both sides of your connection still need the right software. At the Apple end, the software must take care of both the communications link and the particular way you have your hardware configured. Since some mainframes are able to communicate only with specific terminals, the software may also have to disguise an Apple to look like something it is not.

None of this adaptation is easy, especially for the mainframe half of the marriage. Why? Because many of these larger machines were designed without microcomputers in mind. They are set in many of their ways and use software that is expensive and complex, at least compared to programs for the Apple.

Luckily, personal computers are more flexible. With a little help from software and hardware, your Apple can be accommodating to a mainframe. Unless you're responsible for a mainframe that must send and receive detailed file or database information from many personal-computer users, it's much wiser (and easier) to do a little remodeling on the Apple side of the fence, where software is considerably cheaper, the necessary effort is smaller (you can usually install the programs

yourself), and the total investment in time is significantly lower.

Software for Apples comes in two basic classes, mirroring the two very different communications modes the bigger machines employ.

Speaking in Tongues

The first class of software matches a communications protocol, favored by mainframes, that is familiar to many microcomputer users—the asynchronous communications protocol. It is the same method that interfaces terminals, serial printers, and modems to microcomputers as well as minicomputers. When you hook up an Apple with a serial card to a printer or through a modem to another computer or a bulletin board, you're using asynchronous communications.

To use async communications, the main thing you need is software. Any Apple with a serial port (or a serial card for the II family) already has the basic hardware. If you're hooking up to another system by telephone, you'll need a modem as well.

If you have been using CompuServe or The Source, for example, you are already familiar with the use of a typical asynchronous-software package that involves serial connection and a modem. These packages are relatively inexpensive (\$50–\$300) and range from

bare bones to opulent capabilities.

At the very least, an async-communications program allows you to log on to a distant computer system and interact as though you were using a local terminal instead of your Apple. Data appears on the screen as you receive it from the distant computer and as you type it on the keyboard.

In the basic terminal mode (sometimes called the “dumb terminal” mode), these communications packages make your Apple act like a video equivalent of a simple Teletype terminal. The only characters the program has to respond to and be able to display on screen are the printable numbers and letters, carriage returns, line feeds, and backspaces. The characters are all sent and received in the same ASCII character code that all Apples and other personal computers use.

Even a bare-bones package must include an installation program, though, to customize the communications package to your specific hardware setup. This task is not trivial, considering the number of modems, serial boards, printers, operating systems, and screen-display options around.

For the Apple II family of computers, some of the popular programs that provide this basic TTY emulation include Access II from Apple, Acculink,

SANYO MONITOR SALE!!



9" Data Monitor

- 80 Columns x 24 lines
- Green text display
- Easy to read - no eye strain
- Up front brightness control
- High resolution graphics
- Quick start - no preheating
- Regulated power supply
- Attractive metal cabinet
- UL and FCC approved

12" Screen Amber or Green Text Display **\$99**

- 15 Day Free Trial - 90 Day Immediate Replacement Warranty

12" Hi-Resolution Amber or Green Screen Monitor \$119.00

this is a 1000 Line, 80 Column, High Resolution Monitor with crisp clear text that is easy to read! A must for Word Processing! Includes special Software Discount coupon.

List \$249.00 **SALE \$119.00**

14" Hi-Resolution Color Monitor \$229.00

This 14" color monitor has the sharpest and clearest resolution of any color monitor we have tested! Beautiful color contrast! Also compatible with video recorders. Includes special Software Discount coupon.

List \$399.00 **SALE \$229.00 (IBM Compatible)**

• LOWEST PRICES • 15 DAY FREE TRIAL • 90 DAY FREE REPLACEMENT WARRANTY
• BEST SERVICE IN U.S.A. • ONE DAY EXPRESS MAIL • OVER 500 PROGRAMS • FREE CATALOGS

Add \$10.00 for shipping, handling and insurance. Illinois residents please add 6% tax. Add \$20.00 for CANADA, PUERTO RICO, HAWAII, ALASKA, APO-FPO orders. Canadian orders must be in U.S. dollars. WE DO NOT EXPORT TO OTHER COUNTRIES.

Enclose Cashiers Check, Money Order or Personal Check. Allow 14 days for delivery, 2 to 7 days for phone orders, 1 day express mail!

VISA — MASTER CARD — C.O.D.

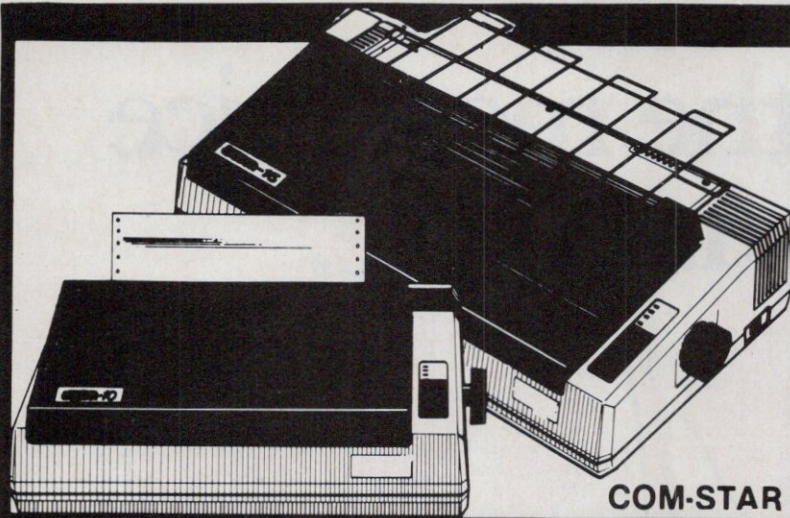
PROTECTO
ENTERPRISES (WE LOVE OUR CUSTOMERS)
BOX 550, BARRINGTON, ILLINOIS 60010
Phone 312/382-5244 to order

FANTASTIC COMPUTER PRINTER SALE!!

COM-STAR T/F

Tractor
Friction
Printer

only \$ **169****



• **Lowest Priced, Best Quality, Tractor-Friction Printers in the U.S.A.**

- **Fast 80-120-160 Characters Per Second**
- **40, 46, 66, 80, 96, 132 Characters Per Line Spacing**
- **Word Processing**
- **Print Labels, Letters, Graphs and Tables**
- **List Your Programs**
- **Print Out Data from Modem Services**
- **"The Most Important Accessory for Your Computer"**

** DELUXE COMSTAR T/F 80 CPS Printer — \$169.00

This COMSTAR T/F (Tractor Friction) PRINTER is exceptionally versatile. It prints 8½" x 11" standard size single sheet stationary or continuous feed computer paper. Bi-directional, impact dot matrix, 80 CPS, 224 characters. (Centronics Parallel Interface).

Premium Quality 120-140 CPS 10" COM-STAR PLUS+ Printer \$269.00

The COM-STAR PLUS+ gives you all the features of the COMSTAR T/F PRINTER plus a 10" carriage, 120-140 CPS, 9x9 dot matrix with double strike capability for 18 x 18 dot matrix (near letter quality), high resolution bit image (120 x 144 dot matrix), underlining, back spacing, left and right margin settings, true lower decenders with super and subscripts, prints standard, italic, block graphics and special characters. It gives you print quality and features found on printers costing twice as much!! (Centronics Parallel Interface) (Better than Epson FX80). List \$499.00 **SALE \$269.00**

Premium Quality 120-140 CPS 15½" COM-STAR PLUS+ Business Printer \$379.00

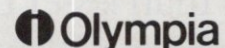
Has all the features of the 10" COM-STAR PLUS+ PRINTER plus 15½" carriage and more powerful electronics components to handle large ledger business forms! (Better than Epson FX 100). List \$599 **SALE \$379.00.**

Superior Quality 140-160 CPS 10" COM-STAR PLUS+ IBM IBM Pers/Bus Printer \$389.00

Has all the features of the 10" COM-STAR PLUS+ PRINTER! It is especially designed for all IBM personal computers! 140-160 CPS HIGH SPEED PRINTING 100% duty cycle, 2K buffer, diverse character fonts, special symbols and true decenders, vertical and horizontal tabs. A RED HOT IBM personal business printer at an unbelievable low price of \$389.00 plus one year immediate replacement warranty (centronics parallel interface) List \$699 **SALE \$389.00**

Superior Quality 160-180 CPS 10" COM-STAR PLUS+ HS Business Printer \$399.00

The **Super Com-Star+ High Speed Business Printer** 160-180 CPS has a 10" Carriage with all the Com-Star+ features built in! The 15½" **High Speed Business Printer** is especially designed with more powerful electronics to handle larger ledger business forms! Exclusive bottom feed! (Centronics parallel interface) **One year immediate replacement warranty.** The 15½" printer is also compatible with IBM Personal/Business Computers! 15½" Printer List \$699.00 **SALE \$399.00**



Executive Letter Quality

DAISY WHEEL PRINTER \$399.00

This is the worlds finest daisy wheel printer **Fantastic Letter Quality**, up to 20 CPS bidirectional, will handle 14.4" forms width! Has a 256 character print buffer, special print enhancements, built in tractor-feed (Centronics Parallel and RS232C Interface) List \$699 **SALE \$399.**

PARALLEL INTERFACES

For VIC-20 and COM-64 — \$49.00 For Apple computers — \$79.00 Atari 850 Interface — \$79.00 For ALL IBM Computers — \$89.00

• 15 Day Free Trial - 180 Day Immediate Replacement Warranty

Add \$14.50 for shipping, handling and insurance. Illinois residents please add 6% tax. Add \$29.00 for CANADA, PUERTO RICO, HAWAII, ALASKA, APO-FPO orders. Canadian orders must be in U.S. dollars. WE DO NOT EXPORT TO OTHER COUNTRIES.

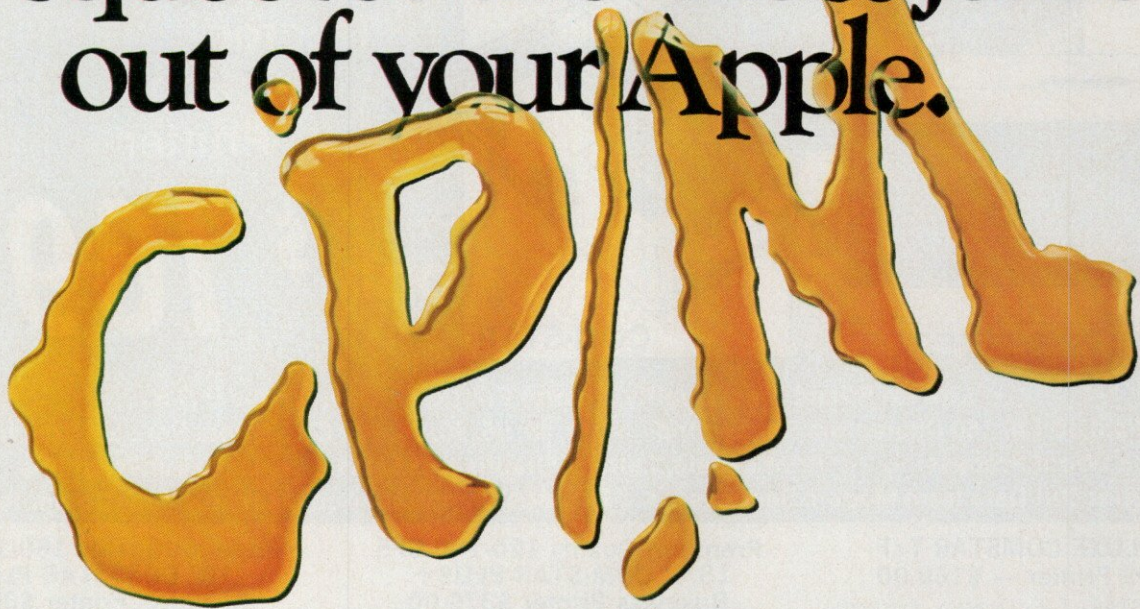
Enclose Cashiers Check, Money Order or Personal Check. Allow 14 days for delivery. 2 to 7 days for phone orders, 1 day express mail! VISA—MASTER CARD—We Ship C.O.D. to U.S. Addresses Only

PROTECTO
ENTERPRIZES (WE LOVE OUR CUSTOMERS)

BOX 550, BARRINGTON, ILLINOIS 60010
Phone 312/382-5244 to order

COM-STAR PLUS+ **ABCDEFGHIJKLMN OPQRSTUVWXYZ**
Print Example: **ABCDEFGHIJKLMN OPQRSTUVWXYZ 1234567890**

SoftCard squeezes the most juice out of your Apple.



Microsoft® Premium SoftCard™ IIe is the high-performance CP/M® board that really juices the Apple® IIe.

Hard facts on SoftCard.

It has a high speed (6MHz) Z-80 that runs CP/M up to three times faster than lesser boards. Plus 64K memory and 80-column display that fits the IIe auxiliary slot and acts like Apple's own Extended 80-column Card. So it works with CP/M, Apple DOS and ProDOS programs, too.

Microsoft BASIC is built-in, so it's compatible with more Apple CP/M software than any other board on the market: Thousands of the juiciest business programs including dBase II®, WordStar® and sophisticated Microsoft languages like

FORTRAN-80, COBOL and BASIC Compiler.

It also has a new low price.

Juicing up the performance of computers is nothing new for us. We invented the SoftCard and make versions for the entire Apple family. We wrote Applesoft for the Apple II.

MICROSOFT In fact, our The High Performance Software BASIC is the language spoken by nine out of ten microcomputers worldwide.

Get the Apple juicer from Washington. Call 800-426-9400 (in Washington State call 206-828-8088) for the name of your nearest Microsoft dealer.

SoftCard is a trademark and Microsoft is a registered trademark of Microsoft Corporation. Apple is a registered trademark of Apple Computer, Inc. IBM is a registered trademark of International Business Machines Corporation. dBASE II is a registered trademark of Ashton-Tate. WordStar is a registered trademark of MicroPro. CP/M is a registered trademark of Digital Research, Inc.

ASCII Express, BLAST, Data Capture, MITE, Modem Magic, TermExec, The Connection, Transend, VisiTerm, and Z-Term. On the Macintosh, along with Apple's MacTerminal and Dennis Brothers' MacTEP (listed in the July issue of *A+* on page 96 and 97), you can also choose from MacAck, MacModem, and a growing number of other terminal-emulation programs. The Lisa can use many of the Macintosh programs, along with Apple's Lisa-Terminal.

Most of these packages can do more than just imitate a simple Teletype. Many communications programs also allow uploading and downloading of files from a mainframe to an Apple. At the Apple end, you can, in most cases, store and retrieve files from disk and tuck them away in memory.

Uploading a file or downloading one for later analysis can save you a great deal of time and money when you're using information services that charge by the minute. You can create a message or document off-line, connect to the mainframe, and send the file off to the receiving computer within minutes.

Some examples of programs that support file uploading and downloading are Apple's Access II, MacTerminal,

and LisaTerminal. From independent vendors, typical programs include Acuculink, ASCII Express, BLAST, ERA 2, MITE, and Transend, among others.

Many communications programs for the Apple offer even more advanced features, some of which may seem needlessly complex at first, but which you may later regard as valuable conveniences. For example, some programs

You must have software and hardware that 'disguise' your system.

let you store "scripts" or "macros" that set up communications links automatically. Once set up, a script can typically dial a phone number, log on to an information service, type in your password and I.D. number, and issue the necessary commands to move into the data area that you use most often. Among the programs offering this feature are Apple's Access II, ASCII Express, Softerm 2, and Transend.

Terminal Emulation

Most any of the popular programs will suffice for connecting you to public networks such as CompuServe. Tying into a private, in-house, corporate mainframe isn't as easy, though. Even after you've successfully surmounted the hardware impediments of hooking up (see "The Apple Connection," on page 57 of this issue), another problem remains. Most private systems are designed for use with only one or two specific types of terminals. To connect your Apple to the mainframe, you must have software and hardware that "disguise" your system as an appropriate kind of terminal.

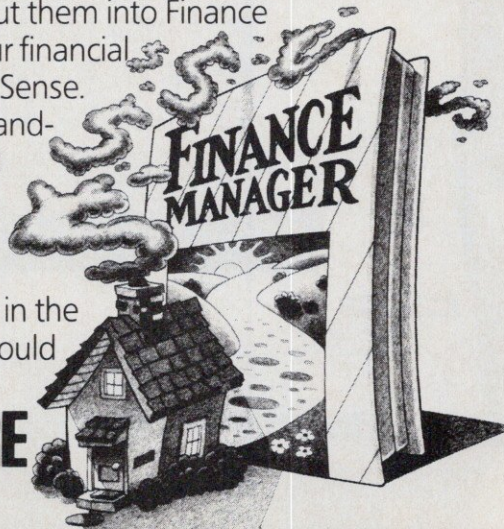
For use with mainframes, the most popular terminals are the IBM 3278 series. In the minicomputer world, either the DEC VT-52 or VT-100 predominate. You must have the right terminal or make your microcomputer look like the right terminal by using a "terminal emulator." A terminal emulator can consist of a combination software/hardware package, or just software alone. In any case, terminal emulation is not a simple trick. The package must be able to handle data input and output (preferably at relatively high rates of speed) while, at the same time, manag-

TAKE ALL THE MONEY YOU HAVE IN THE WORLD AND PUT IT INTO THIS SOFTWARE PROGRAM.

Take all the cash you have in the bank. All the money in your checking account. Your stocks. Bonds. And of course, all your investments, and put them into Finance Manager. Nothing's easier to handle, or keeps track of your financial situation better. Not even Home Accountant or Dollars & Sense. Finance Manager is by far the most efficient and understandable home finance program available. It helps you record your income, expenses, and transactions. Budget your money, make financial plans, organize your tax records, and help you evaluate investments and payment plans. And it has everything you need to keep your bottom line in the black. So go ahead and spring for a Finance Manager. It could be the best investment that you'll ever make.

FINANCE MANAGER™ BY HESWARE

For all IBM PC and Apple II Computers



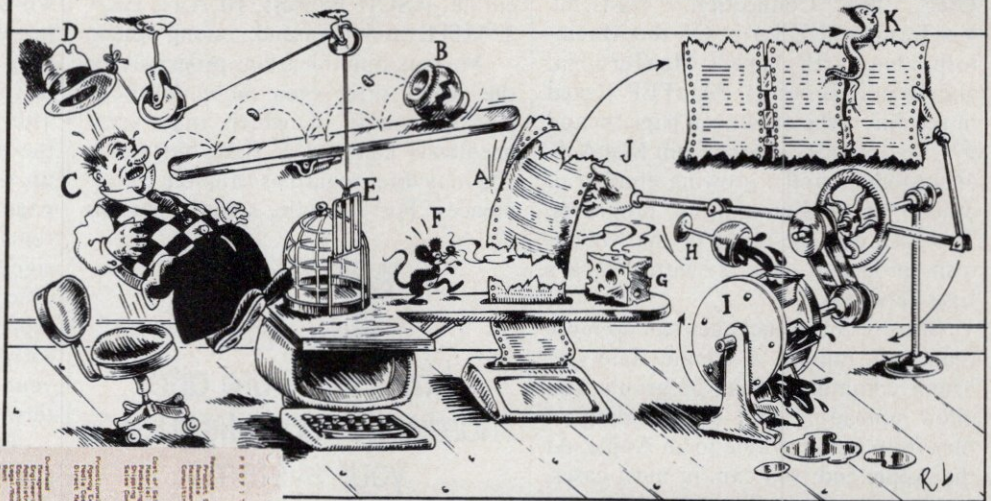
SIMPLIFIED SPREADSHEET ASSEMBLY

RISING SPREADSHEET (A) KNOCKS MEXICAN JUMPING BEANS (B) INTO MOUTH OF NEUROTIC MAN (C) WHO IS SO DISCOMBODULATED THAT HIS HAIR STANDS ON END, DISLODGING HAT (D) WHICH OPENS CAGE (E) AND RELEASES EPICUREAN MOUSE (F).

MUSE, INSPIRED BY SCENT OF PERFECTLY AGED CAMEMBERT CHEESE, GNAWS THROUGH SPREADSHEET, ONLY TO DISCOVER HE HAS BEEN FOOLED BY AROMA OF OVER-RIPE GORGONZOLA (G).

IN A FIT OF PIQUE HE SPILLS JINTAGE WINE (H) INTO WATER-WHEEL (I) WHICH TURNS PULLEY THAT CAUSES GLOVE (J) TO GRASP SPREADSHEET AND MOVE IT TO TAPING AREA.

SHEET IS TAPED SECURELY IN PLACE BY TRAINED ADHESIVE TAPE WORM (K).



MADE SIMPLE.

Now you can save time, aggravation, adhesive tape, and Gorgonzola cheese by following one simple direction—Sideways. It's the unique software program that lets you output all the spreadsheet columns you need, all on one continuous page, all with one print command—and all for only \$60!

The New York Times calls Sideways "one small program that solves a big problem for computer users." You'll agree. Sideways can print as wide a spreadsheet as you can invent with VisiCalc®, Multiplan®, or other programs. You can also use it for those far-into-the-future schedules and pert charts you create with your word processor. And there's more—Sideways gives you complete control over margins and character spacing, and lets you choose from a variety of type sizes. For any wide text file, for dozens of uses, the way to go is Sideways.

You can go Sideways today with your Apple® II and a wide variety of dot matrix printers, including Epson®, Okidata, Apple DMP, and Imagewriter. Ask for Sideways at leading computer stores. Or mail a \$60 check to Funk Software, P.O. Box 1290, Cambridge, MA 02238. (617) 497-6339. MC/Visa accepted. Send no Mexican jumping beans, please.

SIDEWAYS™

FOR EASY-READING HARD COPY

CIRCLE 154 ON READER SERVICE CARD

Product Name	Product Code	Product Price	Product Weight	Product Dimensions	Product Description
Apple II	1000	\$500.00	10.00	10.00	Apple II computer system
Apple II Plus	1001	\$550.00	10.00	10.00	Apple II Plus computer system
Apple II XE	1002	\$600.00	10.00	10.00	Apple II XE computer system
Apple IIc	1003	\$650.00	10.00	10.00	Apple IIc computer system
Apple IIc Plus	1004	\$700.00	10.00	10.00	Apple IIc Plus computer system
Apple IIc XE	1005	\$750.00	10.00	10.00	Apple IIc XE computer system
Apple IIc Plus XE	1006	\$800.00	10.00	10.00	Apple IIc Plus XE computer system
Apple IIc XE Plus	1007	\$850.00	10.00	10.00	Apple IIc XE Plus computer system
Apple IIc Plus XE Plus	1008	\$900.00	10.00	10.00	Apple IIc Plus XE Plus computer system
Apple IIc XE Plus Plus	1009	\$950.00	10.00	10.00	Apple IIc XE Plus Plus computer system
Apple IIc Plus XE Plus Plus	1010	\$1000.00	10.00	10.00	Apple IIc Plus XE Plus Plus computer system
Apple IIc XE Plus Plus Plus	1011	\$1050.00	10.00	10.00	Apple IIc XE Plus Plus Plus computer system
Apple IIc Plus XE Plus Plus Plus	1012	\$1100.00	10.00	10.00	Apple IIc Plus XE Plus Plus Plus computer system
Apple IIc XE Plus Plus Plus Plus	1013	\$1150.00	10.00	10.00	Apple IIc XE Plus Plus Plus Plus computer system
Apple IIc Plus XE Plus Plus Plus Plus	1014	\$1200.00	10.00	10.00	Apple IIc Plus XE Plus Plus Plus Plus computer system
Apple IIc XE Plus Plus Plus Plus Plus	1015	\$1250.00	10.00	10.00	Apple IIc XE Plus Plus Plus Plus Plus computer system
Apple IIc Plus XE Plus Plus Plus Plus Plus	1016	\$1300.00	10.00	10.00	Apple IIc Plus XE Plus Plus Plus Plus Plus computer system
Apple IIc XE Plus Plus Plus Plus Plus Plus	1017	\$1350.00	10.00	10.00	Apple IIc XE Plus Plus Plus Plus Plus Plus computer system
Apple IIc Plus XE Plus Plus Plus Plus Plus Plus	1018	\$1400.00	10.00	10.00	Apple IIc Plus XE Plus Plus Plus Plus Plus Plus computer system
Apple IIc XE Plus Plus Plus Plus Plus Plus Plus	1019	\$1450.00	10.00	10.00	Apple IIc XE Plus Plus Plus Plus Plus Plus Plus computer system
Apple IIc Plus XE Plus Plus Plus Plus Plus Plus Plus	1020	\$1500.00	10.00	10.00	Apple IIc Plus XE Plus Plus Plus Plus Plus Plus Plus computer system
Apple IIc XE Plus Plus Plus Plus Plus Plus Plus Plus	1021	\$1550.00	10.00	10.00	Apple IIc XE Plus Plus Plus Plus Plus Plus Plus Plus computer system
Apple IIc Plus XE Plus Plus Plus Plus Plus Plus Plus Plus	1022	\$1600.00	10.00	10.00	Apple IIc Plus XE Plus Plus Plus Plus Plus Plus Plus Plus computer system
Apple IIc XE Plus Plus Plus Plus Plus Plus Plus Plus Plus	1023	\$1650.00	10.00	10.00	Apple IIc XE Plus Plus Plus Plus Plus Plus Plus Plus Plus computer system
Apple IIc Plus XE Plus Plus Plus Plus Plus Plus Plus Plus Plus	1024	\$1700.00	10.00	10.00	Apple IIc Plus XE Plus Plus Plus Plus Plus Plus Plus Plus Plus computer system
Apple IIc XE Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus	1025	\$1750.00	10.00	10.00	Apple IIc XE Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus computer system
Apple IIc Plus XE Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus	1026	\$1800.00	10.00	10.00	Apple IIc Plus XE Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus computer system
Apple IIc XE Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus	1027	\$1850.00	10.00	10.00	Apple IIc XE Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus computer system
Apple IIc Plus XE Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus	1028	\$1900.00	10.00	10.00	Apple IIc Plus XE Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus computer system
Apple IIc XE Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus	1029	\$1950.00	10.00	10.00	Apple IIc XE Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus computer system
Apple IIc Plus XE Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus	1030	\$2000.00	10.00	10.00	Apple IIc Plus XE Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus computer system
Apple IIc XE Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus	1031	\$2050.00	10.00	10.00	Apple IIc XE Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus computer system
Apple IIc Plus XE Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus	1032	\$2100.00	10.00	10.00	Apple IIc Plus XE Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus computer system
Apple IIc XE Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus	1033	\$2150.00	10.00	10.00	Apple IIc XE Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus computer system
Apple IIc Plus XE Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus	1034	\$2200.00	10.00	10.00	Apple IIc Plus XE Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus computer system
Apple IIc XE Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus	1035	\$2250.00	10.00	10.00	Apple IIc XE Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus computer system
Apple IIc Plus XE Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus	1036	\$2300.00	10.00	10.00	Apple IIc Plus XE Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus computer system
Apple IIc XE Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus	1037	\$2350.00	10.00	10.00	Apple IIc XE Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus computer system
Apple IIc Plus XE Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus	1038	\$2400.00	10.00	10.00	Apple IIc Plus XE Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus computer system
Apple IIc XE Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus	1039	\$2450.00	10.00	10.00	Apple IIc XE Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus computer system
Apple IIc Plus XE Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus	1040	\$2500.00	10.00	10.00	Apple IIc Plus XE Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus computer system
Apple IIc XE Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus	1041	\$2550.00	10.00	10.00	Apple IIc XE Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus computer system
Apple IIc Plus XE Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus Plus	1042	\$2600.00	10.00	10.00	Apple IIc Plus XE Plus computer system
Apple IIc XE Plus	1043	\$2650.00	10.00	10.00	Apple IIc XE Plus computer system
Apple IIc Plus XE Plus	1044	\$2700.00	10.00	10.00	Apple IIc Plus XE Plus computer system
Apple IIc XE Plus	1045	\$2750.00	10.00	10.00	Apple IIc XE Plus computer system
Apple IIc Plus XE Plus	1046	\$2800.00	10.00	10.00	Apple IIc Plus XE Plus computer system
Apple IIc XE Plus	1047	\$2850.00	10.00	10.00	Apple IIc XE Plus computer system
Apple IIc Plus XE Plus	1048	\$2900.00	10.00	10.00	Apple IIc Plus XE Plus computer system
Apple IIc XE Plus	1049	\$2950.00	10.00	10.00	Apple IIc XE Plus computer system
Apple IIc Plus XE Plus	1050	\$3000.00	10.00	10.00	Apple IIc Plus XE Plus computer system



ing display of data on the screen, and possibly handling the disk drives as well—not losing any data all the while.

In addition, most mainframe terminals have special keys and lights that you won't find on your Apple, and the terminal emulator must handle control codes associated with these capabilities.

Emulating most popular asynchronous terminals is primarily a software task. Once you find out what terminal your mainframe expects, you just have to match up the terminal with a software package that includes that particular terminal model in its repertoire. A few programs, such as Disco-Tech's Talisman, Softronics' Softerm 2, and Communications Research Group's BLAST, imitate dozens of terminals, but most software packages for the Apple specialize in one or two. Other terminal emulators for the Apple family include ASCII Express Professional, MacTerminal, and LisaTerminal.

For working with big machines from IBM and other mainframe manufacturers, you may also need an asynchronous-terminal-emulator program, even though the actual communication with the mainframe may involve the IBM bisynchronous-communications (also known as bisync or BSC) standards.

Many of the hardware boxes that interface Apples to these systems connect to the Apple as if the boxes were asynchronous computers communicating with VT-100 terminals. The Apple, then, needs a terminal-emulator package to look like a VT-100.

You can use any of the communications programs that emulate the VT-

Emulating most popular asynchronous terminals is primarily a software task.

100 terminal, but a few of the programs have been customized to work with protocol converters. For example, with Apple's MacTerminal, which simulates a VT-100, you can use the extra keys that an IBM 3278 terminal has but a Macintosh does not by clicking on key images on a pull-down menu. Apple also offers Access 3270 for the Apple III and LisaTerminal for the Lisa set up to work with the Appleline protocol-converter box from Apple.

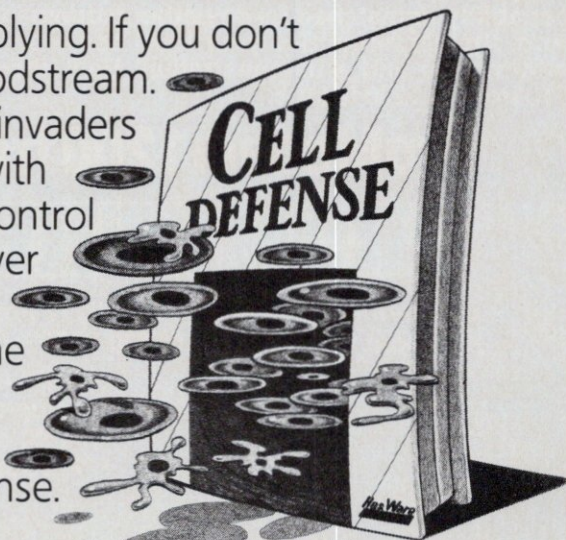
For the Apple II, Apple sells a protocol converter built into a standard plug-in card. With it, you don't need terminal-emulator software. Rather, you require one of two custom programs available specifically for this card. One program sets the card to imitate an IBM 3278 terminal attached to a 3274 Controller; the other turns the Apple into a look-alike of the IBM 2780 and 3780 Remote Job Entry systems.

All the programs we've discussed work with a mainframe that is operating normally, making the Apple jump through hoops to talk with it. With the ever-increasing popularity and visibility of micros in the business environment, however, more mainframe software is becoming available. Programs to transfer and use files created by VisiCalc (DIF format), Multiplan files (SYLK format), and dBASE II (.DBF) files are now available for some machines. For a look at an innovative and comprehensive mainframe-software product for using Apples in a distributed-processing network, see "Continuum," on page 39 of this issue. +

For more information on the products discussed in this article, see page 52.

STOP THE SPREAD OF A DEADLY VIRUS.

Quick. Deadly viruses are rapidly multiplying. If you don't act fast, they'll infiltrate your entire bloodstream. And in seconds it'll be over. So blast the invaders with interferon. And annihilate them with macrophages. With Cell Defense, you control your own immune system. You'll discover basic concepts in biology. And explore exciting scientific strategies. While at the same time, leading an attack against a host of deadly viruses. So get yourself the science simulation game Cell Defense. Your life may depend on it.



CELL DEFENSE™ BY HESWARE

For the Commodore 64, Apple II, and Apple IIc with mouse.

CIRCLE 109 ON READER SERVICE CARD

Top Modem



- Hayes Compatible • More Features • Only \$495

The best price/performance ratio of any 212A modem on the market today for under \$500! That puts ProModem 1200 on top of the stack. Compare the 26 features. You'll see why. Only ProModem offers all 26. 15 are exclusive.

They're important features. The Real Time Clock/Calendar for example. Used with Applications Programs, or the OPTIONS PROCESSOR, gives you pre-set timed operation of the modem. Also, time and duration records of all calls. The convenient HELP command makes ProModem easy to use. It promptly displays the Instructions Menu whenever there's a question about what to do next. With Call Progress Detection, you can "tell" ProModem to do things like automatically "Redial When Busy."

It's the only modem that lets you expand into a full telecommunications center with add-ons. The OPTIONS PROCESSOR gives you Data Store and Time Base Continuity with battery backup, Personal/Business Telephone Directory, and Automatic Receipt/Transfer Buffer, expandable to 64K. The OPTIONS PROCESSOR also enables ProModem to operate unattended, with or without your computer.

The optional 12-character ALPHANUMERIC DISPLAY indicates modem operating status, system diagnostics, message status, phone numbers, and real time clock data. . . to name just a few.

Together, these standard and optional features give you a sophisticated electronic mail and communications capability unmatched by any other modem in this class. And, there's more. See your local dealer for additional information and a demonstration. He'll show you why ProModem 1200 is tops.

ProModem 1200 from ... **PROMETHEUS**

Prometheus Products, Inc., 45277 Fremont Blvd., Fremont CA 94538, (415) 490-2370

NOW AVAILABLE

- ProModem plug-in cards for IBM PC and Apple II
- ProCom Software

212A Modem Comparison Chart *

STANDARD FEATURES

- 300/1200 Baud (212A)
- Intelligent Microprocessor
- Tone and Pulse Dialing
- Hayes Command Compatible (Works with Smartcom™)
- Additional telephone jack with exclusion switching
- Analog loop back self test
- Self Test at Power Up
- Call Progress Detection (Busy, Dial Tones, Trunk Busy, etc.)
- Speaker and External Volume Control
- Full Complement of Status Lights
- 8 Switch Selectable power-up defaults
- Adaptive Dialing
- Auto Redial on Busy
- Ergonomically designed easy to read front display panel
- Internal Stand-Alone Power Supply
- Built in Real Time Clock/Calendar
- Help Command
- 300 baud connect while maintaining 1200 baud RS-232 link

EXPANDABLE OPTIONS

- Automatic Receiver Buffer
- Automatic Transmit Buffer
- On-board Personal/Business Directory
- Buffer, Expandable to 64K
- Auto Logon Macros
- Auto message transmission to groups of numbers
- Records call duration
- 12-character Alphanumeric Display

Feature	PRO	ANCHOR 1200	HAYES STACK	NOVATION SMARTCAT+	US ROBOTICS PASSWORD
300/1200 Baud (212A)	✓	✓	✓	✓	✓
Intelligent Microprocessor	✓	✓	✓	✓	✓
Tone and Pulse Dialing	✓	✓	✓	✓	✓
Hayes Command Compatible (Works with Smartcom™)	✓	✓	✓	✓	✓
Additional telephone jack with exclusion switching	✓	✓	✓	✓	✓
Analog loop back self test	✓	✓	✓	✓	✓
Self Test at Power Up	✓	✓	✓	✓	✓
Call Progress Detection (Busy, Dial Tones, Trunk Busy, etc.)	✓	✓	✓	✓	✓
Speaker and External Volume Control	✓	✓	✓	✓	✓
Full Complement of Status Lights	✓	✓	✓	✓	✓
8 Switch Selectable power-up defaults	✓	✓	✓	✓	✓
Adaptive Dialing	✓	✓	✓	✓	✓
Auto Redial on Busy	✓	✓	✓	✓	✓
Ergonomically designed easy to read front display panel	✓	✓	✓	✓	✓
Internal Stand-Alone Power Supply	✓	✓	✓	✓	✓
Built in Real Time Clock/Calendar	✓	✓	✓	✓	✓
Help Command	✓	✓	✓	✓	✓
300 baud connect while maintaining 1200 baud RS-232 link	✓	✓	✓	✓	✓
Automatic Receiver Buffer	✓	✓	✓	✓	✓
Automatic Transmit Buffer	✓	✓	✓	✓	✓
On-board Personal/Business Directory	✓	✓	✓	✓	✓
Buffer, Expandable to 64K	✓	✓	✓	✓	✓
Auto Logon Macros	✓	✓	✓	✓	✓
Auto message transmission to groups of numbers	✓	✓	✓	✓	✓
Records call duration	✓	✓	✓	✓	✓
12-character Alphanumeric Display	✓	✓	✓	✓	✓

*Comparison made by Prometheus on the basis of the best information available to Prometheus at time of printing.



▶ PRODUCT INFORMATION

Acculink

IE Systems
112 Main Street
Newmarket, NH 03857
(603) 659-5891

List Price: \$245 for the Apple; \$2445, \$995, and \$1475 for the DEC 10/20, PDP 11, and VAX, respectively

Requires: Apple II, II Plus, or IIe

Notes: Two products—one for the Apple and one for the larger computer. Acculink for Apple is a general-purpose async-communications program.

Buying the Acculink program for the DEC 10/20, PDP 11, or VAX allows binary-file transfer with error checking from the Apple II. These are software-only products.

CIRCLE 550 ON READER SERVICE CARD

Apple Access 3270 and 3780/2780

Apple Computer, Inc.
20525 Mariani Avenue
Cupertino, CA 95014
(408) 996-1010

List Price: \$300 each for software packages

Requires: Apple II, II Plus, IIe, or Apple III with Appleline

Notes: Two separate programs—they allow the Apple to emulate an IBM

3274 Cluster Controller attached to a 3278 Display or 2780/3780 Remote Job Entry Terminal.

CIRCLE 551 ON READER SERVICE CARD

ASCII Express—The Professional

United Software
1880 Century Park East
Suite 311
Los Angeles, CA 90067
(213) 556-2211

List Price: \$129.95

Requires: Apple II, II Plus, IIe, or IIc; ProDOS

Notes: Works with 48K and 64K systems. Lowercase generator optional. Supports many printer and modem interfaces and either 40- or 80-column screen. Also supports phone-number library and macro definitions. The TTY for the Deaf (Baudot mode) is available if you use an Apple-CAT modem. Built-in text editor.

CIRCLE 552 ON READER SERVICE CARD

BLAST

Communications Research Group,
Inc.
8939 Jefferson Highway
Baton Rouge, LA 70808
(504) 923-0888

List Price: \$250

Requires: Apple II, II Plus, or IIe with DOS 3.3, or Macintosh

Notes: Available for 70 different micros, minis, and mainframes. If you have BLAST on one machine only, you can send and receive ASCII text only, without error checking. With BLAST on both ends, however, you can send and receive binary data as well as ASCII text, with error checking.

CIRCLE 553 ON READER SERVICE CARD

DataTalker II, DataTalker/Mac

Winterhalter & Associates
3853 Research Park Drive
P.O. Box 2180
Ann Arbor, MI 48106
(313) 662-2002 or (800) 321-7785

List Price: \$1095 for the Mac; \$995 for the II family (software/hardware package)

Requires: Mac or Apple II, II Plus, or IIe. Z80 card and CP/M required on Apple II.

Notes: The Mac program allows 3270-series bisync emulation. The II program does 3270/3780 bisync.

CIRCLE 554 ON READER SERVICE CARD

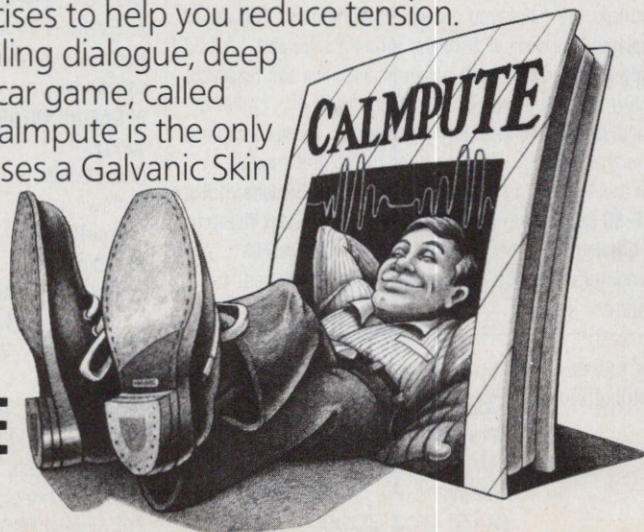
(Continued on page 54)

TO CONTROL STRESS, TAKE ONE AND USE DAILY.

Calmpute is an effective biofeedback program that accurately monitors your level of stress, while suggesting proper exercises to help you reduce tension. Or increase it, if need be. Through revealing dialogue, deep relaxation exercises, and a challenging car game, called CalmPrix, you will learn stress control. Calmpute is the only medical award winning program that uses a Galvanic Skin Response biosensor that you hold in your hand. So get yourself ready for better health. Pick up Calmpute today. It's available over the counter. Without a prescription.

CALMPUTE™ BY HESWARE

Apple II



▶ PRODUCT INFORMATION

ERA II

MicroCom
1400A Providence Highway
Norwood, MA 02062
(617) 762-9310

List Price: \$499

Requires: Apple II, II Plus, IIe, or IIc, or Macintosh with Macmodem

Notes: Includes 1200-bps modem. Macmodem will support 2400 bps after December 1984. Utilizes icons and mouse.

CIRCLE 555 ON READER SERVICE CARD

MITE

Mycroft Labs
P.O. Box 6045
Tallahassee, FL 32314
(904) 385-1141

List Price: \$150

Requires: Apple II, II Plus, or IIe; CP/M; 48K RAM; 80-column board

Notes: Supports various protocols, serial cards, and auto-answer/auto-dial modems.

CIRCLE 556 ON READER SERVICE CARD

Softerm 2

Softronics
3639 New Getwell Road

Suite 10
Memphis, TN 38118
(901) 683-6850

List Price: \$195

Requires: Apple II, II Plus, or IIe
Notes: Provides 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.

CIRCLE 557 ON READER SERVICE CARD

Talisman Terminal Emulator

Disco-Tech
Morton Technologies
Box 1659
Santa Rosa, CA 95402
(707) 527-8500

List Price: \$125

Requires: Apple II with CP/M, Z80 card, and 80-column card, or Apple III with CP/M

Notes: Emulates DEC VT-100, IBM 3101, and 50 other terminals.

CIRCLE 558 ON READER SERVICE CARD

TD-830 Emulator Package

Core Technologies
7201 West Saginaw
Lansing, MI 48917
(517) 321-4659

List Price: \$695 for the emulator package

Requires: Apple II Plus with 80-column card, Apple IIe, or Apple III; 64K RAM

Notes: A hardware/software package that works with all Burroughs computers. Also available for \$1500 is a series of programs to allow file uploading and downloading between Burroughs and Apple. Includes programs for both the Apple and the Burroughs.

CIRCLE 559 ON READER SERVICE CARD

Terminus

Quark, Inc.
2525 West Evans, Suite 220
Denver, CO 80219
(303) 934-2211

List Price: \$89

Requires: Apple II, II Plus, IIe, or IIc with ProDOS, or Apple III

Notes: Optional Word Juggler interface allows editing during transmission.

CIRCLE 560 ON READER SERVICE CARD

TELEMAX, INC. ENHANCEMENT PRODUCTS

WE turn Apples and Franklins into gold, with a little alchemy and lots of engineering.

RGB COLOR BOARDS

Apple 11, 11+, 11e; 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 11 or 11+, the optional VSS-80 softswitch or VSP-80 switchplate can be used to interface Videx Videoterm or Ultraterm 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

The Kaleidoscope VCB-24

Has the same specs. as the COLOR MASTER, with the following added features:

Each text line of 24 lines of text can be independently set to any one of 8 colors, on any one of 8 colors of background. Software provided.

Signal output: RED, GREEN, BLUE, Sync., both composite and H&V. Levels are TTL, both + and -; other outputs: ± 5VDC, +12 VDC. Signals are American Standard. European version is available. Universal RGB monitor compatibility.

ORDERING INFORMATION: (board model nos.)

	11, 11+	11e	Price
APPLE ColorMaster	VCB-8+	VCB-8e	\$139.00
Softswitch	VSS-80	don't need	45.00
SwitchPlate	VSP-80	don't need	30.00
Kaleidoscope	VCB-24+	VCB-24E	199.00
FRANKLIN	Ace 1000	*Monochrome	Price
	1200 (rev. B)	Ace 1000.100	
ColorMaster	VCB8-EF		\$169.00
ColorMaster		VCB-8F	139.00
Kaleidoscope	VCB-24EF	VCB-24F	219.00
SwitchPlate	VSP-80	VSP-80	30.00

(*earlier models that did not have color)
Monitor connector, wired to cable: \$20.00

Apple® is registered by Apple Computer, Inc. Franklin® is registered by Franklin Computer, Inc.

TELEMAX 10, Input/Output Card

Gives user access to the following:
1) Four 8 bit input or output ports (total 32 lines of I/O)
2) Two handshake lines for each port (total 8 lines)
3) Four powerful 16 bit timers, real time or stopwatch.
4) Two shift registers
5) Card may be used in any slot from 1 to 7
6) Suitable for robotics or other control of external equipment. T10-8 \$169.00

TELEMAX Rom/Ram Card

Provides up to 32K of either ROM or RAM storage; user can install CMOS RAM for data or program storage; data can be maintained for 2 years with on-board battery backup. Programs stored in RAM or ROM can be used with other programs. Has 8 bit I/O port for accessing external circuitry. TRR-32 \$199.00

Barcode Reader Standalone system, with wand, ASCII RS232 output, built-in CPU; may be used with any micro or mainframe. Reads LOGMARS. (3 of 9 and others) \$595.00

Barcode Printer Software for Apple 11e and Epson Printers. \$299.00

Prices & specifications are subject to change without notice.

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.

Create motion picture shows.

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.

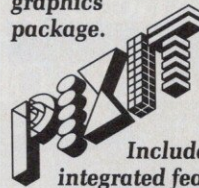
Visa and Master Charge accepted, Michigan residents add 4% sales tax.

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.

"My Apple's[®] telephone just called up the home office!"



Communicating is so easy with a complete telecomputing system from Hayes. Just plug it in—and the world is your Apple. Hayes Smartmodem 300™ is the convenient direct-connect modem for the Apple IIc. And Hayes Micromodem II® is the easily installed board modem for the Apple II, IIe, III, and Apple Plus. Packaged with Smartcom I™

companion "software, both provide a complete telecomputing system. And best of all, both systems are from Hayes, the established telecomputing leader!"

We connect you to all the right places. Bulletin boards, databases, information services—naturally. And that's just the beginning. Let your Apple plan your travel itinerary, including flight numbers, hotel and rental car reservations. Watch it retrieve and analyze daily stock and options prices. Work at home and send reports to and from your office. You can even do your gift shopping by computer!

Would you care to see our menu? Make your selection. Really. With Smartcom I, you just order up what

you want to do. The program guides you along the way. You can create, list, name, send, receive, print or erase files right from the menu. From the very first time you use it, you'll find telecomputing with Hayes as easy as apple pie!

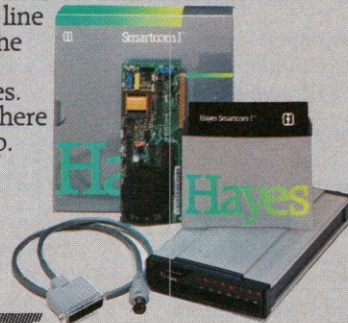
We've got your number! We know that you want a system that's flexible, versatile and accommodating. The Smartmodem 300/Smartcom I system accepts ProDOS™, DOS 3.3, Pascal and CP/M® operating systems. The Micromodem IIe/Smartcom I system accepts DOS 3.3, Pascal and CP/M operating systems.

Smartcom I also provides you with a directory of the files stored on your disk. And will answer calls to your system, without your even being there.

Your Apple's telephone goes anywhere the phone lines go. Hayes modems allow your Apple to communicate with any Bell-103 type modem over ordinary telephone lines. You simply connect directly into a modular phone jack, to perform both Touch-Tone® and pulse dialing. Hayes Smartmodem 300 and Micromodem IIe both transmit at 110 or 300 bits per second, in either half or full duplex.

Follow the leader. Over the years we've built our reputation as the telecomputing leader by developing quality products that set industry standards. Now we invite you to see for yourself just how simple it is to add powerful, easy to use telecomputing capabilities to your Apple computer with a complete, ready-to-go system from Hayes. Visit your Hayes dealer for a hands-on demonstration. And get on line with the world.

Hayes. We're here to help.



Hayes

Hayes Microcomputer Products, Inc.
5923 Peachtree Industrial Blvd.
Norcross, Georgia 30092. 404/441-1617.

CIRCLE 101 ON READER SERVICE CARD

Smartmodem 300 and Smartcom I are trademarks and Micromodem IIe is a registered trademark of Hayes Microcomputer Products, Inc. Apple is a registered trademark, and ProDOS is a trademark of Apple Computer, Inc. Touch-Tone is a registered service mark of American Telephone and Telegraph. CP/M is a registered trademark of Digital Research, Inc. ©1984 Hayes Microcomputer Products, Inc.

The Apple Connection Takes the Right

Hardware



Getting information back and forth between an Apple personal computer and a big mainframe takes more than clever programming. To make the connection, you'll also need the right hardware. Existing mainframe computers were not designed to speak with Apples, nor is changing their ways an easy task. If you want your Apple to connect with a big machine, the Apple will have to do the adapting.

Mainframes, as a rule, expect to communicate with terminals. Thus, the easiest way to connect an Apple and a mainframe is to configure the Apple to electronically imitate the appropriate terminal. Generally, the Apple must act like a simple remote terminal (such as the Digital Equipment Corporation VT-100 or Lear Siegler ADM 3A) or like a member of the more complex IBM 3270 series (see figure 1).

Terminal Emulation

Emulation of simple remote terminals is by far the easier method. These terminals communicate in ASCII (the same character-coding method Apples use), using ordinary asynchronous RS-232 serial communications (the Apples' communications method). The Macintosh, Lisa, and IIc all have built-in serial ports, and you can add serial cards to the rest of the Apple family. To a

mainframe, an Apple communicating through the serial port looks electrically just like a terminal.

You also need the right "terminal emulation" software package so your Apple will know to send and receive data with the serial port, and you must instruct the software how to imitate the selected terminal's response to formatting commands that accomplish such functions as clearing the screen or positioning the cursor.

Technical and organizational policies, especially in a corporate environment, usually prevent you from simply running a standard serial cable from your Apple and plugging it into the back of a mainframe. You're likely to get remote-terminal access to the mainframe only by telephone, so you'll need a modem at the Apple end.

If the mainframe configuration expects ordinary terminals linked to it through modems, an Applemodem or other similar product will do fine. As with any other modem link, you'll have to make sure your modem is compatible and that you've set the right transmission (bps) rate, start bits and stop bits, parity, word length, and so on. You can obtain the proper settings from the company operating the mainframe you want to communicate with.

Talking 3270

Unfortunately, not all mainframes have telephone dial-up ports or other ways of attaching ordinary terminals. Especially as the mainframe size gets larger, it gets to be too much of a chore to support slow-speed terminals that each require a separate line. Instead, most larger systems connect many terminals to a mainframe via a single line and use an entirely different method to regulate the conversation.

The most common, by far, of these terminal families designed for mainframe use is the IBM 3270 series. To emulate a member of the 3270 family, personal computers such as the Apple need some outside help. The 3270 series uses a different character set, a different communications protocol, and even a different type of wiring than ordinary Apple telecommunications equipment does (see box on page 59).

The little box that links these two disparate worlds is called a protocol converter. Apple itself is now marketing a protocol converter called Appleline that is customized for the Apple. So far, it works only with the Macintosh, the Lisa, and the Apple III. Other firms, such as Avatar Technologies and Winterhalter & Associates, have developed instructions for using their standard

personal-computer protocol converters with specific Apple computers.

In fact, if you want to put together your own combination, you can pick from protocol converters from Apple or another company and any Apple computer, including the Apple II. You'll also have to use VT-100 terminal-emulation software from an independent company (under Apple DOS, ProDOS, or CP/M). Most of the converter boxes work in similar ways and cost in the neighborhood of \$1000. The emulation software should run you between \$50 and \$350.

On the Apple's end, the protocol box electronically emulates a mainframe hooked up to communicate with a standard asynchronous terminal (both Apple and Avatar products emulate Digital Equipment Corporation's VT-100). You connect the converter as if it were a modem, but you need a reversing cable or modem eliminator since the serial-interface pinouts on the protocol converter are in the right order for a computer, instead of the order a modem needs. In fact, if you want to connect an Apple to a remote 3270-series controller, you can hook the Apple to a modem, connect that pair by phone to another modem hooked up to a converter, and hook the converter to the controller (see figure 3, page 60).

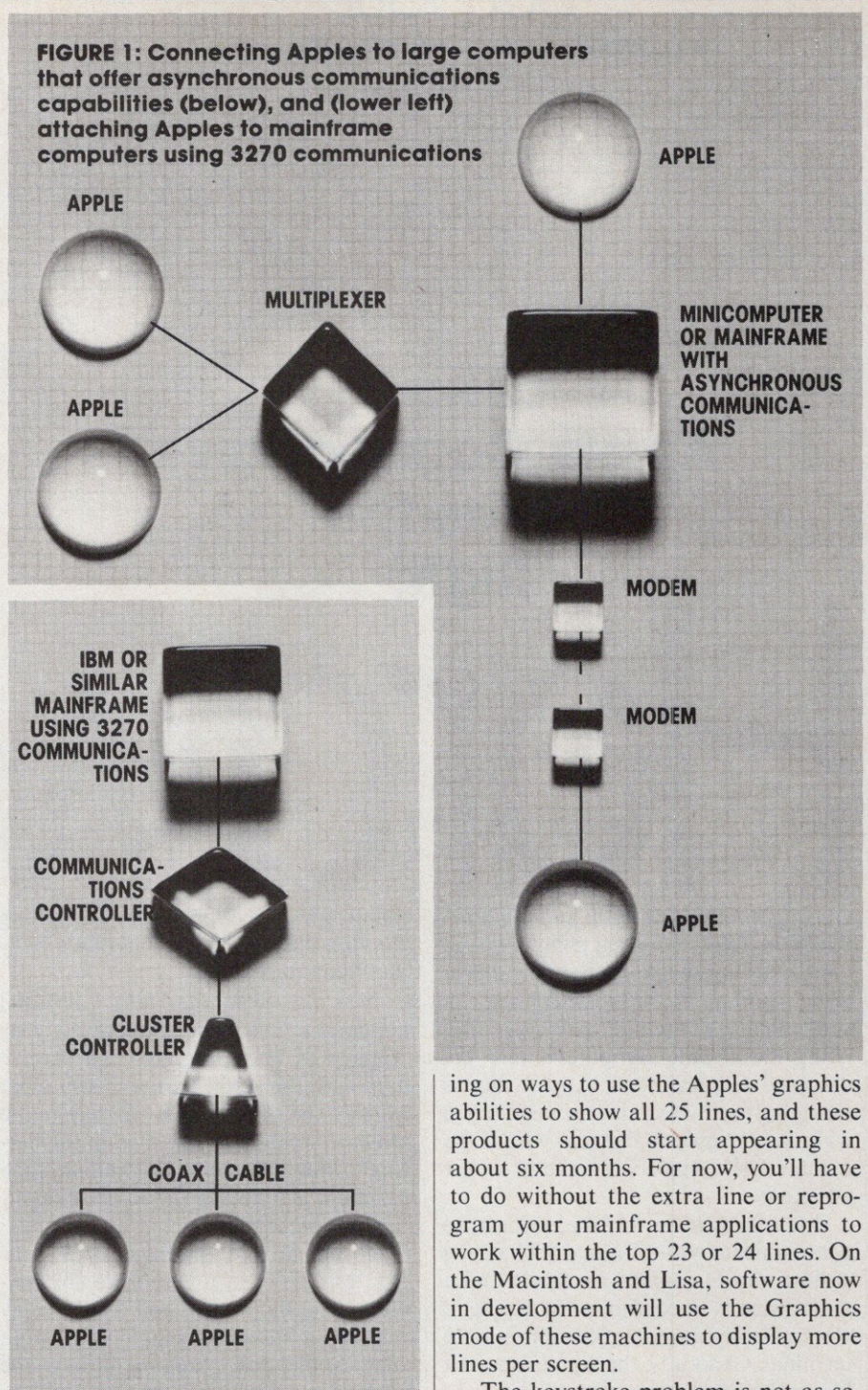
On the other end, the converter emulates an IBM 3278 Model 2 Display Station, which hooks up with coaxial cable to a cluster controller. You can unplug a 3278-2 terminal and replace it with the Apple/converter combination or run a new coaxial cable from the controller.

To connect up to seven Apples to a mainframe through a single connection, Apple also sells the Apple Cluster Controller. This box looks like a standard IBM 3274 or 3276 cluster controller for the IBM network, but provides ports for the more than half-dozen Apples. As with Appleline, the computers can hook directly to the cluster controller or link up via a modem.

For the Apple II family, you can choose a more customized solution. The Apple Communications Protocol Card drops into a II, II Plus, or IIe, and emulates an IBM 3274 Cluster Controller connected to a 3278 Display. With the right software (see "David Talks to Goliath" on page 45), it can also let your Apple II act like a 2780/3780 Remote Job Entry Terminal from IBM.

Lost in the Translation

Although the converter forms an excellent electronic bridge from the Ap-



ple's serial port to the 3270 controller, you still notice some differences from normal Apple use. The most serious problem is screen size: Apples normally show a maximum of 24 lines of text, whereas terminals such as the 3278 show 25 lines, in addition to a set of status lights. Most mainframe terminals also have larger keyboards, so you have to simulate the operation of their extra keys with keystroke combinations or mouse selections.

So far, converters for the Apple do not offer a solution to the problem of screen size. Some companies are work-

ing on ways to use the Apples' graphics abilities to show all 25 lines, and these products should start appearing in about six months. For now, you'll have to do without the extra line or reprogram your mainframe applications to work within the top 23 or 24 lines. On the Macintosh and Lisa, software now in development will use the Graphics mode of these machines to display more lines per screen.

The keystroke problem is not as severe. You can pick from a pull-down video keyboard on the Macintosh and Lisa for the extra keys. If you're using an Avatar PA 1000E, Winterhalter DataTalker, or Appleline with the Apple III and Access 3270, you invoke the operations with short sequences of keys.

Although the converters do an excellent job of simulating terminals in the interactive mode, current models do not provide a particularly good method for file transfer. Typically, the converter puts a screen's worth of data into a buffer (because the 3278 sends and receives an occasional block of data at

▶ THE 3270 SPEAKS A DIFFERENT LANGUAGE

The IBM 3270 series includes a wide range of communications controllers, terminals, and remote printing stations. The terminals generally are grouped in clusters attached to a communications controller, with the controller, in turn, attached to the mainframe (see figure 2). Ordinary asynchronous terminals send data out whenever you enter a keystroke, but 3270-series terminals save their data and wait for a request directed specifically to a particular terminal to dump one or more screens of data out to the controller. This method of transmission, called polling, allows several terminals to share the same connecting line.

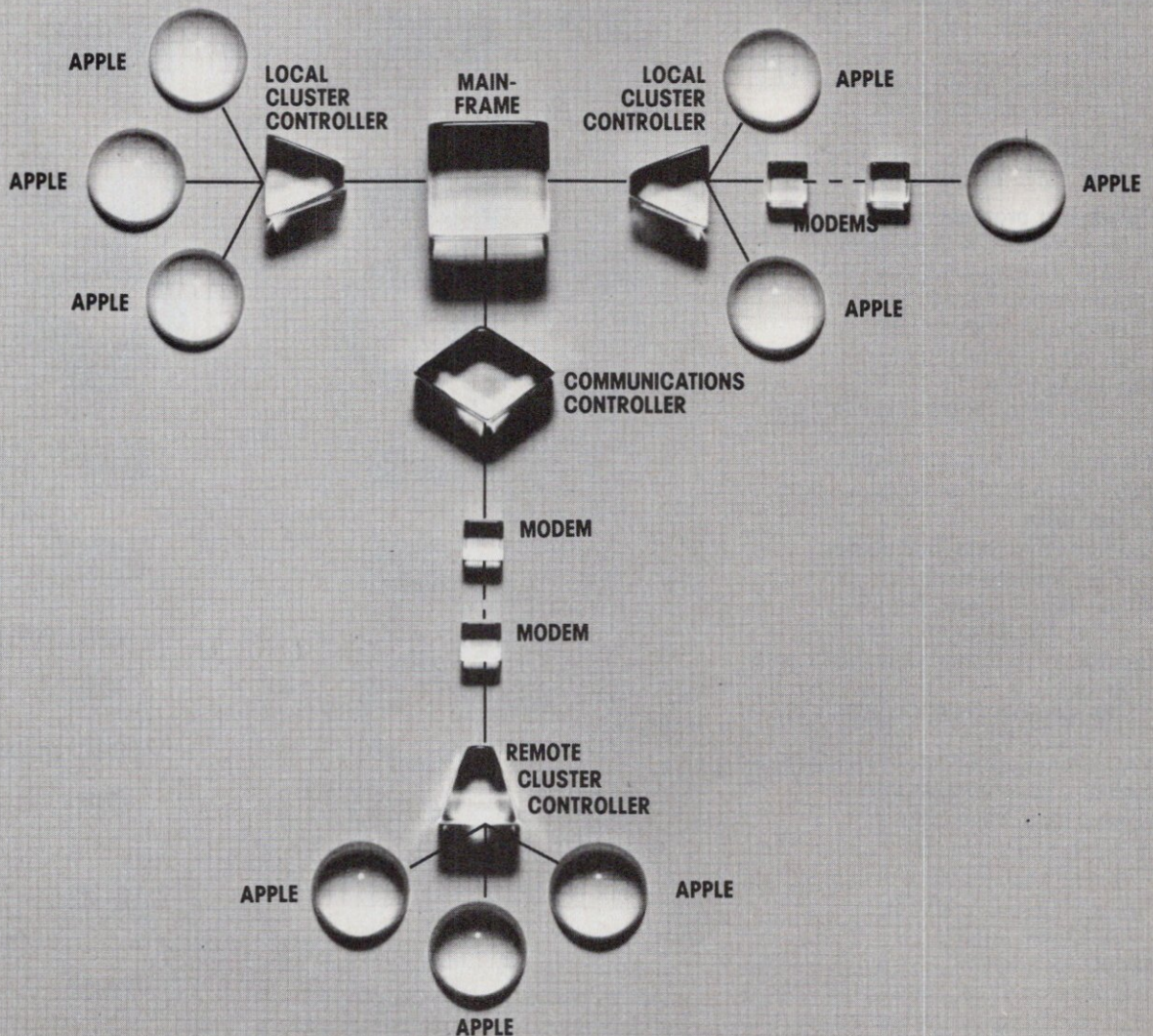
The 3270 products also regulate

their communication differently than ordinary dial-up ports do. Rather than using the asynchronous method (in which each character is sent with a synchronizing start bit and stop bit but nothing is done to maintain timing between characters), 3270-series products link up by using IBM's Bisynchronous or Synchronous Data Link Control (referred to as bisync or BSC and SDLC respectively). These communications protocols also provide a more complex error-checking method and addressing capability than do the simpler methods used in the personal-computer world.

Protocol differences may seem a bit arcane if you're not a communications expert, but the differences in character

sets are visible. The character code that the mainframe sends out for each letter produces a different character symbol on the Apple screen. The IBM mainframe world uses the character code EBCDIC; Apples, other personal computers, terminals, and minicomputers use ASCII. The code that a mainframe sends out for the letter Z, for example, corresponds to an inverse-video closing-parenthesis symbol on the Apple. EBCDIC uses 256 code combinations rather than ASCII's 128, so you can't get a one-to-one translation between codes. Along with symbols that ASCII lacks, such as the ¢ sign, EBCDIC has a richer set of communications- and terminal-control characters.

FIGURE 2: Examples of connecting Apples to mainframes using local and remote cluster controllers



high speed—the Apple, on the other hand, sends and receives data character by character). If you have to save larger data files from the mainframe, the Apple computer must do the saving.

Unfortunately, Macterm and Lisaterm, for example, do not yet have a method for saving screens of data that don't scroll—most 3278 programs erase and repaint the screen instead of scrolling. You can save single screens of data with the Copy to Clipboard or Scrapbook functions, but this method is not viable for capturing long files.

Mainframe-to-Apple communications, however, is still in its infancy. Both Apple and independent vendors are continuously improving their interconnection software and hardware, with ease of use apparently a priority. As they gain more experience in speaking mainframe, Apples will begin to sound more like natives. +

▶ SEND IT BY TAPE

If you need to exchange large volumes of data between Apples and mainframes but don't need immediate interaction with the mainframe programs, you may be best off hooking your Apple to an off-line tape drive. Virtually all mainframe systems can read from and write to open-reel ½-inch magnetic tape ("mag tape") quickly and efficiently. Tying up a mainframe communications port can be costly and time-consuming. Instead, you can hook the Apple to a suitable tape drive, type in all your data, and then mount the tape on the mainframe. This approach is a low-cost, high-speed method of transferring data. For example, it takes several weeks to upload about 5 megabytes of data from an Apple to an IBM 3083 mainframe if you use a modem and a phone hook-up. In contrast, you can upload the same amount of data to

the mainframe in one afternoon with a tape drive. Also, each tape can store 20 megabytes or more.

Finding Apple-to-mag-tape hardware is the easiest part. Companies such as Innovative Data Technology in San Diego, California, sell a variety of tape drives, complete with interfaces for all of the Apple computers.

The core set of device-driver routines comes built into the interface, so you won't have to teach your Apple how to start and stop the transport mechanism or what to do with input data. You will have to write some software on your own to arrange your data in a suitable format for the type of mainframe you plan to use, however.

If you go this route, expect to pay between \$3000 and \$10,000 for your tape drive and interface, and additional money for custom software.

▶ PRODUCT INFORMATION

Avatar PA 1000E protocol converter

Avatar Technologies
99 South Street
Hopkinton, MA 01748
(617) 435-6872

List Price: \$1095

CIRCLE 516 ON READER SERVICE CARD

DataTalker protocol converter

Winterhalter & Associates
3853 Research Park Drive
Ann Arbor, MI 48106
(800) 321-7785
In MI (313) 662-2002

List Price: \$1095

CIRCLE 517 ON READER SERVICE CARD

TD-1012/APP-II or III tape drive TD-1054/APP-II or III high-speed tape drive

Innovative Data Technology
4060 Morena Blvd.
San Diego, CA 92117
(619) 270-3990

List Price: TD-1012, \$4995; TD-1054, \$6995.

CIRCLE 518 ON READER SERVICE CARD

Apple Communications Protocol Card Appleline protocol converter Apple Cluster Controller

Apple Computer, Inc.
20525 Mariani Blvd.
Cupertino, CA 95014
(408) 996-1010

List Price: protocol card, \$700; protocol converter, \$1295; three-port version of the cluster controller, \$4500; and seven-port version, \$7000

CIRCLE 519 ON READER SERVICE CARD

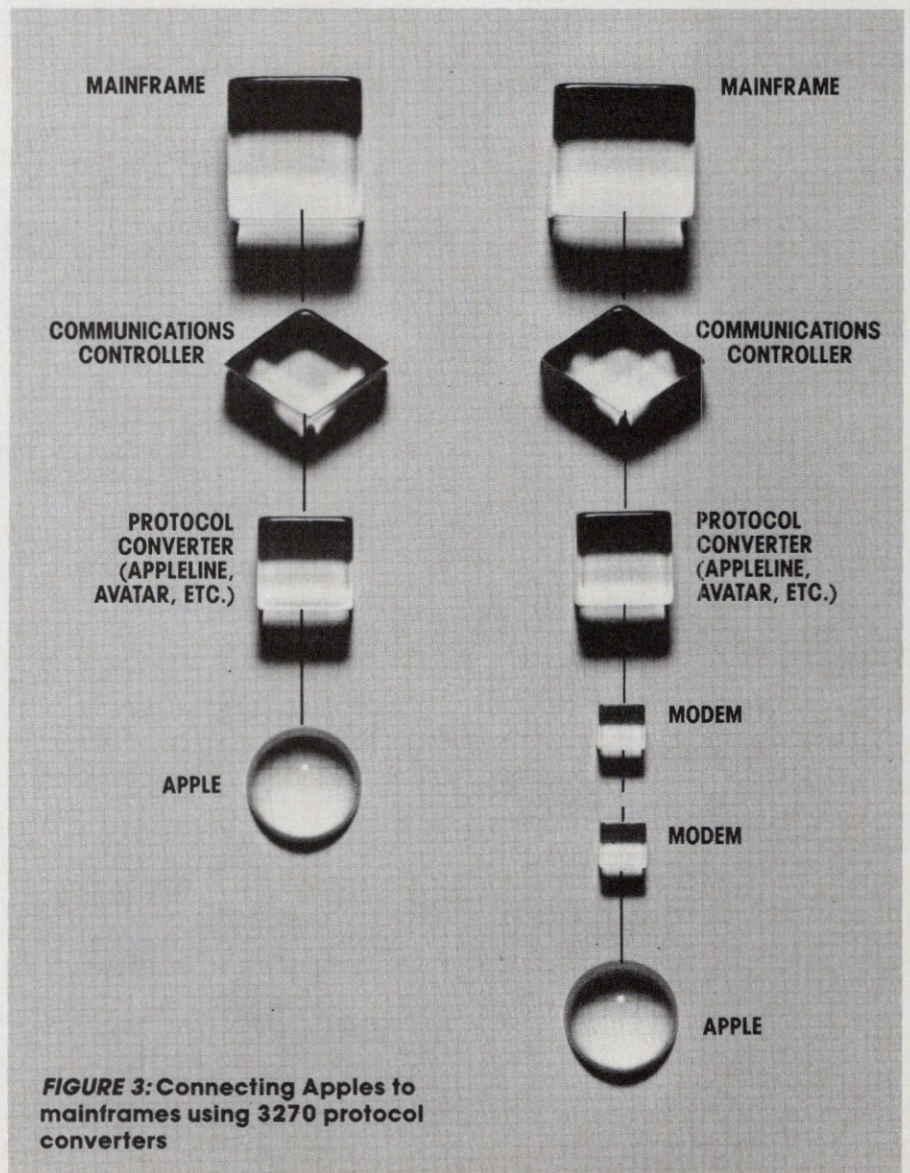
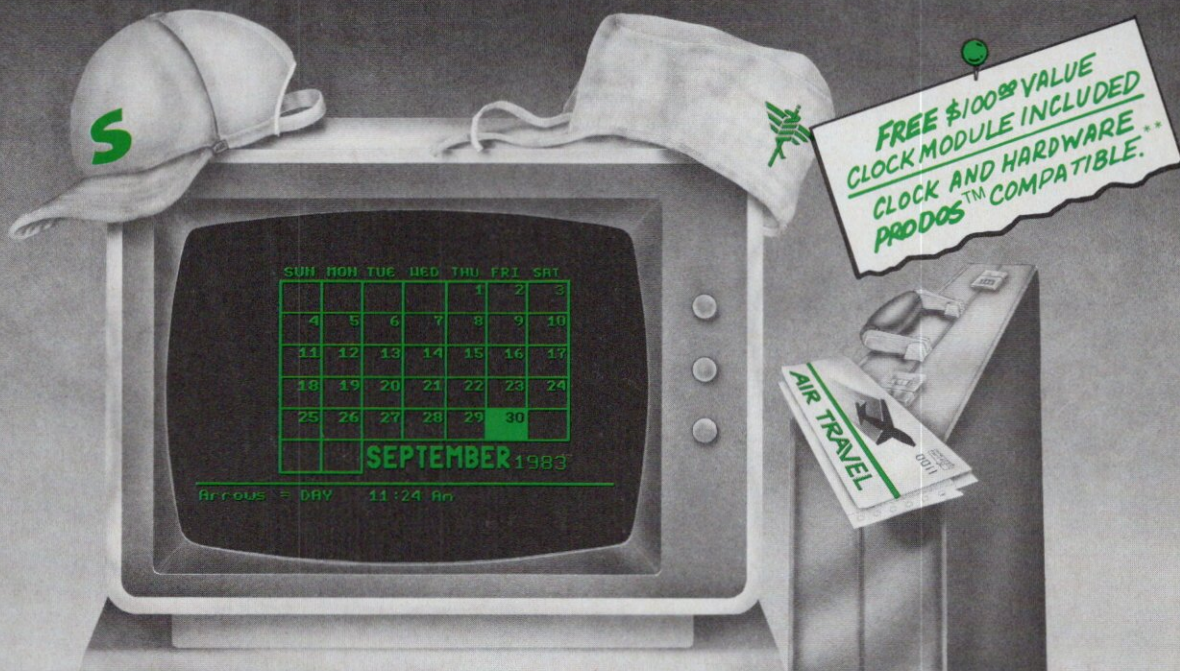


FIGURE 3: Connecting Apples to mainframes using 3270 protocol converters

Suzie's First Softball Game. . . The Two Places-At-Once Schedule . . .Meeting With The Boss.



Time-trax™ Would Have Remembered.



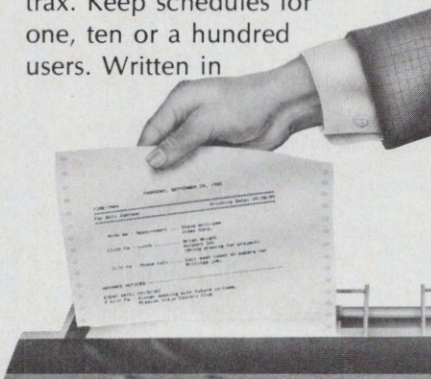
Time-trax™
is for busy people.

Time-trax is a time and date oriented calendar program that will remind you of appointments, errands, phone messages, birthdays, holidays, bills to pay and much more. Time-trax can even notify you in advance of pending important events.

Entirely menu driven, Time-trax is very easy to use. With a simple key-stroke you can make, review and edit entries or search for any entry from past, present or future months. Customize Time-trax entries with your own, meaningful category

labels. Print out a day, a month or any period of time easily.

Busy people everywhere need Time-trax. Keep schedules for one, ten or a hundred users. Written in



machine language with hi-res graphics all routines are very fast and the display is extremely sharp.

CPU

Creative
Peripherals
Unlimited, Inc.
1606 S. Clementine
Anaheim, CA 92802
(714) 535-1155

SPECIAL OFFER
FREE CLOCK MODULE INCLUDED*

11:31³⁷ AM Friday, September 30, 1983

Time-trax comes complete with clock module. Two AA batteries provide up to two years of back up power. Complete information and sub-routines are included for programming.

Time-trax is written for 48K Apple® *** II, II Plus and IIE.

See your local dealer for a Time-trax demo or order direct, for only **\$99.95**, by calling toll free:

800-854-8021 Nationwide

800-432-7268 California

Visa, Mastercard Welcome

TIME-TRAX™

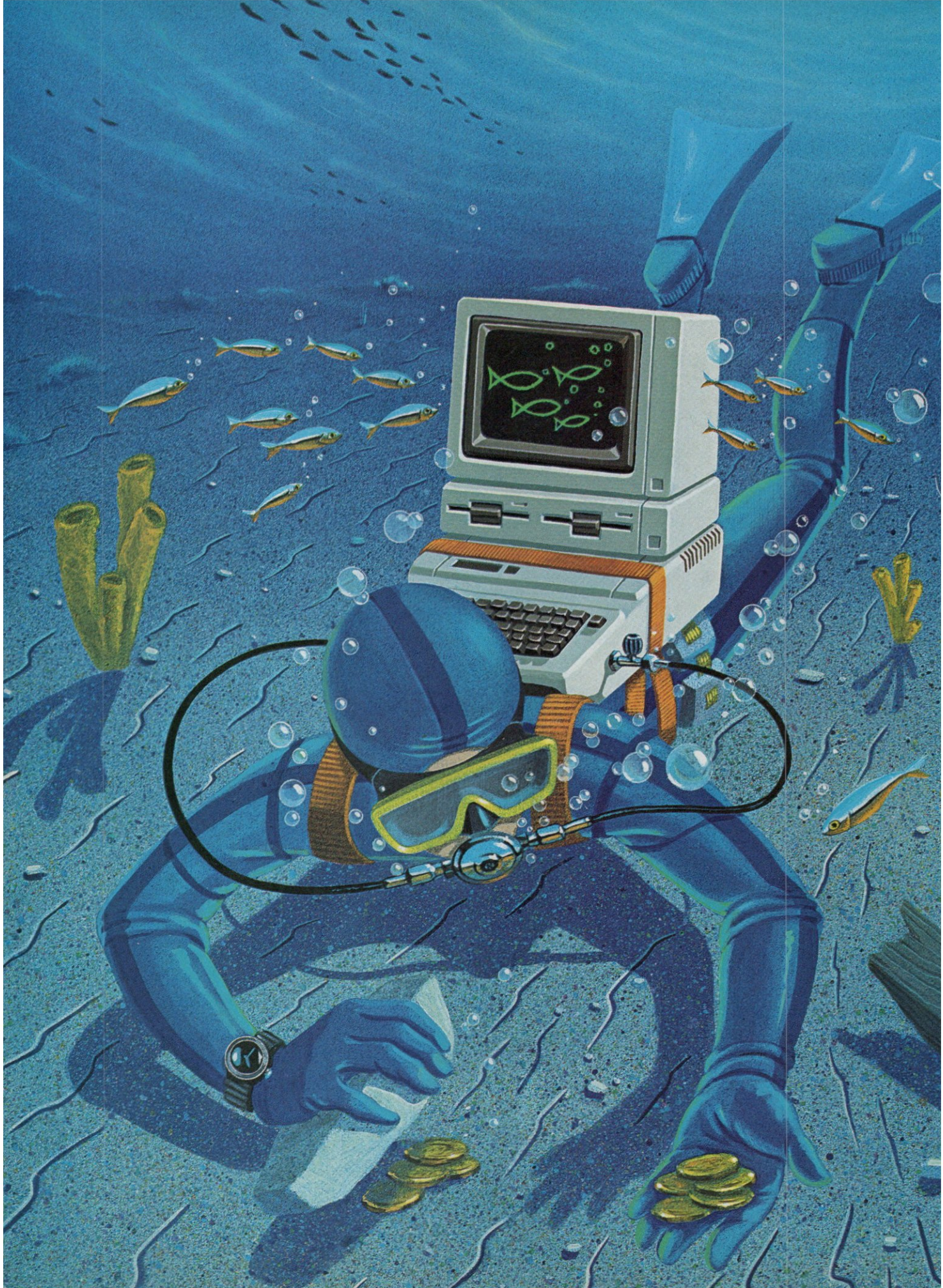
THE TIME MANAGEMENT SYSTEM

Dealer Inquiries Invited.

*This offer expires December 31st, 1984.

**™ProDOS is a trademark of Apple Computer, Inc.

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



▶ APPLES AT WORK/BY ELIZABETH WEAL

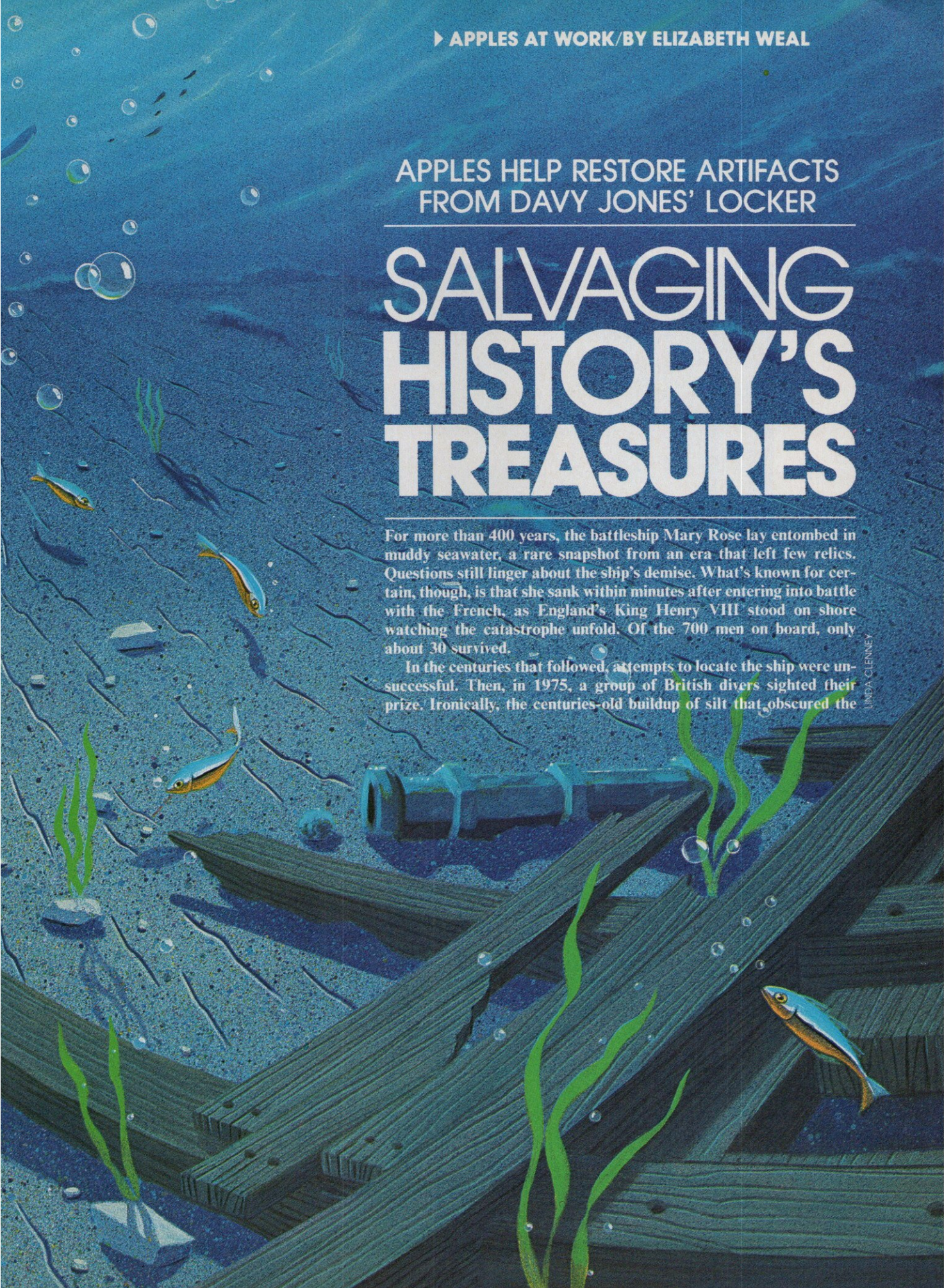
APPLES HELP RESTORE ARTIFACTS
FROM DAVY JONES' LOCKER

SALVAGING HISTORY'S TREASURES

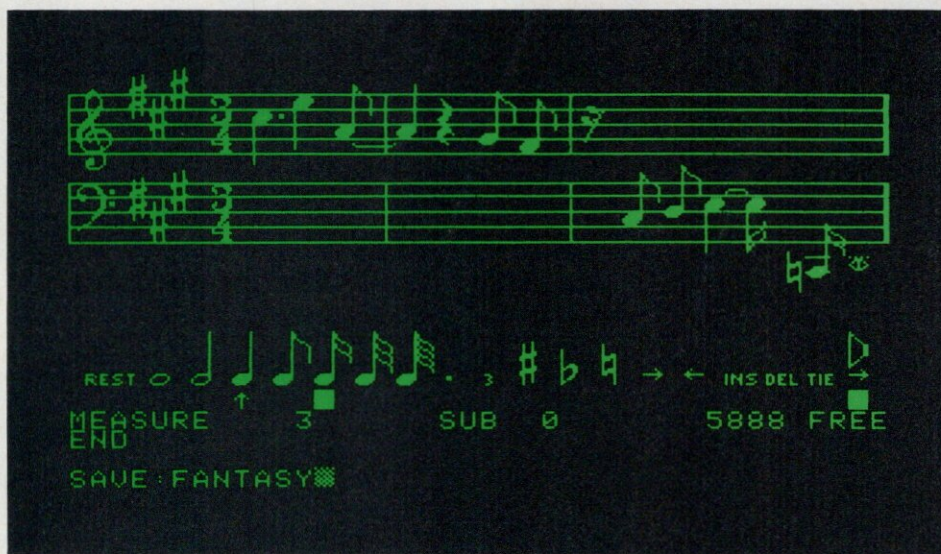
For more than 400 years, the battleship *Mary Rose* lay entombed in muddy seawater, a rare snapshot from an era that left few relics. Questions still linger about the ship's demise. What's known for certain, though, is that she sank within minutes after entering into battle with the French, as England's King Henry VIII stood on shore watching the catastrophe unfold. Of the 700 men on board, only about 30 survived.

In the centuries that followed, attempts to locate the ship were unsuccessful. Then, in 1975, a group of British divers sighted their prize. Ironically, the centuries-old buildup of silt that obscured the

LINDA CLENNY



INSTANT FUN.



Now everyone can make music.

Skip the years of piano lessons. Months of struggling to read sheet music—forget it! Music should be easy, and as fun to make as it is to listen to. Now, with some help from your Apple, it is!

Just pop an ALF Music Card into your Apple, and plug the card's cable into your stereo system. Boot the disk, and WOW! Incredible music leaps from your speakers—you've never heard music like *this* out of a computer. Remember 2- or 3-note chords coming from that tiny speaker in your Apple, like the sound from an old pay phone? Now imagine 9-note chords, hi-fi digital sound,

and ADSR-timbres just like Moog used to make—all dancing out of your system in glorious stereo! Rapture! Ecstasy!!

But now the *real* fun begins. Use the Music Entry program to put in your own songs. Just match the symbols in the sheet music with the ones on the screen. Or make up your own songs—each note is played as you put it in. Changing notes, inserting new notes, and deleting extras is a breeze. Editing is so fast and easy you'll be adding frills just for kicks.

The Music Card goes beyond having a good time. Even professional musicians love its advanced abilities. Change volume, timbre, and tempo at any point in the music. Triplets, quintuplets, sixty-fourth notes and faster? No problem. Rounds, repeats, D.C.

al Fine, al Segno, al Segno e poi la Coda... any repetition you can imagine is simple. Transposition in quarter-steps. Full ADSR envelopes. The Music Card does it all.



So pour some music in your Apple. \$169 at your Apple dealer, or call 1-800-321-4668 (in Colorado, 1-303-234-0871). And start having fun. Instantly!

The Music Card model MC1 plugs in your Apple II, II+, IIe, or III. Game paddles required for the II and II+, recommended for the IIe. "Apple" is a trademark of Apple Computer.

ALF

ALF Products Inc. 1315F Nelson St. Denver, CO 80215 Telex: 4991824

vessel had preserved the objects within in a remarkably pristine state.

The continued preservation of these artifacts—some 17,000 in total—has proved to be a mammoth task, however. According to Howard Murray, one of five conservators on the project, the quantity of articles recovered from the Mary Rose far exceeds that of previous similar finds. To help streamline the tedious and sometimes imprecise preservation effort, Murray has called on VisiCalc, running on an Apple II Plus, to predict how various objects can best be saved.

Preserving the artifacts is crucial to historians and archaeologists because they provide clues to a relatively undocumented era in naval history. The objects include not only military implements—wrought-iron guns, longbows, and arrows—but also relics of the seamen's daily routine—a backgammon game; pocket sundial; bone manicure set; and the barber-surgeon's chest, complete with drug flasks, razors, and pewter bowl for bloodletting. Peas still in their pods testify to the extraordinary conditions in which this storehouse of goods reposed for so many years.

Freeze-Dried Preservation

Within their mud cocoons, these objects are 80 to 90% water. They will disintegrate if, to clean them, they're immersed in a tub of water. Lay them out to dry, and they'll collapse, without mud and silt to support them. The conservators' mission, therefore, is to safely dry each object without sacrificing its original shape.

The recovered objects are first treated with wax. Next they are frozen and placed in the freeze-dryer, an 8 x 1½-foot vacuum chamber, where heat is applied. Freezing turns the water inside the objects to ice; heating causes the ice to escape in the form of water vapor. Before the advent of freeze-drying, it took years—three, four, even five—to dry water-logged objects.

The primary drawback of this approach is that it's not automated. The time each object spends in the freeze-dryer (anywhere from two weeks to two months), the optimum temperature and pressure inside the chamber, and the quantity of stabilizing chemicals (wax

and a sugar alcohol), vary according to what the object is made of, its dimensions, and the amount of water it contains. The conservators' current strategy is to rely on intuition and experience to determine each object's freeze-drying regime, but their plan is to use an Apple II Plus to inject more precision into the process.

Apples Join the Preservation Team

Specifically, the Mary Rose Trust in Portsmouth, England, has contracted with a local software developer to assist with a VisiCalc

model that utilizes data obtained from objects that already have been preserved, in order to predict the freeze-drying requirements of objects not yet dried. Based on an object's dimensions, composition, and level of saturation, the program computes the amount of time the object should be dried, the temperature and pressure at which it should be dried, its weight after drying, and the quantity of chemicals required.

Because there have been few freeze-drying operations of this magnitude in the past, and because it is impossible to simulate the effects of four centuries under water, Murray did not have a lot of past data to go on. Only after conservators had gathered data on some 2000 articles could work on the model begin. Now in the final stages of development, the model will run on a 64K Apple II Plus with a Pascal language card, two disk drives, and an Epson MX-100 printer.

Perhaps the most significant benefit of the VisiCalc model is that it will take much of the guesswork out of freeze-drying. Now the subtleties surrounding how a certain type of wood behaves, or the most effective way to dry a particular shape, are buried in the conservators' personal stash of knowledge.

Once the model is complete, almost anyone can learn the requisite techniques. In addition, the software will

cut expenses by enabling conservators to predict more accurately the quantities of chemicals needed during the process. Eventually, Murray plans to make the program available to other conservation teams.

Freeze-drying on a commercial basis has been around for a long time, but that process requires far less precision than freeze-drying one-of-a-kind artifacts. You can always dispose of a batch of defective freeze-dried coffee—not so with a steering compass from the Tudor period.

The current system, even using the modeling program, is not foolproof; occasionally objects melt. The cause, according to Murray, is that the temperature cannot be varied within the freeze-drying chamber. Since it takes a lot more heat to dry a large object than a small one, small objects can easily get overheated.

In order to solve the problem, conservators are developing a system that uses the Apple II Plus to control equipment within the freeze-dryer—specifically, infrared lamps to regulate temperature and baffles to obstruct the release of water vapor. The equipment is in place. The final step is building the interface.

In addition to its important role in the conservation lab, the Apple has been put to work

in the Mary Rose Trust's accounting department. The financial staff there keeps track of the organization's finances with Jarman, an accounting package which was created in Great Britain, and uses Multiplan to assist in creating fundraising strategies.

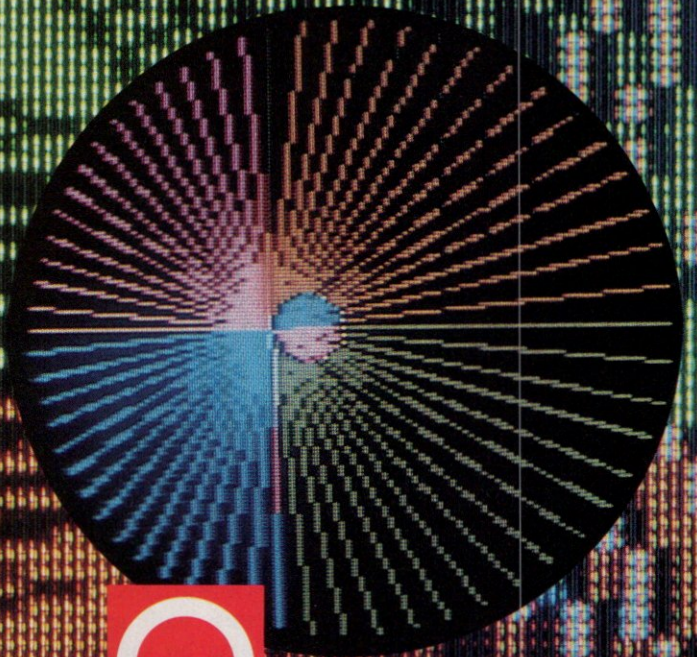
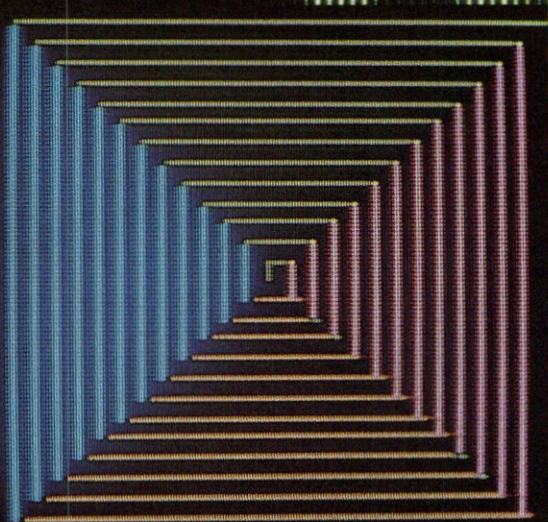
The Apple is certainly not the only high-tech participant in the Mary Rose salvaging effort: The sonar that

helped locate the ship, the light-amplification cameras that made it possible to photograph the underwater wreck, and the sophisticated lifting gear that raised the hull, all played a role.

Obviously, in the future, technology will play a larger and larger role in unraveling enigmas of the past. As one Mary Rose official put it, "Without the use of high technology, it never would have happened." +

PEAS STILL IN THEIR PODS TESTIFY TO THE EXTRAORDINARY CONDITIONS IN WHICH THIS STOREHOUSE OF GOODS REPOSED.

YOU CAN ALWAYS DISPOSE OF A BATCH OF DEFECTIVE FREEZE-DRIED COFFEE—NOT SO WITH A STEERING COMPASS FROM THE TUDOR PERIOD.



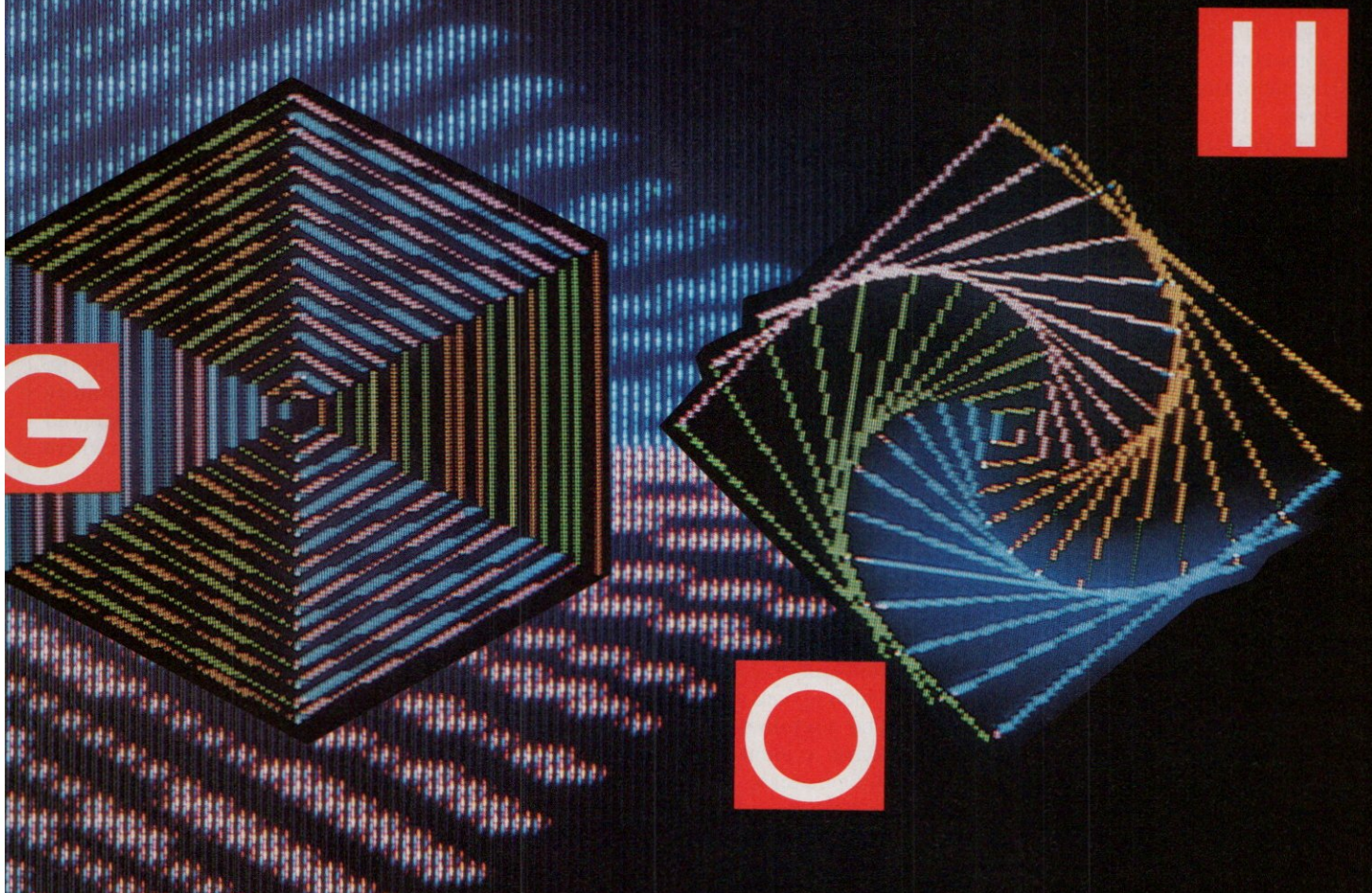
APPLE LOGO II

A new version of Logo provides help for beginners and additional features for advanced users.

If you haven't used Logo, you'll find Apple Logo II an easy-to-learn version of this programming language, replete with all the turtle graphics and list-processing commands that make Logo both fun and powerful.

If you've been using Apple Logo—or any other Logo designed for an Apple with 64K RAM—you'll find Apple Logo II a pleasant surprise, with more than twice the user memory space, many new commands (in Logo, these are known as primitives), and the ability to create data files on disk. (You'll need an Apple IIe with 128K RAM or an Apple IIc to use it, though.)

The new versions of Logo that have come out in the past year for the IBM PC



might have tempted you to swap your Apple, but forget it. Each new package has advantages and disadvantages, but Apple Logo II holds its own with the various versions of Logo now available for the IBM PC.

What Is Logo?

This programming language stands with one foot in the educational philosophy of Jean Piaget and the other in LISP, the language of choice for most artificial-intelligence research. During the past two decades it has emerged from these two traditions, migrating from huge mainframes to minis and, in the past few years, to microcomputers. It is best known for its turtle graphics, but Logo also includes list-processing capabilities that make possible the creation of sophisticated programs such as database managers, word processors, and even expert systems.

Educators have used Logo with preschoolers, beginning engineering students, and senior citizens. Their motives are mixed—to introduce computer programming, to teach creative thinking, to familiarize students with geometry. Families find exploring Logo an activity everyone can participate in, regardless of age or

computer knowledge. For more information on Logo programming, see "Follow the Turtle to Logo," by Steve Rosenthal in *A+*, Volume 1, Issue 2. The Logo educational philosophy is covered in detail in A. Richard Immel's interview with Seymour Papert, (known as the "father of Logo"), in *A+*, Volume 1, Issue 1.

The Language

As with other computer languages, Logo includes a vocabulary of primitive commands and various structural conventions. You can learn the fundamentals of the language while using turtle graphics, a portion of Logo that allows users to draw simple and complex designs on a screen with surprisingly few commands. The Logo "turtle" is nothing more than a small triangle that follows commands. If you type FORWARD 50, for example, the turtle moves forward 50 steps (about two inches), leaving a line of this length on the screen.

In Logo, such commands are grouped together to form "procedures." For example, you can build a procedure called Square out of several commands, telling the turtle first to move forward 50 steps, then turn right 90 degrees, then move forward 50, and so on. If we have defined a procedure called Square and another procedure called Triangle, we can place the two together in a program called House. (That is, if we have been clever enough to make sure that in the drawing the triangle lands on top of the square so it looks like a roof!)

A Helping Hand

As the beginner moves into more complex tasks, Logo's real power emerges, although at the price of greater difficulty.

Logo is known as an easy language to learn, and Apple Logo II has made it even easier with several new aids. These aids include a tutorial disk, two Help screens, and debugging primitives. (Users also receive a 325-page reference manual and a 177-page book, *An Introduction to Programming*.)

The tutorial disk leads you through the basics of turtle graphics, variables, and a few word-oriented commands. It's a well-executed interactive program that makes use of two on-screen personalities, an anonymous instructor, and a zealous gadfly called Leo Logolover. Having two instructors with different personalities adds zest to the instructional activity.

The first Help screen gives basic graphic commands, as well as some other essential information such as how to

start a program or get into the Logo text editor. The second Help screen appears if you ask for help while editing text and gives information about text-editor keystrokes.

Finally, typing HELP—followed by the name of any Logo primitive—serves as a memory jogger, displaying the inputs required by that primitive. (Programmers can also create their own Help screens within Logo.)

Step and Trace

These two Logo primitives help debug a program. Step causes a program

 THE
IMPROVED
APPLE LOGO
IS A TRUE VALUE
AS AN INITIAL
PURCHASE
OR AS
AN UPGRADE.

to execute one line at a time, showing both the program line and the result (action) caused by the line. Trace prints tracing information when you execute a program, showing, for example, the depth of a recursion or the order in which various subprocedures are called. The usefulness of such features becomes evident as Logo programming skills increase.

You can add features such as Step and Trace to other versions of the language by writing procedures that carry out these activities. That's part of Logo's charm—the language is limited only by your ability. You can give each new procedure that you write a one-word name and use it in other procedures, just as if it were a primitive.

Good News

Apple Logo users who are familiar with those frustrating "out of space" messages will welcome Apple Logo II. Apple Logo doesn't take advantage of an Apple IIe with 128K RAM, but Apple Logo II does. Instead of about 2819 nodes of user memory, you'll find 7179. Perhaps more important, Apple Logo II lets users create data files on disk. In Apple Logo, one Save command saves

the entire Logo "workspace." It doesn't matter that all you want saved are the scores of a race, or perhaps the subtotals and total in a checkbook program. Type SAVE, and everything—the entire program and all associated variables—goes onto the disk.

This is a cumbersome way to do business. With Apple Logo II, you can have your program open a file, write to that file, and close it. Later, you can read the file and use the information in another program, or in another portion of the same program. Features such as this take Logo beyond the classroom and make it a serious programming tool for whatever task you have in mind.

Highlights

In all, about 200 primitives comprise the vocabulary of Apple Logo II, and, of these, more than 50 are additions that can't be found in Apple Logo. It's impossible to cover all of them, but here are some highlights:

CALL calls a specified machine-language subroutine.

DRIBBLE sends to the disk or printer a copy of everything that appears on the screen. Logo encourages an exploratory programming style, and this command is a great way to keep track of where you've been and where you're going.

FILL is a significant improvement to turtle graphics. Place the turtle inside a closed area, type FILL, and the area fills with the turtle's current pen color. (If the turtle isn't enclosed, the background is filled.)

LOADPIC enables you to save to disk—and quickly recall—the pictures you create with turtle graphics. Thus, you can include graphic images in a program without going through the painstakingly slow process of having the turtle redraw the picture.

LOWERCASE changes a word to all-lowercase letters. Yes, there's an **UPPERCASE** primitive, too.

PRINTPIC is a screen dump to the printer. Although instructions warn that results are unpredictable with printers other than the Apple Image-writer, I found it worked fine with Apple's new Scribe printer.

READWORD is similar to **READLIST**, but it outputs the material read as a Logo word rather than as a list. The entire family of read commands

NOVATION



NEW LOWER PRICES
300/1200 Baud \$595. 300 Baud \$319
1200 Baud Upgrade \$349.

APPLE-CAT™ II

A communication system you grow into, not out of.

For the Apple II, II + , IIe and Franklin ACE™ computers.

The Cat System lets you slip something into your computer no other modem offers—a complete range of speeds from 110, 300 and 202 half-duplex—to full duplex 1200 baud. All using state-of-the-art LSI.

It's a two card system. So you can start with a 300 baud single card, then move up to 1200 baud with a second card at any time—with absolutely no compromises in quality.

Com-Ware™ software included. Five minutes after you boot up, you'll have a good notion of what it's like to work with the most accurate, convenient communication system designed for your Apple.

It makes all the right moves you need to work with another computer, swap programs, access data, whatever.



Included: a time-saving directory of 26 telephone numbers with terminal configurations all selected and stored for auto dialing. Handy.

And it's all simple to operate. Just follow the menu. No programming. No fussing. It's all there.

They're at your dealers.

No waiting. He has them right now along with all the details. See him today and you can be on-line tonight.

Novation, Inc., Box 2875, 20409 Prairie Street
Chatsworth, CA 91311 • (800) 423-5419
In California: (818) 996-5060

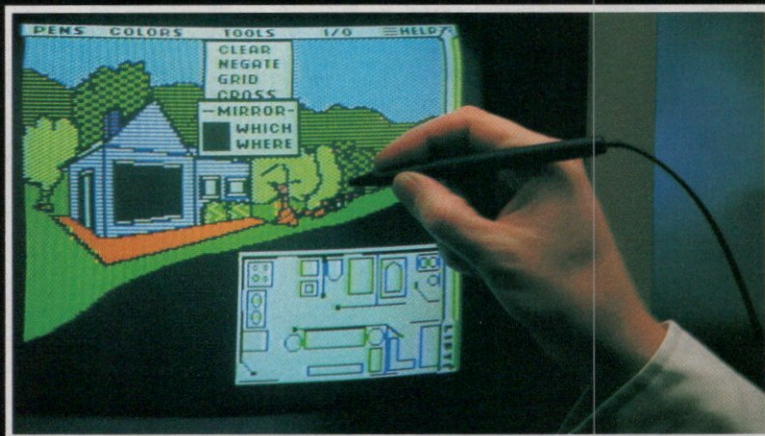
CIRCLE 231 ON READER SERVICE CARD



NOVATION

Apple is a registered trademark of Apple Computer, Inc. Cat is a trademark of Novation, Inc., which does not manufacture Apple Computers. Franklin ACE is a trademark of Franklin Computer Corp.

Now... Draw On Your Imagination



Introducing The Gibson Light Pen System.™

The link between mind and machine has arrived. Suddenly you're free... free to translate your every thought into professional quality computer graphics... just by touching your screen.

The Gibson Light Pen System software features *icon* menus that offer easy access to powerful graphics tools such as symbol libraries, geometric shapes, mirror-imaging, magnification and complete color and pattern editing. Even if you're not a graphic artist, you can design, diagram and draw with precision at high-speed, in high-resolution, and in full-color... right on your screen.

COMPLETE WITH FIVE SOFTWARE SYSTEMS TO MAXIMIZE YOUR CREATIVE OPTIONS.

The Gibson Light Pen System comes complete with all you need to draw, paint, design, score music and learn animation.

DRAW FREEHAND WITH PENPAINTER.™

A full range of drawing tools, shapes, patterns and colors to draw or paint virtually anything on your screen.

DESIGN PRECISION DIAGRAMS WITH PENDESIGNER.™

Turn your computer into your own graphic design studio. A complete selection of templates make perfect business and architectural diagrams, technical drawings and engineering schematics a snap.

CREATE COMPUTERIZED ANIMATION WITH PENANIMATOR.™

All that you need to learn the basics of animation. Develop your own animation sequences, and bring your screen to life.

COMPOSE MUSIC WITH PENMUSICIAN.™

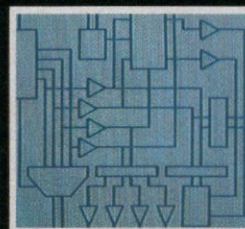
Score computerized melodies with incredible ease at the touch of your pen.

CREATE YOUR OWN LIGHT PEN APPLICATIONS WITH THE PENTRAK LANGUAGE SYSTEM.™

Take advantage of the software features, and customize your own light pen programs.

NOW AVAILABLE FOR THE APPLE II® SERIES

Coming soon for the IBM PC™ and PCjr.™



Koala Technologies
800-KOA-BEAR

The Gibson Light Pen System

Touch the Magic of Light
CIRCLE 301 ON READER SERVICE CARD

has been enhanced by allowing them to read from a file as well as from the keyboard.

SAVEL is similar to SAVE, except that it allows users to list specific procedures and variables to be saved. (With SAVE, the entire workspace is saved.)

TOOT generates a tone of a specified frequency for a specified duration. For example, if you wanted a middle C to last one second, you would type TOOT 262 60.

Wish List

All Logo users have their own "wish list" of special features. Some things I would have liked to have found in Apple Logo II, but didn't, are:

1. An editor that gives users the choice of using special keys—such as the open-apple and cursor-movement keys—or the old control-key sequences. Some of us are used to the control keys. In other instances, schools may have both Apple II Plus and IIe computers; and it would be easier if children learned just one editor to use on both machines, even if that editor were the more difficult, older version with control codes.

2. More colors. Logo II still uses black, white, green, violet, orange, and blue. As other programs have demonstrated, there are ways to simulate more colors on the Apple II.

3. More list-processing primitives. DR Logo (developed by Digital Research) provides primitives for shuffling and sorting lists, for example.

Value and Versatility

Admittedly, these quibbles aren't entirely fair. Logo Computer Systems, Inc., which developed the original Apple Logo—as well as IBM's Logo—has delivered to Apple a language that is amazingly versatile and still leaves users plenty of work space.

At its list price of \$99.95, the improved Apple Logo II is a true value as an initial purchase or as an upgrade from Apple Logo. +

▶ PRODUCT INFORMATION

Apple Logo II

Apple Computer, Inc.
20525 Mariani Avenue
Cupertino, CA 95014
(408) 996-1010

List Price: \$99.95

Requires: Apple IIc or IIe with extended 80-column card; one disk drive

CIRCLE 500 ON READER SERVICE CARD

ROBO CAD

**DRAW WITH YOUR APPLE!—
SCHEMATICS
FLOOR PLANS
ENGINEERING DRAWINGS
TECHNICAL ILLUSTRATIONS**

FOR APPLE II+ and IIe

Save time, get professional quality, in all your drawing projects! Robo CAD-1 and CAD-2 are super-fast drafting systems for the standard Apple*.

INTERACTIVE DRAWING

Robo's precision joystick is both drawing instrument and menu function selector. Real-time image manipulation aids visualization, speeds the drawing process.

CREATE PICTORIAL ELEMENTS FAST

... And, you never draw the same thing twice! Repeated symbols become a one-time task; draw them, store them, use them over and over. Or, you can choose from our Professional Graphics Library (optional) of pre-drawn material.

PLOT YOUR ARTWORK

Robo software is available (optional) for over 30 types of drafting plotters. Your choice!

HIGH SPEED, LOW COST

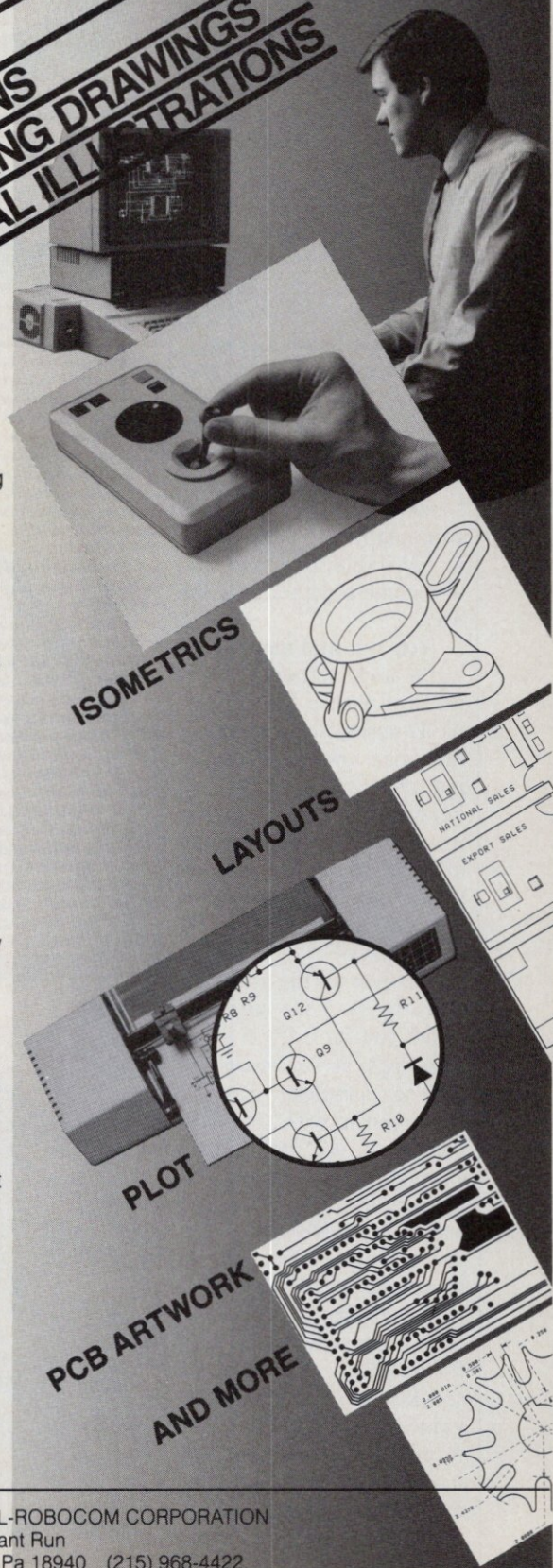
Machine code programming makes ROBO CAD the fastest of all micro-based drafting systems. We've cut learning time, too, with an excellent self-help manual. The CAD-1 package including joystick, sells for only \$1,095. CAD-2, with auto-dimensioning and other powerful utilities, is \$1,495.

* A registered trademark of Apple Computer, Inc.

**ROBO
SYSTEMS**

CHESELL-ROBOCOM CORPORATION
111 Pheasant Run
Newtown, Pa 18940 (215) 968-4422

CIRCLE 183 ON READER SERVICE CARD



► MUSIC/BY FREFF

YOU CAN ORCHESTRATE A PARTNERSHIP BETWEEN YOUR APPLE AND A VARIETY OF HARDWARE AND SOFTWARE, WITH HARMONIOUS RESULTS.

Computers and music have a special affinity, because they speak different dialects of the same language, mathematics. (In fact, music *is* math, of a special sort, a mathematics made up of the relationships of pitches and units of time.) As personal computers become common in everyday life, it is inevitable that the two will come together in a big way.

You can find more hardware and software of a musical nature for the Apple II series of computers—including systems for making music, transcribing it, analyzing it, and marketing it—than you can for any other personal computer on the market today. Most of it is good. Some of it is extraordinary.

So open up the grab bag and dig in. Your ears will thank you for it.

The Apple as Orchestra

The simplest way to make music with your Apple is to use its built-in speaker. Several programs are available that allow you to write simple scores (either in musical notation or as strings of numbers) and play them back without external amplification. Unfortunately, the Apple's speaker was designed with games, rather than music, in mind, and it sounds like it. Even programs such as Paul Lutus' Electric Duet, which manages to trick the

S O U



NEEDS



speaker into creating two-note chords, can't make it sound like more than a toy.

To do that, you've got to upgrade your system by installing one of several oscillator cards: the Mockingboard, the ALF, the Super Music Synthesizer, the MX-5, or the MusicSystem. All of these products plug into some form of outside amplifier, such as the receiver in your home stereo, which allows their sounds to emanate from much better speakers.

The Mockingboard oscillator card, from Sweet Micro Systems, makes its best music in tandem with a program from Electronic Arts called Music Construction Set. Together they can generate chords of up to six notes. The program itself gives you a visual representation of a grand staff, on which you can write and rearrange music, using a joystick, a KoalaPad, or the computer keyboard itself. It's an excellent teaching tool and a lot of fun. Making music becomes a game.

Much the same holds for the ALF digital-oscillator card, manufactured by ALF Products; the Super Music Synthesizer from Applied Engineering; and the Mountain Computer MusicSystem. Though they have more "voices" than the Mockingboard (16 as opposed to 6, allowing them to play more simultaneous notes) and more control over the timbre (tone color) of the sounds they create, their individual software packages allow you to enter notes only from the computer keyboard or a game-type peripheral controller. This process can be both laborious and frustrating. If you're serious about your music and not a masochist, these packages will wear you out. You would do well to take one more step on the upgrade ladder and turn your Apple into a true musical instrument, with

either the Syntauri or the Soundchaser digital-synthesizer package.

The Big Two

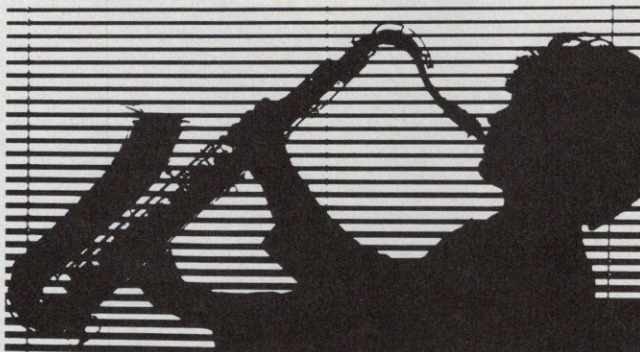
Both the Syntauri, from the Syntauri Corporation, and the Soundchaser, from Passport Designs, started out several years ago as attempts to crack the professional musical-instrument marketplace. The idea was to take an existing package—the Apple equipped with the two peripheral cards that make up the Mountain Computer MusicSystem—and provide a new operating system based on more powerful software and an actual piano-like keyboard. For the first time, the Apple became a true instrument, something that people could play in real time.

The two products are superficially similar. Each can play up to eight notes at a time (a limit that results from the fact that each note comprises two oscillator “voices,” which makes the sound thicker and more interesting). Each comes with your choice of a four- or a five-octave keyboard, and each has a wide range of software, running the gamut from educational packages to multitrack-recording emulators. There are differences between the two systems, however, and you should choose the one you prefer based on careful thought about whether or not it will meet your needs.

For example, the standard versions of both systems take up three peripheral slots—two for the MusicSystem cards, and one for a keyboard interface. Not everyone has that many slots available, however. You may prefer to go with the new Soundchaser MX-5 card, which takes up only one slot and has everything on it, including a keyboard-control interface. (The drawback here is that the card draws a great deal of power

through its one slot, reportedly enough that it *can* stress your system and cause other applications in your Apple to malfunction. I encountered no such problem while testing—but everyone’s computer is slightly different, so I recommend caution.)

Another difference is in the programs that both companies offer for analyzing what you play on the keyboard and then printing out that music, in standard musical notation, on a dot-matrix printer. Syntauri’s Composer’s Assistant is ambitious but has some glitches and other drawbacks. Passport’s equivalent, Polywriter, is less glamorous in intent but far more functional.



For the first time, the Apple became a true instrument, something that people could play in real time.

If you want your compositions in sheet-music form, then the Soundchaser is your better choice. On the other hand, if you are interested in creating exotic sounds and recording music with your Apple, then you may well prefer the Syntauri, because it offers more flexibility of timbral control and a wider range of operating systems.

Syntauri’s latest pack-

ages are called Simply Music and Musicland. The first is more than it appears to be. On the surface it is a teaching tool, with drills that teach you correct finger placement by having you play notes that match those of prerecorded pieces. The notes to be played are shown on both the keyboard and on the musical staff, using the Apple’s high-resolution graphics. Go a little deeper and you find that it is actually an advanced multitrack emulator with which you can record a line of music, play it back, record over it again during playback, play both lines back while recording another line, and so on.

Musicland is ostensibly for kids, but the strongest

reaction I’ve seen to it has been from adults. Developed by Dr. Martin Lamb at the University of Toronto, Musicland is finger painting for the ears. Really. You don’t use the keyboard for this one. Instead you use a KoalaPad or a joystick to doodle shapes and colors across a musical staff, letting the computer translate them into music. It isn’t standard—but that’s OK, because what this package is about is learning to approach the basic components of music, such as melody and timbre, from a whole new angle. Perhaps that’s why kids enjoy it but adults go wild; the kids don’t get the added pleasure and gleeful freedom that comes from throwing years of Serious

Training to the wind.

One distinct advantage that the Syntauri has over the Soundchaser is the existence of two users’ groups, one on each coast, dedicated to upgrading and improving the instrument—with or without the manufacturer’s help. Both groups have generated an abundance of new software, new sounds, and new applications.

Recent meetings on the East Coast, for example, have included demonstrations of the following innovations: a machine-language program that converts MusicSystem note files into a form that the Syntauri alphaPlus and Metatrak software can handle, allowing you to combine the timing precision of the one with the arranging and timbral possibilities of the other; a set of rack-mounted signal-processing components that can improve the instrument’s dynamic range and clarity so that it can hold its own in a recording studio against synthesizers worth five times its price; a program that simulates FM (frequency modulation) synthesis, something usually considered impossible on the MusicSystem cards; and a whole range of alphaPlus and Metatrak modifications and improvements by Russ Streifert, cochairman of the group. In addition, the East Coast group is establishing a monthly diskette-based magazine called *SynDisk*, which will allow Syntauri users who live in other parts of the country to join in the fun and reap the benefits.

The Apple as Microphone

Another development of general interest to Apple owners (and of specific interest to Syntauri and Soundchaser players) is the DX-1 card, from Decillionix. The DX-1 does digital sampling.

Sampling? Well, sam-

pling means recording, using a computer's memory instead of magnetic tape.

Here's how it works in practice: Place the DX-1 card in one of the peripheral slots in your Apple. Hook its output to your stereo or amp, plug a microphone into the card's minijack input (a converter jack comes with the card, since most microphones use quarter-inch plugs), set the software to the correct option, and then say something. Within the limitations of your chosen sampling rate (the higher the rate, the shorter the sample), the sound of what you said will be recorded into the computer and available for immediate playback or, for that matter, alteration. Now that your voice is just raw data, the computer can do a lot with it, such as transpose its pitch up or down over a five-octave musical range or play it backwards or cut it up into little pieces of sound and rearrange them. It's really up to you, your imagination, and the DX-1 Effects II software.

The system offers several other unusual features. You can play it live from the computer keyboard (or the piano-style keyboards that come with the Sound-chaser and Syntauri systems). DX-1 can also create alternative scales (such as pentatonic or just intonation) and use them instead of the standard Western musical scale. It can program and save to disk sound sequences or rhythms, giving you complete control over the duration, pitch, direction, and volume of the sequences. Sounds are stored in "soundbases" of 24K of RAM. The Effects II software comes with three sound sequences (one of which is a standard drum kit) and 12 preprogrammed rhythms.

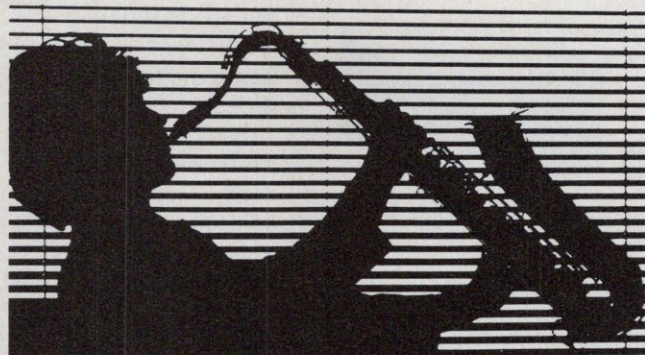
Other packages from Decillionix for its card in-

clude five different disks of sounds; Splash, which is a set of six hi-res displays that are driven by the sampled sounds in real time; and Echo, which allows you to take a sampled sound and "loop" it in memory in different ways, resulting in a variety of echo, reverberation, and feedback effects.

Here's another note of interest for Syntauri owners: Paul Lehrman, an independent software writer, has married the DX-1 and the MusicSystem in an interesting program called Metawave. It lets you take DX-1 samples and use them as the basis for building the waveforms generated by the MusicSystem oscillator cards, so you can create a new range of

snare, multiple tom-toms, cymbals, cowbell, tambourine—they're all here, ready to be programmed into patterns or played automatically in one of the 100 rhythm patterns or 26 sounds built into the system. The Drum-Key package is quite impressive overall and includes multi-track and real-time recording, programmable pattern length (up to 32 measures),

You use a KoalaPad or a joystick to doodle shapes and colors across a musical staff.



unique but playable sounds on that instrument.

The Apple as Rhythm Section

It's one thing to sit and play notes, but what about the beat? The DX-1 card comes with some preprogrammed rhythms, and you can create more, but only as an incidental feature to exploring another concept. Where are the different drummers we might march our Apples to?

Coming up fast, I'm pleased to say.

Easiest to start with is the Drum-Key, from PVI (Peripheral Visions Incorporated). It's an interface board and software package that has digitally sampled recordings of 28 different drum and percussion sounds. Kick bass,

28 possible time signatures, 128 possible tempos, rhythm control that allows you to vary the beat, a programmable audio/video metronome, and sync outputs that let you hook Drum-Key into external synthesizers or drum machines.

It's a nifty and elegant package—just what you'd expect from its writer, Bill Mauchly (the musician/engineer son of father-of-the-computer John Mauchly).

If a wider range of control is what you're after, you'll find that the E-Mu Systems GRC (Graphic Rhythm Controller) fits the bill. This product isn't a digital drum set like DX-1 and Drum-Key; it has no sampled sounds. Instead, it is a control package that al-

lows you to directly drive one of the most common professional-quality drum machines on the market, the E-Mu Systems Drumulator. Each half of the system concentrates on doing one thing well, and the net result is exciting. You create parts by writing in standard drum notation, with a few twists. Stem height, for example, lets you set the volume of a note on a hi-res "time grid," using a joystick for data entry. You start by writing measures (of up to 200 notes!), which you can combine into segments and link into songs. At any step of the process, you can store your data, which allows you to create a library of riffs and patterns that you can call up as your musical needs dictate.

The GRC offers tremendous control to its users. Properly programmed, this unit can create such subtle changes in volume and rhythm that it creates the illusion of a live drummer. It's an invaluable tool for small studios, nondrumming composers, bands that can't find a decent drummer to work with, or drummers who want to explore a new way to craft creative rhythms.

The Apple as Conductor

If you want to start a conversation at a NAMM show, say the acronym *MIDI*.

NAMM stands for National Association of Music Merchants. Twice a year at NAMM shows, people who make musical instruments trot out their newest and best for dealers and musicians who flock in from around the country. *MIDI*, in turn, stands for Musical Instrument Digital Interface, a cute acronym for a concept that has turned the field on its head in only a year.

MIDI is a communications standard (sort of) for any instruments or musical gear that contain a micro-

SPEED UP YOUR APPLE



Here's a whole new way to speed up your Apple II, II+, IIe, or Apple III. RAMDISK 320 from Axlon.

Lightning-fast disk response with RAMDISK 320™

NOW ONLY \$695
SAVE \$300
(408) 747-1900

Thousands of users have discovered how RAMDISK 320 can boost both disk access speeds and memory of their Apples. The RAMDISK 320 is more than 10 times faster than standard floppy disk drives. With the RAMDISK you can zoom through a wide variety of tasks that are disk intensive — wordprocessing, accounting, data base management, software development, or any similar application where speeding up disk access time is important.

RAMDISK 320 is a solid state memory add on system fully compatible with Apple DOS 3.3, PRODOS, SOS, CP/M, Apple Pascal 1.1 and Pascal 4.0 (In fact we'll give you these free with each RAMDISK 320.)

ADDITIONAL FEATURES:

- Increases memory by 320k
- Retains data when computer is turned off
- Three hour battery back-up system
- Built in power supply draws no power from computer
- Technical support available

RAMDISK 320



RAMDISK comes with a plug in, slot-independent interface card, a specially designed operating system, and software for diagnostics and fast load copy routines.

Also included are two data base programs written to take advantage of the speed of the RAMDISK 320 —

MINI BASE PHONE BOOK — Allows you to Enter, Save, Look-Up, Modify and Print information on up to 200 records of six fields each;

THE DIRECTORY — Lets you Create, Modify, Store and Retrieve over 3200 records.

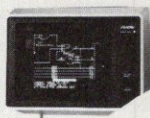
FREE OFFER

Buy RAMDISK 320 and receive DRAWING BOARD 11 FREE!!

DRAWING BOARD II is Axlon's digitized drafting system that incorporates elements of larger full scale CAD (Computer Aided Design) systems.

DRAWING BOARD FEATURES:

- One RAMDISK 320 drive holds the system programs while the other drive is bit mapped into the drawing board
- The monitor acts as a "window" so operator can view any area of the larger drawing board
- Drawing boards can be chained together to offer unlimited picture resolution
- A variable grid system allows shapes to be added at desired grid coordinates



Perfect for electrical schematics or any large drawing that must be edited and maintained.

System Requirements

- 48k Apple II, II+ 11e computer
- Epson MX100 or FX100 printer with Grafrax ROM Set
- Paddle Controllers

OFFER LIMITED—CALL NOW TO ORDER

(408) 747-1900



1287 Lawrence Station Rd.
 Sunnyvale, CA 94089

CIRCLE 178 ON READER SERVICE CARD

processor. We're talking about a lot of devices.

Every synthesizer, every drum machine, most signal-processing gear, all multi-track tape machines, many recording consoles—they are all computerized, and linking them through a network of MIDI connections can bring about a quantum leap in musical control. Furthermore, you can take something with a MIDI on it and link it to a home computer, much as you hook up the GRC and the Drumulator interface. The possibilities are enormous.

Both Syntauri and Passport Designs have introduced MIDI products recently. Syntauri offers the Proxima MIDI/16 and Proxima MIDI/16x; Passport Designs has brought out the MIDI/4.

MIDI/4 is an Apple-based digital recording studio. The 4 in the package's title refers to the number of synthesizers that it can directly and independently control (you can pack in even more by running them as "slave" units to a MIDI-controlled instrument, but they can play only whatever the MIDI-machine plays). It also has a drum sync, so that an external drum machine can provide a control pulse for the system, keeping everything tied to a beat.

MIDI/4 can record not only notes played on the MIDI instruments, but also performance nuances such as key velocity, pitch bend, modulation, and so forth. The system has been licensed for distribution by several major manufacturers in the synthesizer field, including Yamaha.

Polywriter for MIDI is much the same product as Polywriter for the Sound-chaser. It takes what you play on a keyboard, converts it to musical notation, and then prints it out on paper. You can edit the score while it is still inside the

computer's memory and insert lyrics and performance directions for tempo, volume, and playing style.

Syntauri offers the Proxima MIDI series of products, which includes the Proxima MIDI-1 interface card and the Proxima MIDI/16 and MIDI/16x software packages. The two software packages offer full 16-track recording and the ability to control up to 16



A single Apple may soon serve as the heart of a unified network.

MIDI-compatible instruments, such as Yamaha synthesizers, and Roland synthesizers and drum machines. The MIDI/16x software utilizes the Synetix flashcard's 288K RAM card to increase recording capabilities to a whopping 20,000 notes.

MIDI's future should be bright, especially as software development accelerates. Every major manufacturer in the field is creating MIDI-based software for a variety of instruments and computers, and the companies that aren't engaged actively in development are trying to license the work of "garage guys," musical hackers such as Kevin Laubach and the folks in the Hybrid Arts company.

A single Apple may soon serve as the heart of a unified network of musical tools that reaches from drums, guitars, and keyboards, through recording, mixing, and signal processing. Such is the potential power of MIDI, once it is fully tapped.

Listen for it.



The Mockingboard (digital oscillator/
speech-generator card)
Sweet Micro Systems
Cranston, RI 02920
(401) 461-0530

List Price: \$125

CIRCLE 480 ON READER SERVICE CARD

Music Construction Set

By Will Harvey
Electronic Arts
2755 Campus Drive
San Mateo, CA 94403
(415) 571-7171

List Price: \$40

CIRCLE 481 ON READER SERVICE CARD

The Super Music Synthesizer

(card and software)
Applied Engineering
P.O. Box 798
Carrollton, TX 75006
(214) 492-2027

List Price: \$159

CIRCLE 482 ON READER SERVICE CARD

Mountain Computer Music System

(digital oscillator cards and
software)
Mountain Computer
300 El Pueblo Road
Scotts Valley, CA 95066
(408) 438-6650

List Price: \$395

CIRCLE 483 ON READER SERVICE CARD

Syntauri

Syntauri Corporation
1670 South Amphlett Boulevard
Suite 116
San Mateo, CA 94402
(415) 574-3045

List Price: Hardware/software packages include the Syntauri Computer Music System, \$1495; the Simply Music Five System, \$1295; the Simply Music Four System, \$995; and the Musicland Games System (without keyboard), \$495. Software includes Musicland, \$149; Simply Music, \$179.95; Composer's Assistant, \$179; Metatrak II, \$179; alphaPlus sound-definition system, \$150; Musicmaster, \$75; and Dolphin Dialog, \$39.

CIRCLE 484 ON READER SERVICE CARD

East Coast Syntauri User's Group

For information about the group and its floppy-disk magazine, *SynDisk*, contact David Wilson at 218-04 40th Avenue, Bayside, NY 11361. Annual membership is \$35; programs generated by User's Group members include alphaPlus Enhancers, from Streifert Software, 48-11 59th Street, Woodside, NY 11377 (\$39.95) and; a MusicSystem-to-Syntauri conversion package from David Schiminovich, 80 Chester Place, Englewood, NJ 07631 (\$30).

CIRCLE 485 ON READER SERVICE CARD

West Coast Syntauri User's Group

For information, contact Joe West at Computers and Music, 1989 Junipero Serra, Daly City, CA 94014.

CIRCLE 486 ON READER SERVICE CARD

Soundchaser MX-5 System

Passport Designs
625 Miramontes Street
Half Moon Bay, CA 94019
(415) 726-0280

List Price: \$1495 without Polywriter software, \$1790 with. Polywriter software only, \$299.

CIRCLE 487 ON READER SERVICE CARD

DX-1 digital sampling card

Decillionix
P.O. Box 70985
Sunnyvale, CA 94086
(408) 732-7758

List Price: \$349 with Effects II software. Other software is available.

CIRCLE 488 ON READER SERVICE CARD

Metawave

Paul Lehrman
31 Maple Avenue, #1
Cambridge, MA 02139
(617) 497-7522

CIRCLE 489 ON READER SERVICE CARD

Drum-Key (hardware and software)

Peripheral Visions, Inc.
Great Valley Parkway
Malvern, PA 19355
(215) 647-3930

List Price: \$139

CIRCLE 490 ON READER SERVICE CARD

GRC (Graphic Rhythm Controller)

(for the Drumulator digital drum)
E-Mu Systems
2815 Chanticleer
Santa Cruz, CA 95062
(408) 476-4424

List Price: \$130

CIRCLE 491 ON READER SERVICE CARD

Apple IIe MIDI Interface, MIDI/4, and Polywriter

Passport Designs
See Soundchaser, above

List Price: \$195, \$99, and \$299, respectively

CIRCLE 492 ON READER SERVICE CARD

Proxima MIDI-1 interface, Proxima MIDI/16, Proxima MIDI 16x, and Meta-Expander

Syntauri Corporation (above)
List Price: \$195, \$250, \$250, and \$200, respectively

CIRCLE 493 ON READER SERVICE CARD

Synetix flashcard

Synetix, Inc.
10635 N.E. 38th Place
Kirkland, WA 98033
(800) 426-7412

List Price: 144K one-disk capacity, \$395; 288K two-disk capacity, \$595

CIRCLE 494 ON READER SERVICE CARD

NOW, THE LOWEST PRICES EVER ON



**3M Scotch®
DISKETTES**

SPECIAL SALE!

Prices good thru 9/30/84 only.

\$149 ea. 5 1/4" SSDD Qty. 50
\$195 ea. 5 1/4" DSDD Qty. 50
\$219 ea. 5 1/4" SSDD-96TPI
\$275 ea. 5 1/4" DSDD-96TPI

SOFT SECTOR ONLY!

MINIMUM ORDER: 50 DISKETTES
Add 10% for orders of less than 50.

These are factory-fresh 3M diskettes packed in boxes of 10 with Tyvek sleeves, reinforced hubs, identification labels and write-protect tabs.

**LIFETIME WARRANTY!
ON ALL 3M SCOTCH DISKETTES!**

SUPER SPECIAL!



Order 50 3M Scotch Diskettes on this special offer and you can get an Amaray Media Mate 50 for only \$9.99 (shipping included). Normally, a \$14.95 retail value, this is one of the best designed disk storage units we've seen. Special slots and ridges for stacking. A great buy.

With 50 3M Scotch 5 1/4" Diskettes **\$9.99**
Ordered alone: **\$10.95** + \$2.00 Shpng.

8" 3M Scotch Diskettes

8" SSDD ... **\$2.05** ea. 8" SSDD ... **\$2.50** ea.
8" DSDD ... **\$3.10** ea.

SOFT SECTOR ONLY!

MINIMUM ORDER 8" DISKETTES: 20

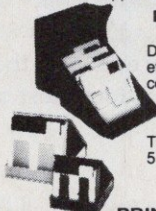
3M HEADCLEANING KITS

Stop swearing and start cleaning. This non-abrasive cleaning kit has everything you need for 30 applications. **\$18.00** + \$1.50 Shpng.

DISKETTE 70 STORAGE:

STILL A GREAT BUY

Dust-free storage for 70 5 1/4" diskettes. Six dividers included. An excellent value. **\$11.95** + \$3.00 Shpng.



DISK CADDIES

The original flip-up holder for 10 5 1/4" diskettes. Beige or grey only. **\$1.65** ea. Shpng.

**PRINTER RIBBONS
AT BARGAIN PRICES!**

Brand new ribbons produced to manufacturer's specs.
Epson MX-70/80 ... **\$3.58** ea. + 25 Shpng.
Epson MX-100 ... **\$6.99** ea. + 25 Shpng.
OkiData Micro 83 ... **\$1.48** ea. + 25 Shpng.
OkiData Micro 84 ... **\$3.66** ea. + 25 Shpng.

Shipping: 5 1/4" DISKETTES—Add \$3.00 per 100 or fewer diskettes. 8" DISKETTES—Add \$4.00 per 100 or fewer diskettes. **Other Items:** Add shipping charges as shown in addition to diskette shipping charges. **Payment:** VISA and MASTERCARD accepted. COD orders only, add \$3.00 handling charge. **Taxes:** Illinois residents only, add 8% sales tax.

FOR ORDERS ONLY:

1-800-621-6827

(In Illinois: 1-312-944-2788)

INFORMATION & INQUIRIES:

1-312-944-2788 only!

HOURS: 9AM - 5PM Central Time,
Monday - Friday

**WE WILL BEAT ANY NATIONALLY ADVERTISED PRICE
ON THE SAME PRODUCTS AND QUANTITIES!**

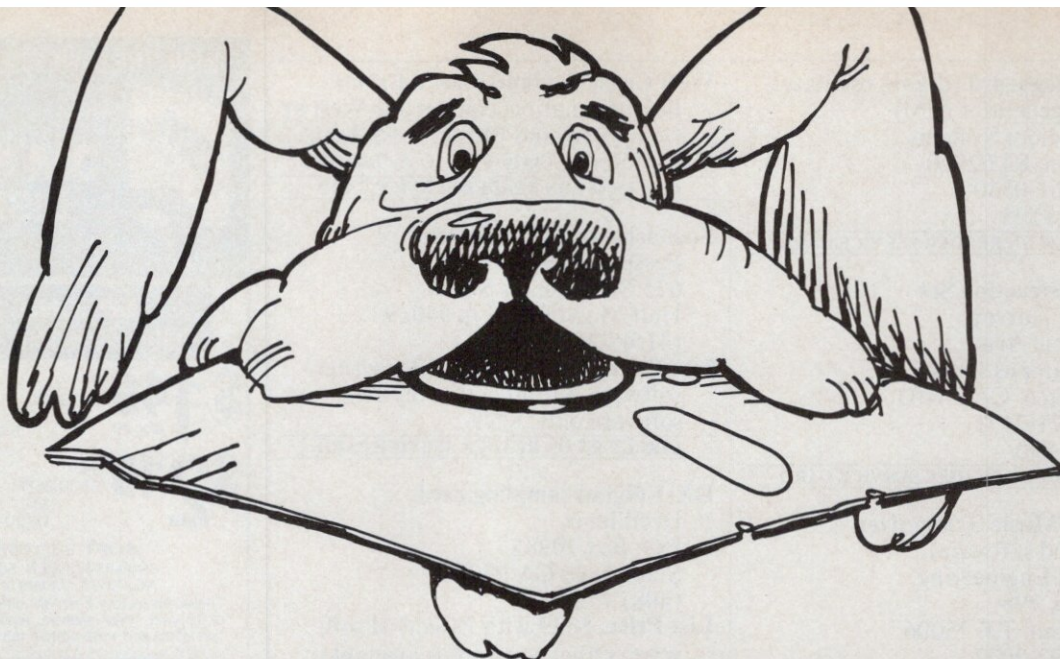
DISK WORLD!, Inc.

Suite 4806 • 30 East Huron Street • Chicago, Illinois 60611

**DISK
WORLD!**

Authorized Distributor
Information Processing
Products





Having problems with retrieval?

You need software insurance.

Diskettes are fragile, and when a protected program is damaged, the results are expensive and inconvenient. If you have a backup diskette, though, you can have your Apple, IBM or compatible computer back on line within seconds... affordably. That's software insurance.

Copy II Plus (Apple][,][Plus, //e)

This is the most widely used backup program for the Apple. Rated as "one of the best software buys of the year" by *InCider* magazine, its simple menu puts nearly every disk command at your fingertips. The manual, with more than 70 pages, describes protection schemes, and our **Backup Book™** lists simple instructions for backing up over 300 popular programs. A new version is now available that is easier to use and more powerful than before. Best of all, Copy II Plus is still only \$39.95.

WildCard 2 (Apple][,][Plus, //e)

Designed by us and produced by Eastside Software, WildCard 2 is the easiest-to-use, most reliable card available. Making backups of your total load software can be as easy as pressing the button, inserting a blank disk and hitting the return key twice. WildCard 2 copies 48K, 64K and 128K software, and, unlike other cards, is always ready to go. No preloading software into the card or special, preformatted diskettes are required. Your backups can be run with or without the card in place and can be transferred to hard disks. \$139.95 complete.

Important Notice: These products are provided for the purpose of enabling you to make archival copies only. Under the Copyright Law, you, as the owner of a computer program, are entitled to make a new copy for archival purposes only, and these products will enable you to do so.

These products are supplied for no other purpose and you are not permitted to utilize them for any use, other than that specified.

Copy II PC (IBM)

This is **THE** disk backup program for the IBM PC and PC/XT that backs up almost anything. Others may make similar claims, but in reality, nothing out performs Copy II PC... at any price. Copy II PC even includes a disk speed check and is another "best buy" at only \$39.95.

We are the backup professionals. Instead of diluting our efforts in creating a wide variety of programs, we specialize in offering the very best in backup products. So, protect your software investment, **before** your software meets its master.



**CENTRAL POINT
Software, Inc.**

The Backup Professionals

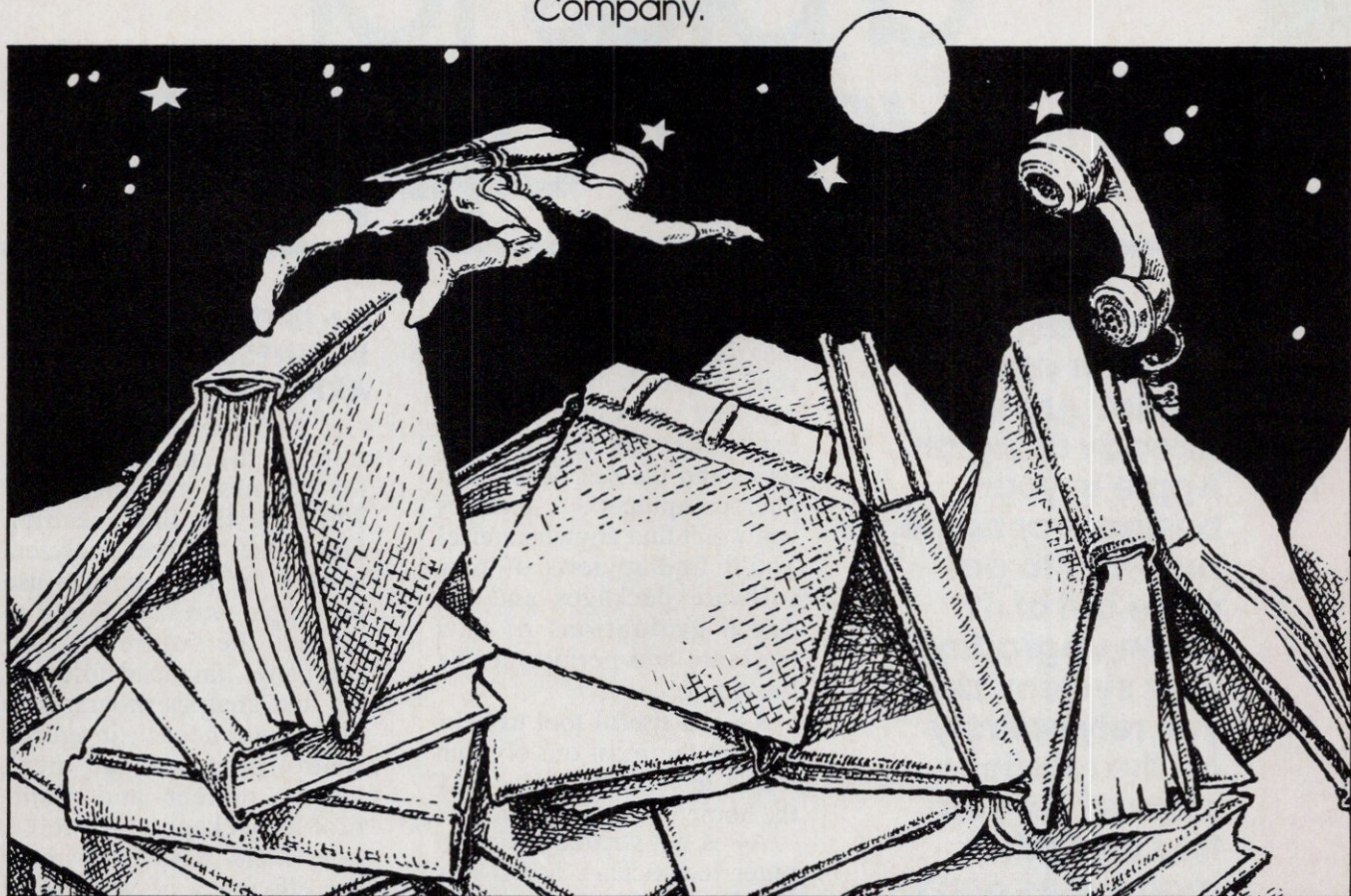
To order, call 503/244-5782, 8:00-5:30 Mon.-Fri., or send your order to: Central Point Software, 9700 SW Capitol Hwy, Suite 100, Portland, OR 97219. **Prepayment is required.** Please include \$3 for shipping and handling (\$8 outside U.S. or Canada).



Welcome

▶ **TELECOMMUNICATIONS
BY RUSS LOCKWOOD**

Do your research electronically through Information Access Company.



THE FINAL FRONTIER

In science fiction, star-hopping heroes scour the galaxy for information to help them solve all sorts of crises. They track down clues, follow leads, find many dead ends, and fall into traps. Eventually, they conquer all the obstacles time and space can devise, but the victory carries a heavy price.

Businesspeople and students often feel like space heroes when they are trying to find information for a report or paper. They must warp between office, home, and library; battle card catalogs, indexes, and disorganized files; and then see if the information is actually available. In the end, they too surmount the obstacles, but the cost in time and effort often makes for a Pyrrhic victory.

IAC to the Rescue

Information Access Company (IAC), a division of Ziff-Davis Publishing Company, makes cumbersome li-

brary literature searching a thing of the past. No longer must you wade through multitudes of magazines, newspapers, and other periodicals to make your research complete. Now, with your Apple and a modem, you can retrieve all that

▶ **Businesspeople and students often feel like space heroes when they are trying to find information.**

information instantly over the telephone lines from IAC's six databases—Magazine Index, National Newspaper Index, Trade and Industry Index, Legal Resources Index, Newsearch, and Management Contents.

You call up IAC via Dialog Infor-

mation Services, a subsidiary of Lockheed Corporation, to access a particular IAC database. The databases contain capsule descriptions of articles, usually no longer than a sentence. Two of the databases, Magazine Index and Trade and Industry Index, also include subsets that contain the entire text of articles. IAC has a little over two million abstracts available in the six databases.

Once you are connected to a database, you have two searching options—controlled vocabulary and free text. Controlled vocabulary uses a list of subject headings, which generally follows the Library of Congress format. You choose one or more headings, and the IAC computer retrieves articles that are listed under those headings. The more headings you type in, the more specific your search results.

a plus for your apple...

Are you depending more on your Apple? Are you already using an Apple in your business or home, but want to get more out of it? When upgrading your system, do you rely entirely on the retailer's claims? Do you find that other magazines don't go beyond simplistic programming ideas?

**LOOK NO FURTHER!
A+ IS HERE!**

A+ will teach you how to maximize the functions of your Apple. It brings to life new and innovative program applications for the Apple II series and the *new* Macintosh microcomputers . . . features you won't find anywhere else! You'll find reviews of new software packages and in-depth evaluations of new hardware and peripherals for the Apple.

A+ is a useful tool to help you get the most out of your Apple in both the office and the home!

A+ is not written for computer technicians, nor is it a simple magazine written for new users...A+ is written for *you*, covering...the programs *you* can adapt for your office and home...the products *you* can purchase to expand your Apple II series or Macintosh microcomputer...the applications *you* can implement to increase your productivity...the topics *you* want *and* need, month after month!

**SUBSCRIBE TODAY
AND SAVE UP TO 26%!**

A+ IS THE BUSINESS GUIDE FOR APPLE COMPUTING!

Get the reviews and evaluations of the newest releases for business and finance... which of the three leading Dow Jones Market analyzers is right for you...how to use the Apple as a crystal ball to predict the future of your company...financial forecasting and analysis programs to meet your needs...inventory control programs that aren't losers...patient- and client-profile packages that tell a story...and ways to increase the efficiency of your word processor, in the office or at home!



Tablets for IIs—new relief for the creative professional and student.

A+ IS THE CONSUMER'S GUIDE TO NEW SOFTWARE!

Each issue of A+ gives you unbiased evaluations of the



THE INDEPENDENT GUIDE FOR apple COMPUTING



latest software releases for home and office...programs that teach you how to use video games to help children learn...which modems will make your Apple a great communicator...the software solution to combine graphics, animation and text...problem solving with artificial intuition...software that gives you *all* of your money's worth ...and games that challenge your mental faculties and *not* your good nature!

A+ IS YOUR MONTHLY "FACT SHEET" ON NEW HARDWARE AND PERIPHERALS!

A+ covers what you need to expand your Macintosh or Apple II series...current advances in telecommunications and networking...new ways to augment memory...how to



Modem Magic—Reach out and access an information service.

access a wider variety of peripherals with greater ease ...what debugging aids *really* work...how to expand your RAM...ink-jet printers or dot-matrix printers...and the

hardware you'll need to accomplish the jobs in your business and home!

You'll get this and so much more in each monthly issue of A+! Regular columns and features covering Graphics, Programming, Education, Games and Entertainment make A+ the source for new applications and ideas...and Rescue Squad, Thoughtware and Product News round out all the facts you need for your Apple!

A+ is the complete guide for Apple computing, *the* magazine you can't do without!



Dictionary Disk—It's new, it's hot and makes word processing a snap.

A+ THE INDEPENDENT GUIDE FOR apple COMPUTING

P.O. Box 2964 • Boulder, Colorado 80322

YES! I don't have to look any further, A+ is here! Please enter my subscription to A+ for:

- 9 issues for only \$15.97—SAVE 15%!
 - One year for only \$19.97—SAVE 20%!
 - Two years for only \$36.97.—SAVE 26%!
- Savings based on full one-year subscription price of \$24.97.

42023

Mr. /Mrs. /Ms. _____ please print name in full

Company _____

Address _____

City _____ State _____ Zip _____

Check one: Payment enclosed Bill me later
Charge my: American Express Visa MasterCard

Card No. _____ Exp. Date _____

Add \$12 a year in Canada and all other foreign countries. Please allow 30 to 60 days for delivery of first issue.

With free-text searching, you type in a word or phrase, and the IAC computer finds all abstracts and articles containing those words or phrases. Again, the more words you choose, the more specific your search results.

Magazine Index

The Magazine Index contains abstracts from more than 400 popular U.S. and Canadian magazines. Coverage begins in 1959 and is updated monthly. Magazine Index provides information on a variety of topics, including current events, business, education, science, performing arts, and travel. Periodicals covered include *Creative Computing*, *AFL-CIO News*, *Scientific American*, *Industrial Research and Development*, *Playboy*, and, of course, *A+*.

The Magazine Index contains a subset, Magazine ASAP, that contains the entire text of all articles in 58 selected publications. Coverage begins in January 1983 and is updated monthly. You can view articles on the screen, print them out on your printer, or have Dialog Information Services mail you a printout of the articles.

National Newspaper Index

The National Newspaper Index contains abstracts on international and na-

tional news and current events. It is updated monthly and contains cover-to-cover indexing of the *New York Times*, the *Wall Street Journal*, and the *Christian Science Monitor* starting from January 1979; the *Washington Post* from September 1982; and the *Los Angeles Times* from October 1982. IAC also provides an index to business af-

▶ You type in a word or phrase, and the IAC computer finds all abstracts and articles containing those words or phrases.

fairs, which covers contracts, mergers, new products, and company tracking.

Trade and Industry Index

The Trade and Industry Index provides abstracts from more than 330 journals covering all major industries, as well as selective coverage from more than 1000 general magazines and law journals. It is updated monthly and contains entries dating back to January 1981. Publications covered include *Advertising Age*, *Forbes*, *Electronic News*,

Business America, *Government Product News*, and *Industry Week*.

Like the Magazine Index, Trade and Industry Index contains a subset with the entire text of all articles in 87 publications. Trade and Industry ASAP contains articles dating back to January 1983.

Management Contents

Management Contents indexes more than 500 business and management journals dating back to 1974. The database holds information on the theory and practice of management, administration, advertising, sales, economics, and marketing.

Legal Resource Index

As the name implies, this database concentrates information from more than 750 law journals and six legal newspapers into one index. Sponsored by the American Association of Law Libraries, the Legal Resource Index provides the legal perspective on corporate law, civil rights, taxes, environment, and other topics. Coverage begins in January 1980 and is updated monthly.

Newsearch

For those who want up-to-the-minute coverage, Newsearch provides daily updates of the IAC databases—more

Software to go with the flow . . .



Even when you can't!

TIME IS MONEY - and there are few tasks more time consuming than drawing flowcharts and organizational charts. But no longer!

FLOW CHARTING™ is specifically designed to reduce the time that you spend drawing, updating, and printing charts. It combines the quality of a draftsman with the speed of the computer and printer - increasing your productivity.

FLOW CHARTING's easy editing features allow you to insert symbols, lines, and text anywhere on the page and then reorganize

to your satisfaction. Most importantly, when your documentation needs changing, you can edit and reprint in minutes - and always with the same professional neatness.

So, if you're tired of wasting time with a pencil and eraser, let FLOW CHARTING do the work for you. It just might be the most valuable resource you've ever 'drawn' upon.

Available on APPLE® and IBM® PC. Suggested retail price for Apple version \$138.00; IBM PC version \$167.00.

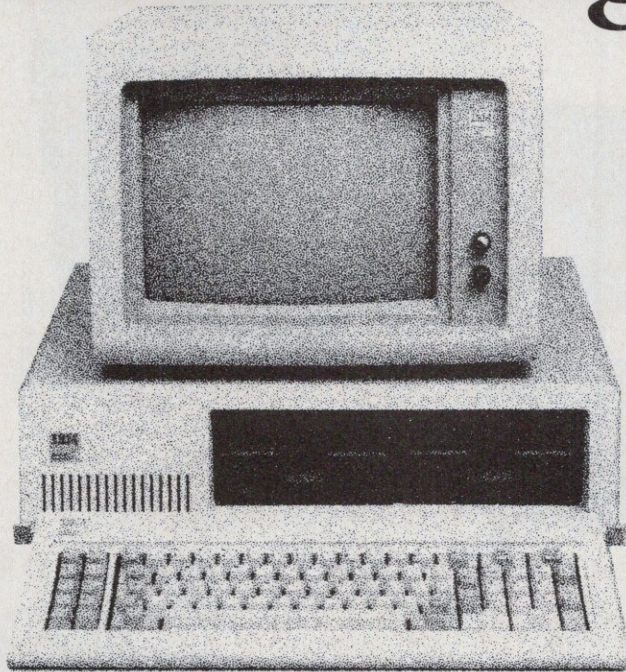
For more information on FLOW CHARTING call PATTON & PATTON at (408) 629-5044.

For your copy of FLOW CHARTING contact your local software store or write to Patton & Patton for immediate delivery. Please include P.O. number, check or money order.

PATTON & PATTON
340 Lassenpark Circle
San Jose, CA 95136

CIRCLE 200 ON READER SERVICE CARD

friendly,
dependable,
intelligent,
hardworking.



vulnerable.

A computer system is a valuable asset to your business. And like other valuables, it deserves reliable, effective protection.

The Data Defender Security System guards any computer or piece of electronic equipment against theft.

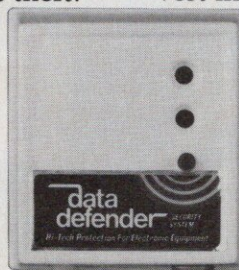
Just place your electronic component on our pressure sensitive mat. If the equipment is lifted off the mat, the alarm will sound.

The tamper-resistant Data Defender can protect up to

ten pieces of electronic equipment. It works with standard wall outlets, has a battery backup and is accessible only to keyholders. Best of all, this easy-to-use security system is just \$198.

Protect your electronic assets. Invest in reasonably priced protection you can trust.

Call PICOtronics at 1-800-431-5007 for more information and to order your Data Defender today.



data defender SECURITY SYSTEM

PICOtronics, Inc. 820 East 47th B-10 Tucson, Arizona 85713

CIRCLE 118 ON READER SERVICE CARD

WE'VE ELIMINATED THE HARD CHOICE IN SOFTWARE PACKAGES.



The performance of a good software program is the reason you buy a computer in the first place. Now...which programs should you buy?

The price range and the capacity of the programs on the market vary all over the lot. Worse: Higher price does not necessarily mean better performance.

How do you make a choice?

You read the ads in your favorite computer publication, but this one, but many of them are harder to understand than program manuals.

You talk to your friendly computer store salesman. It is hard for him to present you with the program he is most familiar with or the program with the most profit for the store. Don't blame him. Just ask about MEGAHAUS QUALITY SOFTWARE and ask him to compare us to the competition.

We can make computer program selection simple for you. Just visit your favorite computer store and ask to see a MEGAHAUS program. Our story is printed right on the box. If you compare our features with Brand 'X', you've made a sale.

MEGAHAUS is dedicated to providing you with a competitively-priced Word Processor, Spelling Checker and Data Management System that work together for your Apple or IBM Computer. They do more, are less expensive, easier to use and offer friendly manuals that do not read like a college course in Advanced Gobble-do-gook.

Want more detailed information before going to the store? Just write us for our easy-to-read brochures and they'll come to you by return mail. No charge, no obligation.

**The more you learn about software,
The more you'll choose**

megahaus™

WE MAKE COMPUTERS WORK HARDER.

Easier.

MEGAHAUS CORPORATION/5703 Oberlin Drive, San Diego, CA 92121/(619) 450-1230
CIRCLE 272 ON READER SERVICE CARD

than 1900 publications. Newsearch allows regular monitoring of specific issues, companies, and people.

The Price of Power

Knowledge is power, and power does not come cheap. An annual subscription fee of \$200 includes documentation, software upgrades, and toll-free customer support. A typical search costs from \$10 to \$15. IAC has no monthly minimum charges.

If you want volume discounts, IAC offers Search Helper, a software package that sets up search parameters within your Apple before you connect to the IAC databases. This service saves you money by reducing the amount of time you are connected to the databases. The software automatically dials Dialog Information Services and then connects you to IAC. A subscription costs \$1950 for the first 700 searches and \$1750 for every 700 searches thereafter.

Two New Services on CompuServe

We gave an overview of CompuServe in the first issue of *A+*, November 1983, and that information is still fairly accurate. CompuServe is steadily adding new services, however, and two are especially noteworthy.

If Hawaii is your kind of place, dial

into the Computer Job Bank. As you may surmise from the name, Computer Job Bank is an electronic help-wanted database that advertises local and national jobs in the computer, communications, and information fields.

Employment opportunities are posted the same day they are received and remain in the database for up to six weeks or until filled. Prospective applicants can transmit their resumes via electronic mail, which arrives at the company within hours, or in the more traditional way through the regular mail.

Computer Job Bank carries no charge other than the normal CompuServe subscriber rates. Advertisers need not subscribe to CompuServe in order to post their openings.

The other new service, the Creative Computing Special Interest Group (CCSIG), is a place to find new uses for your Apple. *Creative Computing*, a sister publication of *A+*, covers the entire computer industry, including Apple Computer, Inc., and provides in-depth reviews of products, peripherals, and software for your Apple.

Once on the CCSIG, you can read the monthly Apple column, upload and download programs, and find out what

is going on in the computer world. One of the best reasons to visit the CCSIG is to talk not only to Apple enthusiasts, but to Atarians, Commodoreans, and IBMers too.

You can reach the CCSIG at PGS-22. The CCSIG carries no charge other than normal CompuServe subscriber rates.

Continuing Voyages

Finding information electronically through your Apple and a modem is like bringing the library into your office or home. Businesspeople and students profit from the fast, complete, and convenient service telecommunications companies offer. So, leave your starship in the garage. Information beckons, and it is only a phone call away. +

CONTACT

Information Access Company

11 Davis Drive
Belmont, CA 94002
(415) 591-2333

Computer Job Bank

P.O. Box 3497
Honolulu, HI 96811
(808) 595-2365

END ALL YOUR SPELING PROBLEMS


THE SENSIBLE SPELLER™ WON'T LET MISSPELLINGS GET AWAY!

This unique software program, a virtual electronic dictionary, catches spelling mistakes in your writings. It actually displays misspelled words in context, suggests the correct spelling, and allows immediate replacement of misspelled words with correct ones. It derives its huge, 80,000-word vocabulary...which is all on disk...directly from the official Random House Dictionary.

Sensible Speller is friendly and fast, taking only a minute or two to correct a ten-page document. It provides room on disk to add thousands of your own words. It is compatible with nearly all Apple word processor

programs* and runs on all Apple //c, //e, II+, and Apple-compatible computers. Yes, Sensible Speller is the "best of its kind," as stated by *Softalk Magazine* in its March, 1984 issue.

Sensible Speller is available for \$125 in either the "IV" or ProDOS version at your dealer or you may order it direct, enclosing \$1.25 for shipping. Visa/MasterCard/Check/COD welcome! And...send for a free brochure on all Sensible Software products.

 **Sensible
Software, Inc.®**

24011 Seneca,
Oak Park, MI 48237
(313) 399-8877



*It works with all the following word processors, with owners of trademarks indicated in parentheses: DOS 3.2 & DOS 3.3 - AppleWorks & AppleWriter, all versions (Apple Computer, Inc.); Bank Street Writer, Format II (Broderbund); HomeWord and 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 and Word Handler.

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

▶ MACINTOSH & LISA

Macintosh

FEATURING THE APPLE 32 LINE

THE DAISY CHAIN: Letter-quality Printing with the Macintosh

Leave the Drawing to Us

I'd like to Teach the Mac to Sing

Pipeline





PRINTERS/BY SUE CRISSMAN

The Daisy Chain

Letter-quality printing with the Macintosh

When Apple announced the Macintosh last January, the computer was compatible with only one printer, the Apple Imagewriter. Those of us who already owned a printer and were interested

in a Mac, as well as those of us who wanted to use a letter-quality printer, didn't have to spend much time wondering if we should buy a Macintosh. It simply wouldn't do what we wanted it to do. Now the situation is different. Several products that permit the Macintosh to communicate with printers other than the Imagewriter are available. Although some of these printers are designed for a specific printer, two are generalists; that is, they work with a variety of different printers.

What these products do is take the

Macintosh codes that produce dots on the Imagewriter and translate them into information that a letter-quality printer can understand. The process requires both software and hardware. The software handles the code translations, and the hardware (in the simplest case, a cable) carries the information to your printer.

Simple or Sophisticated

Both the Mac Daisywheel Connection from Assimilation Process and the Printer Optimizer from Applied Creative Technology, Inc., can get the job done. These two products are

quite different from each other, however. The Mac Daisywheel Connection is essentially a diskette that performs the code translations. Created by the team that designed MacWrite, it works in the usual Macintosh style—simply and straightforwardly. You insert the diskette, click on a few answers in dialog boxes, and you're off and printing.

The Printer Optimizer, on the other hand, was designed before the Mac came out and was intended to do many more things than speak Macintosh. That you can use it to print from MacWrite to a letter-quality printer is just one feature of this sophisticated product. The Optimizer serves as a buffer to free up your Mac while you're printing out documents, lets you connect up to three printers (both serial and parallel), provides alternate storage areas that are useful for merging documents, and lets you program a variety of commands and control codes.

T

his kind of versatility means a complex product and a higher price. If your main objective is to print from a Macintosh to a letter-quality printer, you'll probably be more interested in the Mac Daisywheel Connection. If you are doing a lot of work with your Macintosh, however, and don't want to have to wait around during the printing process, or if you'd like to be able to connect several different printers to your Mac, the Printer Optimizer may be the better choice.

Mac Daisywheel Connection

When you open the box containing the Mac Daisywheel Connection, you'll see two diskettes (a master and a backup), a cable, and a 39-page manual. To get started, you plug the cable into your printer and your Mac. This product works only with serial printers.

If you have a serial printer that does not have a DB-25 connector, you may have to purchase a special adapter—several types are available from Assimilation Process. Next, you insert the disk and open the application icon. The manual provides specific instructions for printing both

If your main objective is to print from a Macintosh to a letter-quality printer, you'll probably be interested in the Mac Daisywheel Connection.

MacWrite and Multiplan documents; it states that the Mac Daisywheel Connection "will be compatible with any Macintosh software program which can normally print via the standard Imagewriter driver."

To print with MacWrite, you start by opening the Mac Daisywheel Connection icon. The first dialog box shows current settings; by clicking on New Settings, you'll get another dialog box, which allows you to choose the type of printer you want to use, the transmission rate, and whether you want output from the printer or the modem port. You then set specifications for page length, pitch, paper feed, and line spacing. At this point, you're ready to print.

After ejecting the Daisywheel Connection disk and inserting your own, you'll get a list box of your files. Clicking on a filename and Open causes printing to begin. The system includes a pause feature, and you can cancel printing if you wish. That's all there is to it. I accomplished the entire process in less than ten minutes.

Printing from Multiplan or other Macintosh software is slightly different but equally easy. You have to modify the Imagewriter driver on your disk so that letter-quality printing replaces the Draft mode. This modification involves copying the Set Printer file to your Multiplan disk, opening it, and following the instructions on the screen.

Once you've completed this procedure, you use the usual Print commands in Multiplan. When you choose Page Setup, the dialog box will be the standard Multiplan version, with one exception: the choice for A4 paper has been replaced with a choice for wide-carriage printing. This option formats your daisy-wheel printer for up to 14 inches of printing.

Once you've organized things onto the proper disk, you simply print out the information on it.

Of course, the actual size and style of your type will depend on the print wheel you're using, but if your printer supports them, the Mac Daisywheel Connection will let you print bold and underlined print, as well as subscripts and superscripts.

The Mac Daisywheel Connection package includes information about updates for future Macintosh applications. Efforts are under way to sell the product as part of a bundle with the Qume LetterPro 20. This combination should save you about \$100, compared to purchasing each product separately.

Printer Optimizer

When you open the Printer Optimizer package, you find a metal 10 × 7 × 3½-inch box with a digital display and a keypad on the front, a small plastic envelope of jumper wires, and a three-ring binder with more than 100 pages of text. An additional 15-page manual and a diskette specifically for use with the Macintosh are also part of the package.

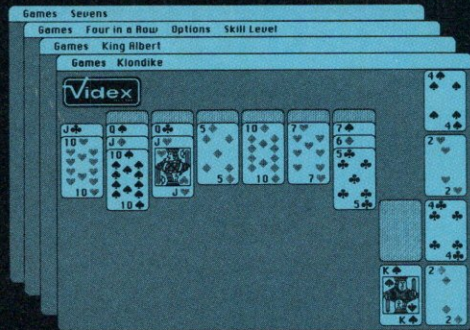
Setting up the system involves several steps. You have to remove the cover of your computer and set several sets of DIP switches to match up the output of your computer and the input of your printer. The manual provides several "recipes" for accomplishing this task, but if you happen to have a printer that is not described in the Optimizer manual, you'll have to do some sleuthing in your printer manual, or perhaps with your dealer, in order to discover the correct settings.

B

ecause the Printer Optimizer is designed for use with virtually any computer and printer (both serial and parallel), a cable is not included with the product. As the manual explains, "You, or someone you hire, must determine what kind of connector should be installed on each end of both cables, plus the wiring layout inside the connectors, and the length of each cable." I chose not to hire someone, and I did it myself.

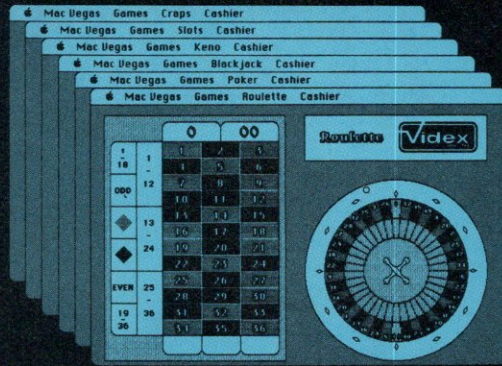
Connecting the Printer Optimizer

The MacClassics™ from Videx. Legends in Their Own Time.



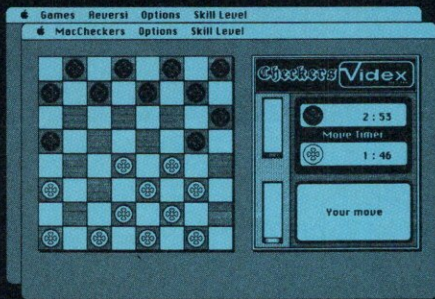
FunPak™ - \$39

**Klondike Solitaire •
King Albert Solitaire •
Four in a Row • Sevens**



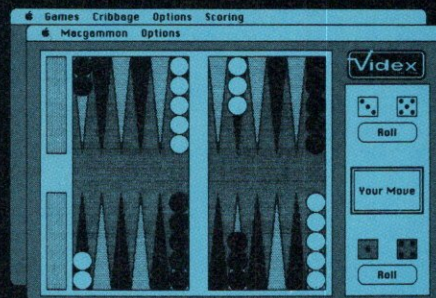
MacVegas™ - \$59

**Roulette • Poker • Blackjack •
Keno • Slots • Craps**



MacCheckers™ - \$49

Checkers • Reversi



MacGammon™ - \$49

Backgammon • Cribbage

Introducing the MacClassics, a collection of familiar games designed to entertain and challenge. With Macintosh™ or a friend as an opponent, you can enjoy such classic games as solitaire, poker, checkers, backgammon, roulette, etc., and they're all more fast-paced and exciting than ever before, with a little assistance from Macintosh. MacClassics let you enjoy and explore the power of your Macintosh while you relax and have a good time.

The MacClassics are just another example of the kind of high-quality

products you've come to expect from Videx. With a solid reputation for dependable, innovative business software and hardware, Videx is consciously building that same degree of excellence into its entertainment software. Through development of Apple® and Macintosh software, Videx continues to provide the micro-computer industry with an ever-expanding line of exciting, reliable products.

Call today for more information.
(503) 758-0521.



Innovation Backed by Support

Videx, Inc. • 1105 NE Circle Blvd. • Corvallis, OR 97330

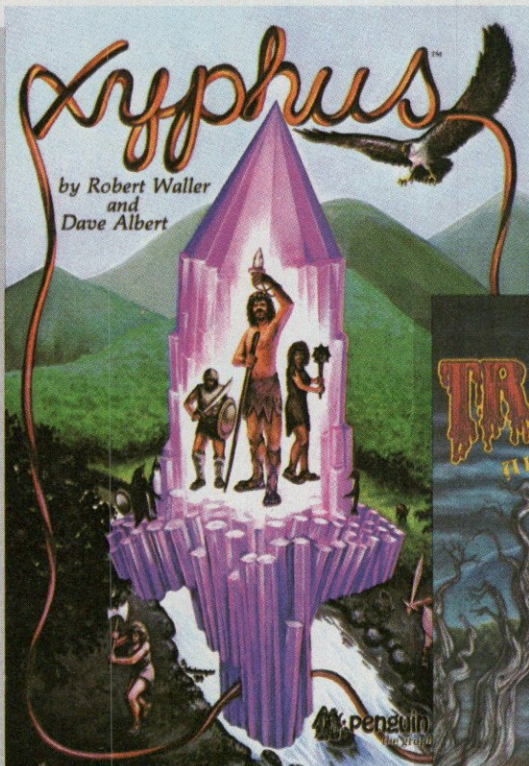


Macintosh is a trademark of Apple Computer, Inc. Apple is a registered trademark of Apple Computer, Inc.

CIRCLE 142 ON READER SERVICE CARD

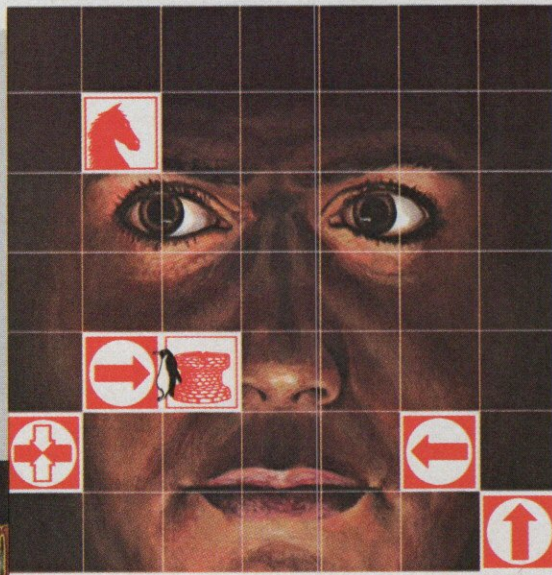
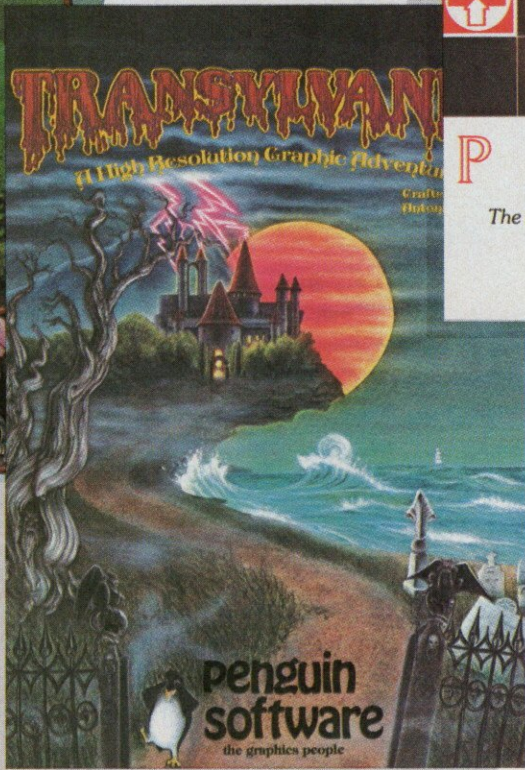
ADVENTURE STRATEGY FANTASY

We cover
the spectrum
for Macintosh™
entertainment.



Xyphus—Enter the Lost Continent of Arroya in search of Xyphus, Lord of Demons. Six increasingly difficult scenarios, four-player independent movement, plus a wide variety of spells and weapons make this fantasy role-playing game like no other you've ever seen.

Transylvania—You have until dawn to save a kidnapped princess from a land haunted by werewolves, goblins, vampires, and wizards in this award-winning graphics adventure.



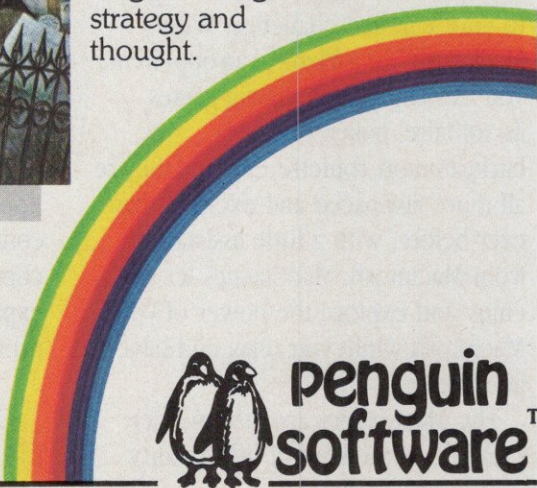
PENSATE™

The thinking game by John Besnard and Robert Hardy



Pensate—Outwit the computer's legions of pieces as you make your way across the playfield. Ten distinct types of opposing pieces and nine levels of difficulty provide endless variety and challenge in this game of strategy and thought.

All Macintosh versions by Robert Hardy.
Write or call for a free catalog.

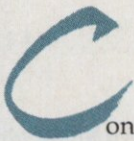


Macintosh is a trademark of Apple Computer, Inc.
Penguin Software is a trademark of Penguin Software, Inc.

*The longer
your documents,
the more time
you'll save with
the buffering
capabilities of
the Printer Optimizer.*

for use with the Imagewriter is easy; it comes with all the instructions you need for cable selection, DIP switch setting, and jumper-wire attachment.

You may be wondering why you'd want to set a Macintosh up with an Imagewriter in the first place. After all, your Macintosh already works with an Imagewriter. The Optimizer, however, lets you dump your MacWrite documents into the buffer, and once you've done so, you can continue to use your Macintosh while the Optimizer handles your printing job. Once I started using this feature, I found myself immediately attached to it. Earlier printing efforts had always left me looking for coffee and other distractions during printing time; with the Optimizer, on the other hand, I could continue working on the Macintosh.

onnecting a letter-quality printer to your Macintosh takes more time and energy than connecting an Imagewriter, especially if your printer is not one of those in the Optimizer's preconfigured setups. Like all setup procedures, however, once it's done, it's done, and you won't have to worry about it again, until the time comes to add an additional printer or plotter.

Then we have the matter of translation codes. In general, the Printer Optimizer leaves making a translation table for the codes up to you; the manual explains translation equations in great detail. For use with MacWrite, however, it includes complete instructions, and you can get the code (at an extra charge) on diskette. By using the keypad, your Macintosh, and the Opti-Auto-Program diskette, you can easily install the codes that you need to translate your MacWrite program into a format that a letter-quality printer can utilize. Once the translation is finished, the printing process is reasonably straightforward.

Again, the type of print you'll get depends on your print wheel and the capabilities of your printer. When you create text with MacWrite, the Printer Optimizer restricts you to the 12-point Monaco, Plain typeface. Since capabilities such as boldfacing and

underlining vary across printers, you may have to do some extra work to accomplish these tasks.

Buffering and Switching

These procedures may seem formidable, especially compared to the simplicity of the Mac Daisywheel Connection, but the Printer Optimizer is really designed to provide other, more sophisticated benefits. In computer parlance, the Printer Optimizer is known as a buffer and a switch box. As for buffering, the basic unit comes with 64K of memory on one Optimem memory board, and you can add up to three more Optimems for a total memory capacity of 256K. (The 64K of memory will give you about 16 pages of dot-matrix print.)

Letter-quality printers require much more code information (especially if you're using features such as right-justification or proportional spacing), so 64K of memory can accommodate only six pages or so of letter-quality text. Adding an additional board to bring memory capacity up to 128K should allow you to dump most of your MacWrite documents for a letter-quality printer directly into the Optimizer. The longer your documents, the more time you'll save with the buffering capabilities of the Printer Optimizer.

The Optimizer's switching capabilities involve changing either from one printer to another or from one job to another. If you have two printers attached to your Macintosh, you can dump in a job for each printer, enter some code to tell which job should go where, and leave the work to your Optimizer. You don't have to print jobs in the order in which you created them or entered them into the Optimizer.

The system gives you alternate storage areas, so you can store different jobs and switch back and forth between them with control codes. An

example is working with mailing lists. You can have your names and addresses in one storage area and the text of your letter in another. You then program the Optimizer to switch back and forth between the two areas and print out your letters, including the names and inside addresses. You can also use storage areas to print multiple copies of any document whenever you want originals instead of photocopies.

The Printer Optimizer is a modular system, so you can purchase the parts you need for your current system and expand to meet future needs. If you want to start by connecting your Macintosh to your current printer, you'll need the basic unit and, if you have a serial printer, the Opticom board. You may want to expand memory capacity, especially if a hard disk is in your future.

Which One?

Both of these products will get your Macintosh working with a letter-quality printer. If that is your only goal, the Mac Daisywheel Connection will do the job. On the other hand, if you want a more powerful product that enables you, among other things, to drop your document into a buffer and continue using your Mac, make use of switching capabilities, expand your Macintosh into a larger system, or use the product with other computers, the Printer Optimizer is certainly worth considering. +

PRODUCT INFORMATION

Mac Daisywheel Connection

Assimilation Process
20833 Stevens Creek Blvd.
Cupertino, CA 95041
(408) 446-0797

List Price: \$99

Printer Optimizer

Applied Creative Technology, Inc.
2156 West Northwest Highway
Suite 303
Dallas, TX 75220
(800) 433-5373
In Texas: (214) 556-2916

List Price: Basic Optimizer unit for parallel devices (64K), \$499; Opticom board for one serial input and one serial output, \$99; Opticom+ for two serial outputs, \$149; additional memory board (64K), \$139; Opti-Auto-Program diskette, \$25.95

BUY HARDWARE AND SOFTWARE AT WHOLESALE +8%, AND GET 12-21 DAY SOFTWARE RENTALS† ...

Join the thousands of buyers who have saved more than \$12,000,000.00 on over 30,000 orders in just the last six months.

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:

AT&T	Harvard University
Barclays Bank	Hughes Aircraft
Bell & Howell	Kodak
Centel	National Opinion
Citibank	Research Center
Columbia University	Standard Oil of Ohio
Farm Bureau Insurance	University of Chicago
Frontier Airlines	Veteran's Administration
GATX Corporation	Hospitals
General Mills	

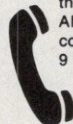
plus thousands of satisfied consulting firms, small businesses, computer clubs, user groups, municipalities, government agencies and valuwis individuals ACROSS THE NATION! Their buyers know that purchasing or renting from PC NETWORK saves them time, money and trouble. They also count on us for product 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: M5A1

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.

5A1

I am under no obligation to buy anything. My complete satisfaction is guaranteed. Please check () all boxes that apply:

- | | |
|--|--|
| Basic Membership | Special V.I.P. Membership* |
| <input type="checkbox"/> One-year membership for \$8 | <input type="checkbox"/> One-year membership for \$15 |
| <input type="checkbox"/> Two-year membership for \$15 (SAVE \$1) | <input type="checkbox"/> Two-year membership for \$25 (SAVE \$5) |
| <input type="checkbox"/> Business Software Rental Library for \$25 add'l. per year—with 12 day rentals | <input type="checkbox"/> BOTH Business and Game Software Rental Libraries for \$30 add'l. per year—with 21 day rentals |
| <input type="checkbox"/> Games Software Rental Library for \$10 add'l per year | *VIP members receive advance notice on limited quantity merchandise specials |

Bill my credit card: VISA MasterCard 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"/> MACINTOSH | <input type="checkbox"/> LISA | <input type="checkbox"/> APPLE III |
| <input type="checkbox"/> Other: _____ | | |

Signature _____
(Signature required to validate membership)

Copyright ©1984, PC NETWORK INC.

LATEST ISSUE Price Reductions!

As the NETWORK's volume grows our prices drop. The following popular products are now available at these new lower prices!

64K MEMORY CHIPS \$ 4.50* ea.
Guaranteed for Life.

AMDEK MONITORS

V300G Composite Green 110.00*

V300A Composite Amber 120.00*

C. ITOH STARWRITER F10/40 ... 875.00*
40 CPS-Letter Quality Printer

HAYES MICROMODEM IIe 200.00*
With Smartcom I

QUADRAM APIC/G 62.00*
Graphics Printer Interface

BRAND NAME SSSD 11.00*
DISKETTES

Box of 10 *Guaranteed for Life*

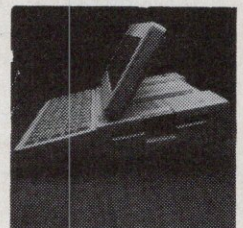
*NETWORK members pay just 8% above these wholesale prices plus shipping.

Complete Apple Systems

The NETWORK offers fantastic discounts on these three complete 100% 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 **940.00*** (20.30)
Built in Drive
Software



▶ APPLE //e STARTER SYSTEM

128K //e CPU
80 Column Card
Tilt Swivel Monitor //
1 Disk Drive
Software **1032.00*** (30.00)



▶ MACINTOSH BASE SYSTEM

192K Memory
400K Diskette
Keyboard
Mouse
Software **1800.00*** (39.10)



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!

... 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 400 PAGE WHOLESALE CATALOG—Members receive our 400 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—ALL PRICED at 8% above Dealer WHOLESALE.

3 EXPERIENCED CONSULTANTS—The NETWORK hires consultants, not order takers, to aid you in product selection. Our consulting staff possess in excess of 150 man years of personal computer product experience. **We back our consultants with our money back guarantee: ANY PRODUCT RECOMMENDED BY OUR CONSULTING STAFF FAILS TO PERFORM AS PROMISED—OR IS INCOMPATIBLE WITH YOUR SYSTEM—WE WILL TAKE IT BACK AT OUR EXPENSE FOR A 100% REFUND.**

4 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.

5 FREE TECHNICAL SUPPORT—The NETWORK supports every product it sells. We maintain a qualified TECHNICAL SUPPORT staff to 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!**

6 OPTIONAL BUSINESS RENTAL LIBRARY—All members can join our BUSINESS RENTAL LIBRARY for just \$25 PER YEAR above the base membership fee. This entitles you to rent business software AT JUST 20% of the DISCOUNTED PRICE FOR A 12 DAY PERIOD. If you decide to keep the software, the entire rental fee is deducted from the purchase price. **VIP MEMBERS GET A FULL 21 DAYS for just \$30 above the V.I.P. base fee.** This also includes the game library privileges for a \$5 combination savings.

7 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.

8 SPECIAL SAVINGS BULLETINS—THE PRINTOUT—The NETWORK seeks every opportunity to save money for its members. We buy excess dealer inventories, and store bankruptcy closeouts regularly. We then turn around and make this merchandise (only top quality name brand products) available to our members at fantastic savings via THE PRINTOUT, our newsletter and savings bulletins.

9 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.

10 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.

11 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.

12 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.

13 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!!** And remember, for Clients who pay by Credit Card, we never charge your card until the product ships.

14 MEMBERSHIP SATISFACTION GUARANTEE—If for any reason you are not satisfied with your membership within 30 days, we will refund your dues IN FULL.

15 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.

GAMES & EDUCATIONAL SOFTWARE

(Please add \$1 shipping and handling for each title ordered from below.)

	Wholesale	Wholesale
Bluechip Barron, Millionaire or Tycoon	\$34.20*	Scarborough Mastertyp
Broderbund Loadrunner	19.75*	Screenplay Professional Blackjack
Broderbund Choplifter	19.00*	Sierra On-Line Frogger
CBS Goren-Bridge Made Easy	48.00*	Sierra On-Line Crossfire
CBS Mastering the SAT	90.00*	Sir-Tech Wizardry
Counterpoint Music, Fractions or Piece of Cake	17.00*	SubLogic Flight Simulator II
Designware Creature Creator or Spellcopter	22.80*	SubLogic Night Mission Pinball
Designware Crypto-Cube or Trap-A-Zoid	22.80*	Spinnaker Alphabet Zoo
EPYX Temple of Apsah	21.97*	Spinnaker Delta Drawing
Hayden Sargon III	28.47*	Spinnaker FaceMaker
Hayden-SAT Sampler Test	11.97*	Spinnaker Hey Diddle Diddle
Infocom Zork I, II, or III	21.50*	Spinnaker KinderComp
Infocom Deadline, Witness or Suspended	27.00*	Spinnaker Rhymes & Riddles
MicroLab Miner 209er	22.80*	Spinnaker Story Machine
Microsoft Typing Tutor II	14.22*	Spinnaker The Most Amazing Thing
Orion JBird (QBert Look Alike)	22.00*	Virtual Combinetics Micro Cookbook

BUSINESS SOFTWARE

(Please add \$2.50 shipping and handling for each title ordered from below.)

ASPEN/WANG Grammatik	\$42.00*	Microsoft MS Financial Statement	57.00*
ATI How to use Wordstar	42.00*	Microsoft A.L.D.S.	70.00*
ATI How to use Multiplan	42.00*	Microsoft Word for Macintosh	110.00*
Broderbund Bank Street Writer	40.00*	Microsoft File for Macintosh	110.00*
Business Solutions The Incredible Jack	100.00*	Microsoft Multiplan for Macintosh	110.00*
Central Point Calc Plus	23.00*	Microsoft Basic for Macintosh	85.00*
Dow Jones Software Market Analyzer	198.00*	Microsoft Chart for Macintosh	71.00*
Dow Jones Software Market Manager	171.00*	Microsoft Stuff Crosstalk	105.00*
Eagle Money Decisions	113.00*	Monogram Dollars & Sense	57.00*
Howardsoft Tax Preparer 1984	143.00*	Softcraft Fancy Fonts	125.00*
Living Videotext Think-Track	85.00*	Microtek Publishers PFS:File	71.00*
LJK DataPerfect	80.00*	Software Publishing PFS:Write	71.00*
LJK LetterPerfect	60.00*	Software Publishing PFS:Graph	71.00*
Microsoft Applesoft Compiler	99.00*	Stoneware DB Master Version 4	199.00*
Microsoft Multiplan (DOS or CP/M)	110.00*	Verbatim Disk Drive Analyzer	23.00*

HARDWARE

(Please add shipping and handling charges found in italics next to price.)

COMPLETE SYSTEMS			
Apple Lisa All Configs Available	CALL	Princeton HX-12 RGB Monitor	CALL
Apple Macintosh Base System	1,800.00* (39.10)	Taxan 210 Combination RGB/Composite Display	230.00* (6.00)
Apple /c All Configs Available	940.00* (20.30)	Zenith ZVM-123 High Res Green	78.00* (2.50)
Apple /e 100% Apple Starter System	1,032.00* (30.20)	Zenith ZVM-131 13" RGB Color w/Green Switch	275.00* (6.00)
Columbia Desktop & Portable Systems	CALL		
Eagle Desktop PC and Spirit Portables	CALL		
IBM PC 2 DSDD Floppy Drives/256K	1,736.50* (37.51)		
IBM Hard Disk 1 Floppy/10MB	2,384.00* (51.50)		
Hard Disk/256K			
NEC Notebook (New Lower Price)	420.00* (10.00)		
Alps AP-100B Same as 100A with One Drive	640.00* (15.00)		
Alps AP-100C Slimline Drive in Case	159.00* (4.00)		
Apple ALL MODELS	CALL		
Corvus 6MB Hard Disk	1,436.00* (31.02)		
Davong Hard Disks for Macintosh	CALL		
Franklin Data X-10 10MB Hard Disk	1,305.00* (28.20)		
Micro-Sci A2 142KB Drive	185.00* (5.00)		
Micro-Sci Floppy Controller	55.00* (2.50)		
Rana Elite II 163K Drive	225.00* (5.00)		
Rana Elite II 326K Drive	320.00* (7.00)		
Rana Elite III 652K Drive	398.00* (10.00)		
Rana Floppy Controller	70.00* (2.50)		
Panasonic Half Height DSDD Drive—No Case	130.00* (2.81)		
Shugart AP-50 Full Height Add-On	155.00* (4.00)		
Tandon TM 100-2 Full Height DSDD Drive Only	158.00* (3.41)		
Teac FD55-B Half Height DSDD Drive Only	140.00* (4.00)		

MEMORY CHIPS

All chips guaranteed for life.

64K Memory Upgrade Kits (9 Chips)	40.50* (1.00)
64K Dynamic Ram Chips (Each)	4.50* (1.00)

MODEMS

Anchor Volksmodem	47.00* (2.50)
Anchor Mark XIII LOWEST PRICE 1200BPS	230.00* (5.00)
HAYES COMPATIBLE EXTERNAL MODEM	CALL
Hayes Micromodem /w/ Smartcom	200.00* (2.50)
Hayes Smartmodem 300	180.00* (3.50)
Hayes Smartmodem 1200B with Smartcom II	366.90* (2.60)
Hayes Smartmodem 1200B without software	299.00* (2.50)
Novation Apple Cat II	196.00* (2.50)
Novation 212 AppleCat	389.88* (2.50)
Prometheus ProModem 1200	325.00* (8.00)
Rison R212A Smart 1200BPS	335.00* (8.50)
U.S. Robotics Password (Compact 1200BPS Ext'l)	290.00* (6.50)

MONITORS

Amdtek Video 300G Composite Monitor	110.00* (3.00)
Amdtek Video 300A Composite Monitor	120.00* (3.00)
Amdtek Video 310A IBM Type Monochrome Monitor	130.00* (3.00)
Amdtek Color 302 Composite Color	215.00* (6.00)
Amdtek Color 500 RGB Color	320.00* (6.00)
Amdtek DVIII RGB Monitor Interface Card	110.00* (2.50)

BOARDS AND BUFFERS

ALS ZCard II	96.33* (2.50)
Digital Research CP/M Gold Card w/192K	465.00* (2.50)
Research Premium Softcard /e	243.67* (2.50)
Microtek Dumping/GX	55.00* (2.50)
Microtek Magnum 80M 80Col + 64K	93.00* (2.50)
Orange Micro Grappler +	96.90* (2.50)
Orange Micro Grappler/Bufferboard	113.05* (2.50)
PC Network Z80 Card	35.00* (2.50)
PC Network Printer Card w/Cable	40.00* (2.50)
Personal Comp Prod 6MH Appli-Card with 8088/BASIC/MS-DOS	552.00* (2.50)
Quadram MP-8 8K Microfazer Buffer (expandable)	110.00* (2.50)
Quadram APC Parallel Interface	57.00* (2.50)
Quadram APIC/G Graphics Interface	82.00* (2.50)
Street Electronics ECHO II Speech Synthesizer	100.00* (2.50)

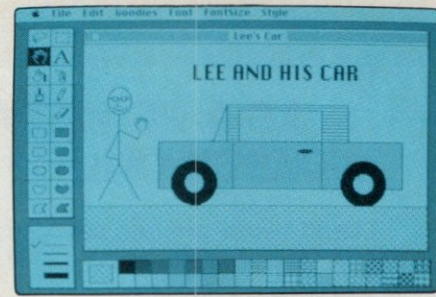
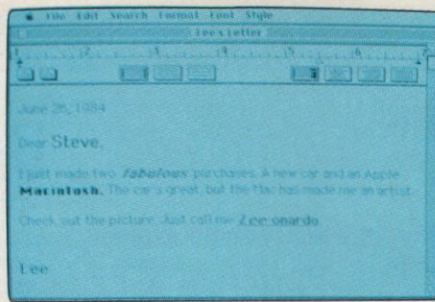
PRINTERS

Abati 18CPS Letter Quality Printer C. Itoh Starwriter F10/40	340.00* (8.00)
40 CPS LQ	875.00* (18.90)
Comrex/Brother CR-II 13CPS LQ Printer	385.00* (8.62)
Comrex/Brother Typewriter Keyboard for CR-II	150.00* (3.25)
Comrex/Brother Cut Sheet Feeder for CR-II	180.00* (3.89)
Epson RX-100 100CPS Wide Platen	475.00* (11.00)
Epson FX-80 160CPS 80 Col LQ	815.00* (9.25)
Epson FX-100 160CPS Wide Platen	600.00* (14.35)
Epson LQ1500 NEW LQ/DP Printer	CALL
Epson IBM-to-EPSON Parallel Cable	21.00* (1.00)
IDS Prism 132Color w/all opts	1,365.00* (30.00)
NEC 2020 20CPS Letter Quality Printer	825.00* (16.53)
NEC 3530 33CPS Letter Quality Printer	1,185.00* (31.54)
Okidata 82A Serial & Parallel	280.00* (7.00)
Okidata ML92P 160CPS 80 Col Printer	395.00* (8.55)
Okidata IBM-to-Okidata Parallel Cable	20.75* (1.00)
Okidata Quadjet Multicolor Ink-Jet	539.00* (12.00)
Qume Sprint 11/45 45CPS Letter Quality	1,155.00* (24.40)
Qume IBM Cable and Interface (required)	72.00* (1.00)
Star Micronics Gemini 10X	248.00* (6.00)
Talley MT-160L 160CPS DP/LQ Printer	540.00* (12.00)
Telex Instruments 855 DP/LQ w/Tractor	718.00* (15.50)
Toshiba P-1351 160/100 CPS DP/LQ	1,200.00* (25.92)

ACCESSORIES AND SUPPLIES

Brand Name SSSD Datasets	11.00* (1.00)
Guaranteed for Life! Box of 10 Chalkboard Powerpad	62.00* (1.50)
Kensington Microwave System Saver Fan	58.97* (1.50)
Koala KoalaPad Touch Tablet	78.00* (1.50)
Hayes Mech II Joystick for /e	25.00* (2.50)
Hayes Mech III Joystick w/Fire Button for /e	31.00* (1.50)
M & R Sup-R-Mod RF Modulator	44.00* (1.50)
PC Network Cooling Fan with Surge Protector & Dual Outlets	25.00* (2.50)
WP Printer Paper 2600 Sheets Microline Perfs	17.00* (10.00)

CALL TOLL FREE 1-800-62-S-A-V-E (orders and membership only)
 In Illinois call (312) 280-0002 validation M5A1
 CIRCLE 376 ON READER SERVICE CARD



It's time to get

The reviews are in and everyone agrees. There's never been a personal computer that's easier or more fun to use than the Macintosh.™ Especially with terrific programs like MacWrite™ and MacPaint™ to get you started.

But if you really want to take full advantage of your Mac's tremendous abilities, you'll need to go a step further than just writing letters and painting pictures. You'll need some serious business tools to make you more productive.

And the first one to purchase is Habadex.

Desktop management has arrived.

Habadex is pioneering an entirely new category

in computer software—desktop management. It's the only program that lets you do on your Mac what you now do on your desk. So you can put your address and phone directory, appointment calendar, things-to-do list—and any other paperwork that clutters your desk and your mind—right into your Mac.

And because Habadex was designed specifically for the Macintosh, it incorporates all of the same graphic capabilities that have made Apple's new computer so incredible. And incomparable.

A data base based on your own needs.

Habadex lets you create and sort hundreds of

records. You can arrange the large number of fields however you choose. By first name, last name, company, category, zip code, etc. You can even rename fields, and rearrange or change information easily for complete flexibility.

You've found your calling.

Habadex lets you create and arrange an entire phone directory within your data base. It dials direct and long-distance calls, automatically inserting your O.C.C. like Sprint or MCI. It has a quick-dial feature for storing commonly-called personal or emergency numbers. And it works with the inexpensive HabaDialer or your current modem.

OK Mac. down to business.

It gets you through the day. Every day.

Habadex is also one of the most complete calendars you'll ever need. It provides monthly overviews and day-at-a-glance scheduling, through December 1985. Lets you keep track of all your appointments and automatically updates them throughout each day. Even leaves room for valuable travel and expense information.

It also features a things-to-do list which is automatically updated when you

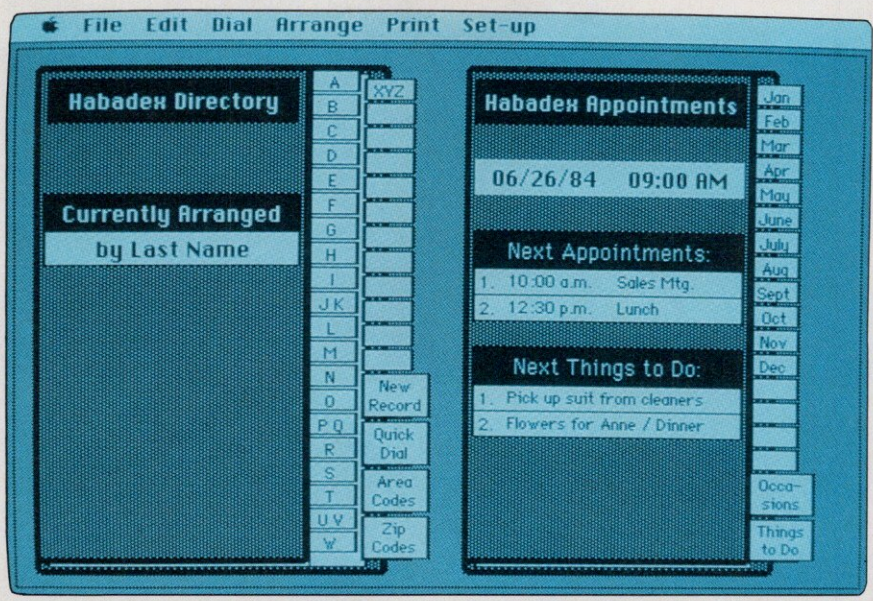
check items off. Plus complete area code and zip code directories with ranges for all cities in the

mailing labels and custom lists in any format and size of your choosing. It mail merges form letter text with

your data base and prints them for any or all of your records—in virtually any order, arrangement or quantity. And in your choice of fonts.

Are you ready to get more from your Mac than just words and pictures? Then you're ready

for Habadex. It's the serious business tool that still lets you have some serious fun.



United States and Canada.

Print it your way.

Habadex also prints



habadex™

Making Apples more tempting than ever.™

CIRCLE 338 ON READER SERVICE CARD

Leave the Drawing to Us

Electronic clip art

You are a businessperson issuing a sales report, or you're a teacher preparing a class handout, or the members of your organization are waiting for the latest newsletter, or you are designing invitations to a party, or perhaps you just love to doodle.

You bought a Macintosh because of its graphics abilities, but you don't have the artistic skill, or you just don't have the time. You need clip art.

What Is Clip Art?

Clip art is "ready-to-use" art. It consists of stylized "spot" drawings, old engravings, symbols, cartoons, signs, borders—any image that is in the public domain or has its copyright held by a publisher who offers the work, copyright-free, for the use of the purchasers of the book that contains the drawings. Clip art is used as is, or edited, for such diverse applications as decoupage, advertising, newsletters, and business and school publications.

The Macintosh computer, with its crisp black-and-white, high-resolution display, coupled with the Image-writer's excellent merged text and graphics output, is sure to establish a demand for electronic clip art. Not surprisingly, four of the newest software packages for the Mac anticipate this demand.

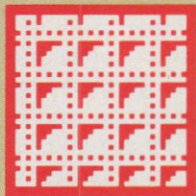


None of the four packages is copy-protected, and you need MacPaint and MacWrite to take full advantage of them.

CLICKART

ClickArt comes in a blue plastic, 3½-inch disk case. A folded 12 × 14-inch sheet of paper fits within the confines of the box. One side of this paper is a poster with images from ClickArt, and the other side contains documentation on how to use the software.

The instructions are easy to follow, but you may find the tightly packed copy difficult to read. I caution you against following the direction to throw your scrapbook file into the trash so that you can put the ClickArt scrapbook onto your disk. Instead, rename your scrapbook file and store



it outside the system folder until you are sure you will not need the pictures it contains. In the world of computers, when in doubt, don't throw it out!

The ClickArt documentation urges you to use the program's drawings as they are or to use them as a starting point for your own creativity. Unfortunately, however, it does not give you any hints on *how* to use the drawings creatively.

Returning your registration card enrolls you in the ClickArt Users' Group, which entitles you to receive the *ClickArt Newsletter*. It contains examples and tips on ClickArt applications. Users who submit ideas that are published in the newsletter will receive the next ClickArt portfolio free.



The Software

When I opened ClickArt, six folders, a MacWrite document, and a scrapbook icon spilled onto my desktop. Assuming that the MacWrite document contained pertinent information, such as a list of pictures and/or hints on how to use them, I ejected the ClickArt disk, inserted MacWrite, and opened the document. The object of my curiosity was nothing more than a copyright notice. I returned to my desktop, opened MacPaint, and looked at the 25 MacPaint docu-



ments. I discovered the following:

1. Titles often have nothing to do with the contents of a document. "Good Guys" offers three paper clips, four stars, a fountain pen, a pointing finger, RSVP, ASAP, and a border design. Good guys?
2. The images within a document seldom relate to each other in theme. "More Little Guys" offers an inflated frog, a rolled-up panda, an elephant, a large screw, two portraits of singers, and a vase.
3. The choice of subject and the quality of the art leave much to be desired.

How useful are a ¾-page rendering of an egret or portraits of Hart, Mondale, Jackson, and Boy George? I printed the document "Al and Jimmy" and asked three different people to identify the pictures. Everyone rec-



ognized Albert Einstein, but no one knew who "Jimmy" was. Jimmy who? Cagney? Walker? I don't know. If it is either one, why with Einstein? Indeed, why at all?

With a few exceptions, ClickArt's rough sketches and overworked portraits do not qualify as professional clip art.

Summing Up

ClickArt may be adequate if you want pictures to "play" with. T/Maker's press release states that the company wanted its first collection of



images to be entertaining as well as useful. "... admit it. Part of the reason you bought your Macintosh was to have fun with it... So, take your Macintosh on a cruise through ClickArt, and enjoy. Aren't you glad you didn't buy a boring computer?"

I am glad that I bought a Macintosh, and I do have fun with it. I look forward to buying software that will add to the fun and usefulness of this exciting computer, but, from my point of view, as an artist, ClickArt has little to offer.

MCPIC

McPic comes boxed with an excellent 28-page manual that includes instructions on how to use the program, a list of categories and pictures within each category, and a section of ideas. In "Ideas" you'll find 29 fully



illustrated, step-by-step examples of how to alter and use the images on the disk. The suggestions should inspire experienced artists as well as novices. A section that is entitled "OOOPS!" lists some of the things that can go wrong and how to remedy them.

The Software

When you open McPic, an open folder of scrapbook icons, arranged alphabetically, appears on the desktop. Unlike the other packages in this review, which supply their images on MacPaint documents, McPic uses scrapbooks, an approach that enables you to use these images with any Macintosh program that supports the Mac's standard Cut and Paste functions. You must copy one or more of the scrapbook files from the McPic





YOU CAN FIND **A+DISK** AT:

ALABAMA

ANNISTON
Kemp's Officenter
HUNTSVILLE
Anderson
Computers
Software City
MONTGOMERY
Trade N' Books

ALASKA

JUNEAU
Juneau Electronics

ARIZONA

PHOENIX
Software City
Soft Wars

CALIFORNIA

BAKERSFIELD
Software World
BELMONT
Sci Tech Computers
BERKELEY
Lyon Enterprises
BREA
Software Only
CAMPBELL
Triangle Computer
Systems
CARMEL
Computer Design
Center
CITRUS HEIGHTS
Computerland/
Citrus Heights
Software Plus
CONCORD
Software Centre
International
CUPERTINO
Clear Well Lighted
Place
DANA POINT
Computers Unlimited
DIAMOND BAR
Software Plus
DUBLIN
Computer Solutions
EL CERRITO
Computerland
EL SEGUNDO
Stuff & Puff
ENCINITAS
Infotainment
Computers
ENCINO
Software Centre
International
EUREKA
WCI Computer
Central
FOSTER CITY
The Workstation
FRESNO
Software Centre
FULLERTON
Computer Rent
GOLETA
Personal Electronics
GRAND TERRACE
Micro Sense
HAYWARD
Software Centre
International

LANCASTER

Computerland/
Lancaster
LIVERMORE
Software Galeria
LOS ANGELES
Computer Showcase
Software Centre
NEWBURY PARK
Computerland/
Thousand Oaks
OAKLAND
Computer Store/
Oakland

ILLINOIS

ALGONQUIN
Computers 'N'
Software
DE KALB
Appletree Stereo
ELMHURST
Computer Junction
LAGRANGE
Computer Junction
LISLE
The Computer Patch
Inc.

NORTHBROOK

Computerland
INDIANA
INDIANAPOLIS
A-Computer Store
MICHIGAN CITY
Indiana Computer
Ctr.

IOWA

AMES
Beacon Micro Center
CRESTON
The Computer Tree
DAVENPORT
Software City
DES MOINES
Computer Emporium
NEWTON
Forbes Office Equip.
Inc.

KANSAS

EMPORIA
Mr. Computer
LAWRENCE
EZ-CCMP Computer
Store
LIBERAL
Tradewind Systems

COLORADO

WESTMINSTER
Software City
DELAWARE

WILMINGTON
Nor-Mar Inc.

FLORIDA

BOCA RATON
Software, Software
Inc.
CORAL GABLES
Software Centrum
FORT MYERS
Computer Software
Center
KISSIMMEE
World of Micros
MELBOURNE
City Newsstand
ORLANDO
Compumax
WEST PALM BEACH
Great American
Book Co.

GEORGIA

AUGUSTA
Computer Pro.
BRUNSWICK
Comp. Sales &
Services
CHAMPEE
Software Showcase
HAWAII

HONOLULU

Memory Lane
Computer
ILLINOIS

ALGONQUIN
Computers 'N'
Software
DE KALB
Appletree Stereo
ELMHURST
Computer Junction
LAGRANGE
Computer Junction
LISLE
The Computer Patch
Inc.

NORTHBROOK

Computerland
INDIANA

INDIANAPOLIS
A-Computer Store
MICHIGAN CITY
Indiana Computer
Ctr.

IOWA

AMES
Beacon Micro Center
CRESTON
The Computer Tree
DAVENPORT
Software City
DES MOINES
Computer Emporium
NEWTON
Forbes Office Equip.
Inc.

KANSAS

EMPORIA
Mr. Computer
LAWRENCE
EZ-CCMP Computer
Store
LIBERAL
Tradewind Systems

COLORADO

WESTMINSTER
Software City
DELAWARE

WILMINGTON
Nor-Mar Inc.

FLORIDA

BOCA RATON
Software, Software
Inc.
CORAL GABLES
Software Centrum
FORT MYERS
Computer Software
Center
KISSIMMEE
World of Micros
MELBOURNE
City Newsstand
ORLANDO
Compumax
WEST PALM BEACH
Great American
Book Co.

BURLINGTON

DRA Computers
CAMBRIDGE
Tech Computer Store
The Program Store
FRAMINGHAM
DRA Computers
The Program Store
HANOVER
Egger Mahon
Computer
Computer Concepts
LUDLOW
Northeast Computer
Store
NORWELL
Personal CCMP,
Resources
SAUGUS
On-Line Computer
Center
WEST SPRINGFIELD
Software Etc.
TEWKSBURY
Microtronics
WATERTOWN
Micro Source/
Financial
WELLESLEY
Green's Software +
WOBURN
Micro Con Software
Ctrs.

MAINE

LEWISTON
Advantage Business
Store
WATERVILLE
Home Port Computer
MARYLAND

BETHESDA
The Software Store
COLUMBIA
Softwhere Unlimited
ELDERSBURG
Memory Bank
Computer
LEXINGTON PARK
Books, Etc.
LUTHERVILLE
Programs Unlimited
SILVER SPRING
Computer Age
STARKVILLE
Teletronics
WHEATON
The Software Store

MARYLAND

BETHESDA
The Software Store
COLUMBIA
Softwhere Unlimited
ELDERSBURG
Memory Bank
Computer
LEXINGTON PARK
Books, Etc.
LUTHERVILLE
Programs Unlimited
SILVER SPRING
Computer Age
STARKVILLE
Teletronics
WHEATON
The Software Store

MICHIGAN

ANN ARBOR
Complete Computer
Ctr
Learning Center
BATTLE CREEK
Krum's Photography
W. BLOOMFIELD
I Brouse Books
EAST DETROIT
Just Software
GARDEN CITY
Retail Computer
Center
GRAND RAPIDS
Software Carousel

MICHIGAN

ANN ARBOR
Complete Computer
Ctr
Learning Center
BATTLE CREEK
Krum's Photography
W. BLOOMFIELD
I Brouse Books
EAST DETROIT
Just Software
GARDEN CITY
Retail Computer
Center
GRAND RAPIDS
Software Carousel

E. LANSING

INACCMP/Comp
Ctrs
LIVONIA
Computer Horizons
MT PLEASANT
Compu Ed
MUSKEGON
Advance Manage-
ment SYS
OKEMOS
Software City
PONTIAC
Computer Mart NW
ROCHESTER
Rochester Book
Center
SAGINAW
Computerland
SOUTHFIELD
Software City
WARREN
Command Computer
System

MINNESOTA

MINNETONKA
Sailors Software
ST. PAUL
Quester Corporation
MISSOURI

CREVE COEUR
Software City
JOPLIN
Computer Patch
ST. LOUIS
Software Centre
NEBRASKA

OMAHA
Software City
NEVADA

LAS VEGAS
Home Computer
PAHRUMP
H&W Computer
Systems
NEW HAMPSHIRE

HANOVER
Dartmouth
Bookstore
HUDSON
Green's Software +
NEW JERSEY

CHERRY HILL
Computer Workshop
CLOSTER
Computer City
EATONTOWN
Computerland
HARTON
Software Gallery
OCEAN
Transnet Computer
Forms
PINEBROOK
Software City
PITMAN
Computer Run
RED BANK
Software City
ROCKAWAY
Software Station
EAST RUTHERFORD
Micro Merchants

NEW JERSEY

CHERRY HILL
Computer Workshop
CLOSTER
Computer City
EATONTOWN
Computerland
HARTON
Software Gallery
OCEAN
Transnet Computer
Forms
PINEBROOK
Software City
PITMAN
Computer Run
RED BANK
Software City
ROCKAWAY
Software Station
EAST RUTHERFORD
Micro Merchants

SOMERVILLE

Software Store Inc.
TEANECK
Software City
TOMS RIVER
Atlantic Computer
SYS
Computerland
UNION
Union Software
Outlet
WOODBIDGE
Good Earth Software
NEW YORK

ALBANY

Computer
Professionals
BROOKLYN
Pure Logic
Computers
EAST PATCHOGUE
Palermo Business
SYS
NEW YORK
The Computer Store
at Macy's
SYOSSET
Computerland
OHIO

ALLIANCE
Computer World
CANTON
Software Ctr. of
Canton
CENTERVILLE
Software City
CINCINNATI
Cincinnati Computer
Store
CLEVELAND/BAY
VILLAGE
North Coast
Computer
COLUMBUS
The Micro Center
Programs Unlimited
DAYTON
Computerland
AI's Computers Inc.
LANCASTER
The Bookcase
LIMA
Computer
Connection
LORRAINE
Computer Network
TOLEDO
ABACUS II
WARREN
N.E. Microsystems
WESTERVILLE
The Micro Center
WORTHINGTON
Programs Unlimited
ZANESVILLE
Programs Unlimited

OHIO

ALLIANCE
Computer World
CANTON
Software Ctr. of
Canton
CENTERVILLE
Software City
CINCINNATI
Cincinnati Computer
Store
CLEVELAND/BAY
VILLAGE
North Coast
Computer
COLUMBUS
The Micro Center
Programs Unlimited
DAYTON
Computerland
AI's Computers Inc.
LANCASTER
The Bookcase
LIMA
Computer
Connection
LORRAINE
Computer Network
TOLEDO
ABACUS II
WARREN
N.E. Microsystems
WESTERVILLE
The Micro Center
WORTHINGTON
Programs Unlimited
ZANESVILLE
Programs Unlimited

UTAH

OGDEN
Computer Store
VIRGINIA

RICHMOND
Computer Concepts
Database
SPRINGFIELD
The Software Store
VIENNA
Software Center
WASHINGTON

BELLEVUE
Software City
WISCONSIN

GREENFIELD
Byte
Shop/Milwaukee
MILWAUKEE
Array of Software
North Shore
Computers
OSHKOSH
Union Bookstore
WALSAU
Computerland

OKLAHOMA

TULSA
The Computer Store
OREGON

BEAVERTON
The Software Station

PENNSYLVANIA

FRAZER
Computer Forum
PITTSBURG
Computer Store
WILKES-BARRE
Computerland
SOUTH CAROLINA

UNION

SPARTANBURG
A+ Computer
TENNESSEE

KNOXVILLE
MCS Inc.
MEMPHIS
Software Store
Stuart Software
NASHVILLE
Endata Business Pro
SEVIERVILLE
Svrgata Computer
Systems
TEXAS

ARLINGTON
Hardin Computer
BROWNWOOD
Computers Etc.
DALLAS
Program Place
EL PASO
Norton Bros. Com-
puter CTR
FT. WORTH
Software Terminal
HOUSTON
Software Place
Software Station, Inc.
LAREDO
Southwest Computer
Ctr.
SAN ANTONIO
Periodical
Management
Software Store
TEMPLE
Computer Solutions
WICHITA FALLS
Computer Store
UTAH

OGDEN
Computer Store
VIRGINIA

RICHMOND
Computer Concepts
Database
SPRINGFIELD
The Software Store
VIENNA
Software Center
WASHINGTON

BELLEVUE
Software City
WISCONSIN

GREENFIELD
Byte
Shop/Milwaukee
MILWAUKEE
Array of Software
North Shore
Computers
OSHKOSH
Union Bookstore
WALSAU
Computerland

OGDEN
Computer Store
VIRGINIA

RICHMOND
Computer Concepts
Database
SPRINGFIELD
The Software Store
VIENNA
Software Center
WASHINGTON

BELLEVUE
Software City
WISCONSIN

GREENFIELD
Byte
Shop/Milwaukee
MILWAUKEE
Array of Software
North Shore
Computers
OSHKOSH
Union Bookstore
WALSAU
Computerland

BEAVERTON
The Software Station

WEST VIRGINIA

SO. CHARLESTON
Computerland
GUAM

AGANA, GUAM
Marianas Electronics
CANADA

ALBERTA
EDMONTON
Computer Circle
RED DEER
Computer Terminal
BRITISH COLUMBIA

RICHMOND
Super Software Inc.
VANCOUVER
Integrated DP
Supplies
Minitronics
NEWFOUNDLAND

ST. JOHNS
Micro-Tech Com-
puter Center
NOVA SCOTIA
Halifax
Atlantic News
ONTARIO

DOWNSVIEW
Canadian
Communications
MISSISSALGA
Home & Business
Computers
THUNDER BAY
Allied Computer
Center Inc.
TORONTO
Computer Software
Plus
Exceltronix
Components
Fastron Computer
Inc.

QUEBEC
BROSSARD
S.I.M. Micro Inc.
DOLLARD DES
ORME
Compo-Nord 11 Inc.

QUEBEC
BROSSARD
S.I.M. Micro Inc.
DOLLARD DES
ORME
Compo-Nord 11 Inc.

QUEBEC
BROSSARD
S.I.M. Micro Inc.
DOLLARD DES
ORME
Compo-Nord 11 Inc.

QUEBEC
BROSSARD
S.I.M. Micro Inc.
DOLLARD DES
ORME
Compo-Nord 11 Inc.

QUEBEC
BROSSARD
S.I.M. Micro Inc.
DOLLARD DES
ORME
Compo-Nord 11 Inc.

QUEBEC
BROSSARD
S.I.M. Micro Inc.
DOLLARD DES
ORME
Compo-Nord 11 Inc.

QUEBEC
BROSSARD
S.I.M. Micro Inc.
DOLLARD DES
ORME
Compo-Nord 11 Inc.

QUEBEC
BROSSARD
S.I.M. Micro Inc.
DOLLARD DES
ORME
Compo-Nord 11 Inc.





LETTER QUALITY PRINTING FOR YOUR MACINTOSH™

with

ProPrint™



CDI's **ProPrint** is the **MOST COMPREHENSIVE** letter quality program for the MAC on the market today! You can print MacWrite™ files on all popular (serial) letter quality printers and prepare documents which are professional in appearance.

- **Versatile — formatting includes**

- Underlining
- Subscript
- Bold face
- Ribbon color change
- Superscript
- Tabbing
- Justification: Right, Left, Center, Full

- **Multi-tasking**

- **Available for immediate delivery at these low prices:**

ProPrint \$ **74⁰⁰**

ProPrint with cable \$ **99⁰⁰**

ProPrint with A/B Switch \$ **225⁰⁰**
(Includes 2 Cables)

Creighton Development, Inc.

4931 Birch Street
Newport Beach, California 92660
(714) 476-1973

TM—Macintosh is a trademark licensed to Apple Computer, Inc.
—ProPrint is a trademark of Creighton Development, Inc.
—MacWrite is a trademark of Apple Computer, Inc.

- **Easy to use, yet POWERFUL:**

- Mouse driven; uses pull down menus
- Auto loads and prints up to 50 files
- Single or multiple copies
- Auto default to most recent printer settings upon start up (no need to reload printer specs before each use)

- **Fully warranted for one year**

ORDER TODAY OR SEE YOUR DEALER!!

Please rush me Mac letter quality program:

- ProPrint** ... \$74.00 **ProPrint** w/cable ... \$99.00
 ProPrint with A/B Switch and 2 Cables \$225.00
(add \$2.50 for shipping & handling) (Calif. residents add 6% sales tax)

Name _____

Street _____

City _____ St. _____ Zip : _____

Check Enclosed Charge my Mastercard or Visa

Card No. _____ Exp. Date _____

Creighton Development, Inc.

4931 Birch Street, Newport Beach, CA 92660
(714) 476-1973

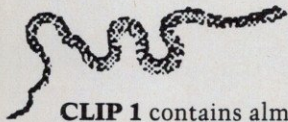


"The thoughtful touches and the manual alone are worth twice the price."

"Do you mean to tell me that I don't have to print out my own image catalog?"

"First Class!"

A few of the comments from our customers.



CLIP 1 contains almost 200 complete and unique, high quality images plus many variations of these images in size and tone quality.

CLIP 1 comes with a complete manual contained in a high quality 3-ring looseleaf binder with

- over 40 pages of instructions
- lots of technical help and hints on **CLIP 1** and the MAC
- source references for all images
- many illustrations
- a printed copy of the **complete image catalog**



ANNOUNCEMENT

CLIP 2 with almost 200 more, new and unique images and manual of the fine CLIP 1 quality will be ready for shipment no later than November 1, 1984.



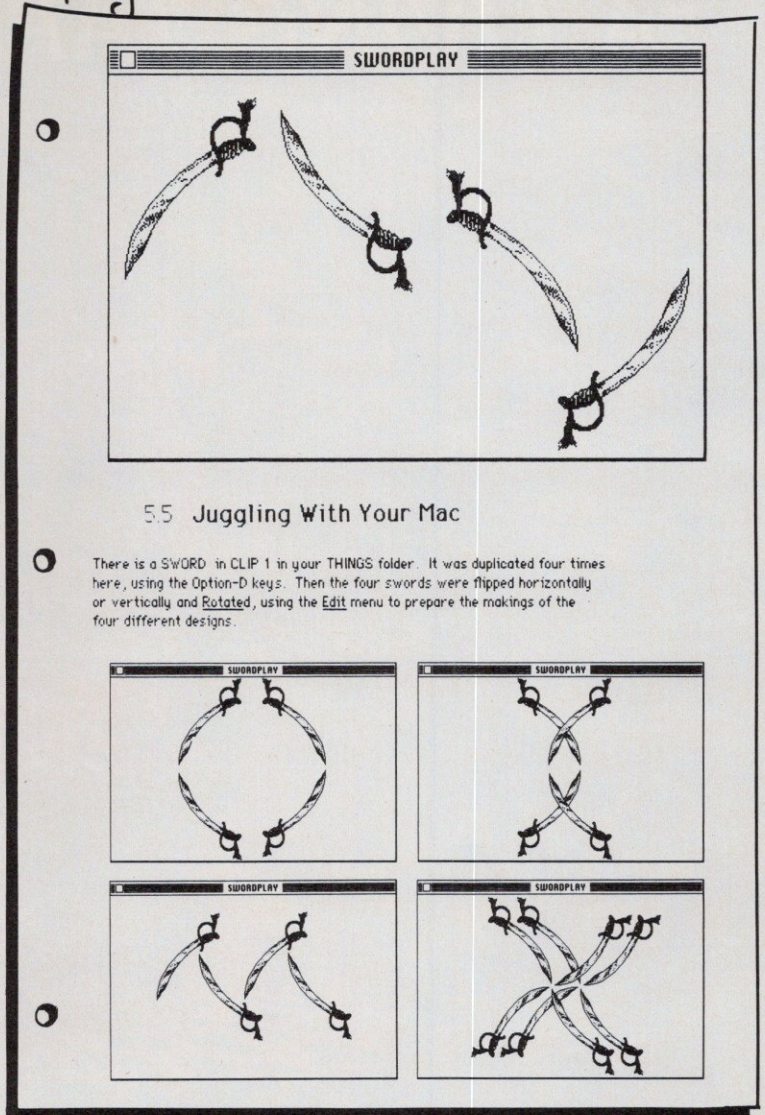
CLIP 2 contains many HOLIDAY images



Frazier, Peper & Associates
The MACnificent Software Company™
P.O. Box 3019, Santa Cruz, CA 95063
(408) 476-2358

CIRCLE 148 ON READER SERVICE CARD

a page from the CLIP 1 manual

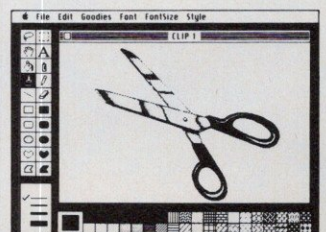


CLIP manuals are especially designed to stimulate your creativity and help you get the most from your MAC

\$29.95 for the complete **CLIP 1** package including image disk and binder with manual.

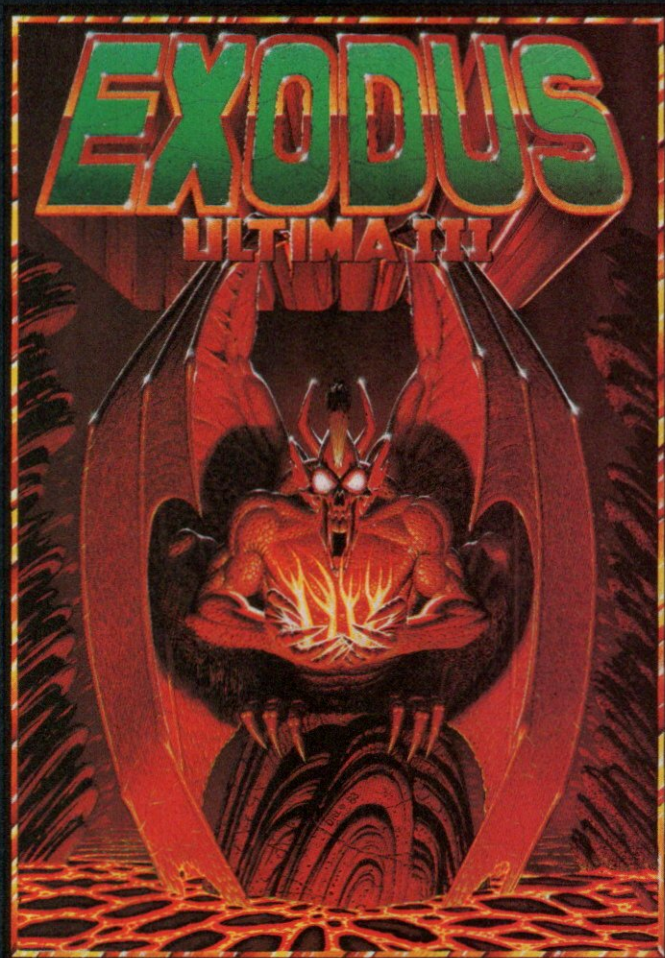
Add \$2.00 in U.S. for shipping/handling. CA residents please add 6½% tax.

VISA/MASTERCARD/COD accepted.



CLIP ART FOR THE MAC **CLIP 1**

“A LIVING TAPESTRY . . .”



“The world of Ultima III can only be compared to a living tapestry — complex and beautiful . . . This is the best fantasy game in computing. Indeed, it is one of the best fantasy worlds in which to live. Lord British is a veritable JRR Tolkien of the keyboard.” — Popular Mechanics

“Exodus: Ultima III, with a superior plot to match its superior gaming system, is a great game. It upgrades the market; in several ways it sets new standards for fantasy gaming state of the art.” — Softline

“Exodus: Ultima III is Lord British’s magnum opus — so far. It’s fun and exciting to play and constantly intriguing. And the ending is marvelously unexpected and not a bit disappointing — except that it is the ending, and as with a good book, you’ll probably wish there were more.” — Softalk

Available on: Apple, Atari, Com64, IBM

ORIGIN
SYSTEMS INC.

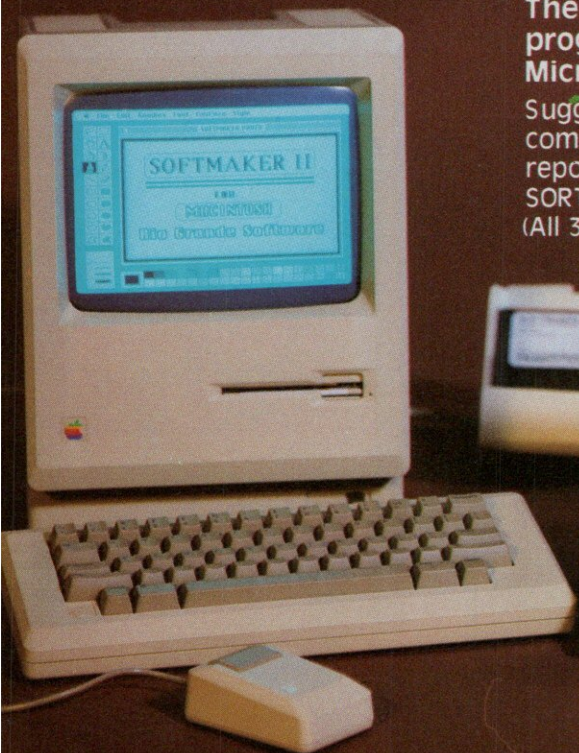
1545 OSGOOD ST., #7 NORTH ANDOVER, MA 01845
(617) 681-0609

CIRCLE 141 ON READER SERVICE CARD

AVAILABLE NOW!

RGS SOFTMAKER II™

for your Macintosh Computer



The data-base oriented program generator for Microsoft® BASIC.

Suggested retail only \$150.00 complete with FREE "SOFTREP" report program and FREE "SOFT SORT" sort/merge program. (All 3 included.)

Your Macintosh is ready and waiting for RGS SOFTMAKER II, the extremely user-friendly, data-base oriented program generator. BUT, most important to you right now is that SOFTMAKER II is especially ideal for and designed for the Macintosh Computer; will enhance the utility and enjoyment of your Macintosh; provides generated programs that will delight you; is complete at one low price that makes it the greatest data-base generator value.

Menu-driven; your programs will be error-resistant; produce the well-designed programs you want faster; use SOFTMAKER II as "YOUR PARTNER IN

SOFTWARE DEVELOPMENT" freely — for your personal use or to sell to other users. Includes so much! ... user's manual (120 pages); report production ability; professional results (whether you're non-professional or professional), proven to over 14,000 happy users; includes complete documentation; 30 day money-back guarantee of satisfaction.

ORDER TODAY from your favorite computer retailer. If he cannot supply you, send us his name or ORDER DIRECT ... \$150.00 prepaid. No C.O.D.'s. Illustrated literature and information is available without charge. **WRITE, RIGHT NOW.**

RGS SOFTMAKER II — A family of program generators for Macintosh, IBM-PC, TRS-80, TAVA, EPSON, SPERRY COLUMBIA, EAGLE, CORONA, COMPAQ, TI PROF., WANG, DIGITAL AND OTHER CP/M computers.

RGS RIO GRANDE SOFTWARE

1107 Upas, McAllen, Texas 78501
512-630-6979

Microsoft and Microsoft BASIC are registered trademarks of Microsoft Corporation. SOFTMAKER II and RGS are registered trademarks of Rio Grande Software, Inc. Macintosh is a trademark of Apple Computer, Inc.

CIRCLE 131 ON READER SERVICE CARD

Pipeline

PFS:File and PFS:Report

Completely redesigned, PFS:File and PFS:Report now work with the Macintosh and its mouse, pull-down menus, and cut-and-paste procedures. Users of these information-management programs can reduce data-entry time by using the Macintosh's clipboard to store and recall commonly used phrases, and they can save PFS data in ASCII format to send via modem.

PFS:File allows users to store, find, sort, and print large amounts of information—including mailing labels—and use PFS:Report to produce presentation-quality reports, table totals, averages, and column counts. You can store up to 2900 records per diskette using PFS:File on the Macintosh and up to 32,000 records on a hard disk. (List Price: \$125 each)

Software Publishing Corporation
1901 Landings Drive
Mountain View, CA 94043
(415) 962-8910

CIRCLE 923 ON READER SERVICE CARD

Softmaker II for the Macintosh

New from Rio Grande Software, Softmaker II, a database-oriented program generator for Microsoft BASIC, provides a program generator, Softrep report program, and Softsort sort/merge program. With Softmaker II, programs are error-resistant, well designed, and faster to produce. (List Price: \$150)

Rio Grande Software, Inc.
1107 Upas
McAllen, TX 78501
(512) 630-6979

CIRCLE 924 ON READER SERVICE CARD

MacModem

MacModem is a communications package for the Macintosh that includes a 1200 bps modem, communications software, cables, and a subscription to the Dow Jones News/Retrieval Service with one free hour of use.

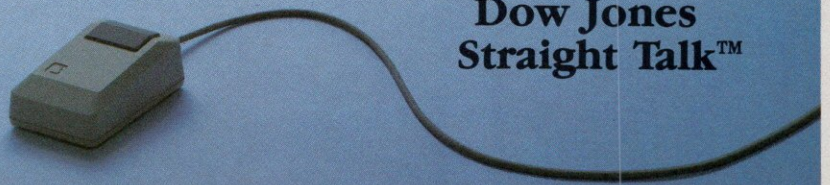
The Bell 212A-compatible, direct-connect modem offers auto-dial and auto-answer capability, tone and

Get that Summer House.

The stock market's about to close. That stock you bought has leveled off, and price patterns indicate that the bottom could drop out at any time. You should act before trading ends today.

Now There's Smart Software for the Mac.

With Straight Talk, the smart software from Dow Jones, you can get current stock prices right on your desk. Maybe even a selling price that will allow you to buy the vacation property you've always wanted.

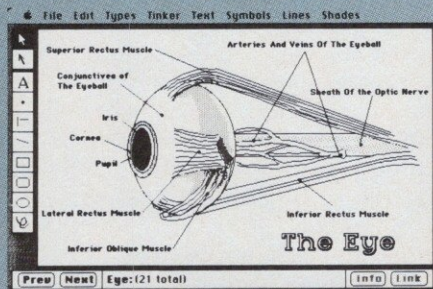
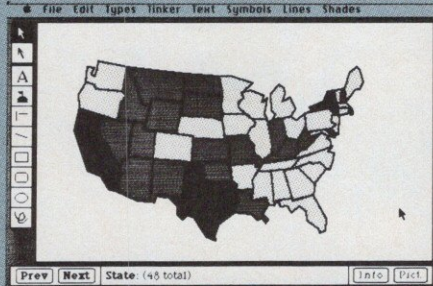


Filevision

With Filevision—a combination filing system and object-oriented drawing system for the Macintosh—you can call up information about an object on the screen by pointing at it with the mouse. For closer study, you can select groups of objects that share common characteristics. You can also select information to appear in reports or drawings to print with certain items highlighted. The ready-made palette contains 20 symbols, and additional symbols can be created. (List Price: \$195)

Telos Software Products
3420 Ocean Park Blvd.
Santa Monica, CA 90405
(213) 450-2424

CIRCLE 913 ON READER SERVICE CARD



Filevision, from Telos Software

MacManager

A realistic, competitive management-simulation program for the Macintosh, MacManager gives you complete management control of a hypothetical company. By making business decisions based on financial data, players try to maximize the profits earned by their company. (List Price: \$49.95)

Harvard Associates, Inc.
260 Beacon Street
Somerville, MA 02143
(617) 492-0660

CIRCLE 914 ON READER SERVICE CARD

Be Smart.

See Straight Talk at your Macintosh dealer or call: 1-800-257-5114 for further information.



Dow Jones Straight Talk™

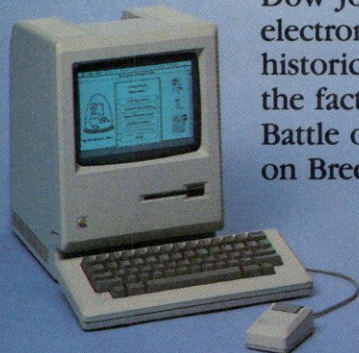
(In New Jersey, Alaska, Hawaii and
Canada call: 1-609-452-1511.)

Get an "A" on your Term Paper.

It's one o'clock in the morning. Your paper on the American Revolution is due at 8 a.m. Where was the misnamed Battle of Bunker Hill *really* fought? It could be the difference between an "A" and a "B".

Now There's Smart Software for the Mac.

With Straight Talk, the smart software from Dow Jones, you can use an electronic encyclopedia to find the historical fact you need. Even if it's the fact that on June 17, 1776 the Battle of Bunker Hill was fought on Breed's Hill.



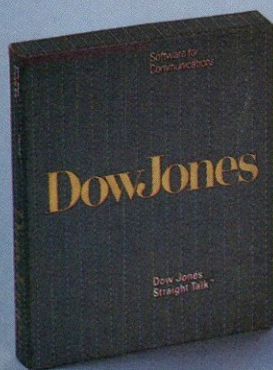
**Dow Jones
Straight Talk™**

Get that Big Promotion.

In half an hour, your boss is due to finalize a merger with a company you have doubts about. His career rides on this deal. How can you change his mind before it's too late?

Now There's Smart Software for the Mac.

With Straight Talk, the smart software from Dow Jones, you can get the lowdown on a company without ever leaving your office. You might even discover a revealing fact that saves your boss's job and earns you a new one.



**Dow Jones
Straight Talk™**

Pipeline

lows protected disks to be duplicated rapidly for commercial production purposes. (*List Price: \$495, licensing only*)

Double-Gold Software, Inc.
3900 Moorpark Avenue, Suite 29
San Jose, CA 95117
(408) 554-9133

CIRCLE 910 ON READER SERVICE CARD

Paint Mover

Paint Mover is a utility that allows you to convert a MacPaint file into a data file compatible with Microsoft BASIC. The converted file can be loaded directly into an array through BASIC programming and displayed on the screen with the Put command.

With Paint Mover, beginning and experienced programmers alike can use MacPaint to create detailed objects for use in games and other application programs, sophisticated menus, or forms. (*List Price: \$29.95*)

MacinSoft
Box 27583
San Diego, CA 92128
(619) 745-6084

CIRCLE 911 ON READER SERVICE CARD

Macintosh Software Diskette

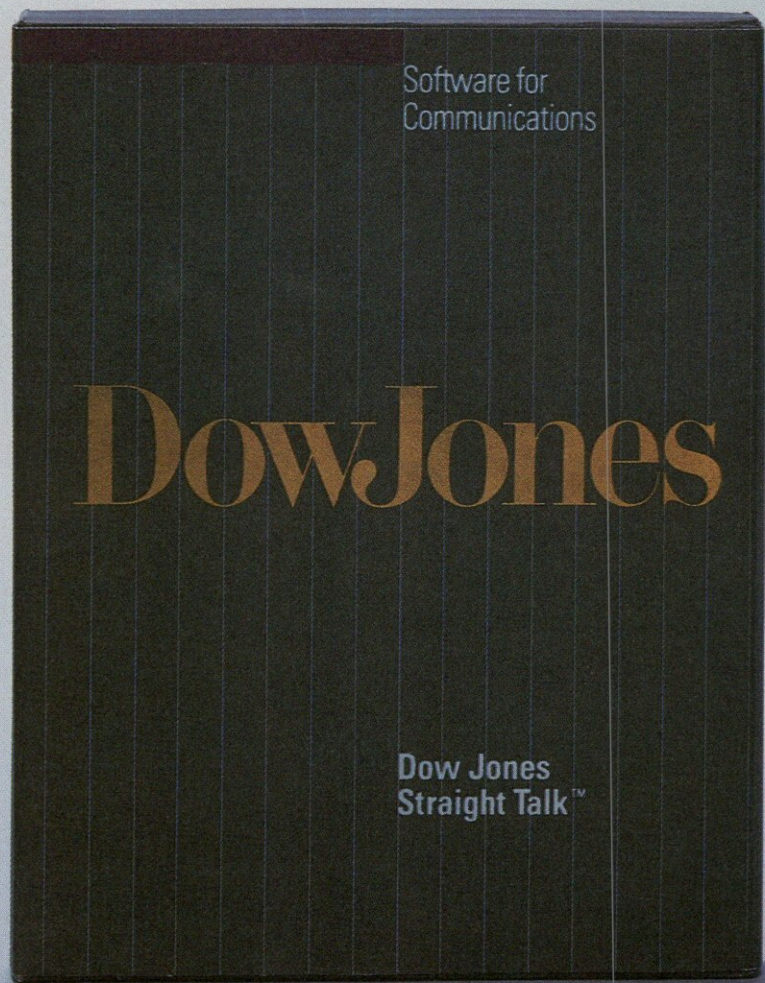
The Macintosh Software Diskette cleans the Macintosh's disk-drive heads, thus helping to prevent errors or data loss due to smoke, dirt, and oxide buildup on the heads. The program guides you through the head-cleaning process with simple instructions that appear on the computer screen. The 3½-inch cleaning diskettes are disposable, and the diskette jacket is reusable.

The Macintosh Software Diskette comes packaged as part of the Nortronic Diskette Head Cleaning Kit. The kit includes—in addition to the software—two cleaning diskettes, a reusable diskette jacket, and head-cleaning spray. (*List Price: Nortronic Head Cleaning Kit, \$39.95; The Macintosh Software Diskette, \$29.95*)

Nortronic Company, Inc.
8101 Tenth Avenue North
Minneapolis, MN 55427
(612) 540-8674

CIRCLE 912 ON READER SERVICE CARD

Now there's smart software™ for the Macintosh.



Introducing Dow Jones Straight Talk™

Think of it. Now there's software as smart as the Apple® Macintosh™ itself. Dow Jones Straight Talk™ offers you all the facts in Dow Jones News/Retrieval® and the other leading

information services. With Straight Talk, you get the exact information you want, when you want it, to get the job done.

Dow Jones Straight Talk is a trademark of Dow Jones & Company, Inc. Dow Jones News/Retrieval is a registered trademark of Dow Jones & Company, Inc. Apple is a registered trademark of Apple Computer, Inc. Macintosh is a trademark licensed to Apple Computer, Inc. Copyright © 1984 Dow Jones & Company, Inc. All Rights Reserved.

CIRCLE 225 ON READER SERVICE CARD

around the board.

In addition, Sargon III enables you to change the board size, change the colors of the squares, save the game in progress, or print it out in high-quality Macintosh graphics. (List Price: \$49.95)

Hayden Software Company
600 Suffolk Street
Lowell, MA 01853
(617) 937-0200

CIRCLE 905 ON READER SERVICE CARD

1stBASE

A relational-database system for the Macintosh, 1stBASE offers multiple-file capability, user-defined file formats, automatic generation of data-entry screens, use of all Macintosh editing features, and nested sorts of up to ten keys. You can use 1stBASE to create personnel files, prospect lists, columnar reports, mailing labels, and other applications. (List Price: \$195)

Desktop Software Corporation
228 Alexander Street
Princeton, NJ 08540
(609) 924-7111

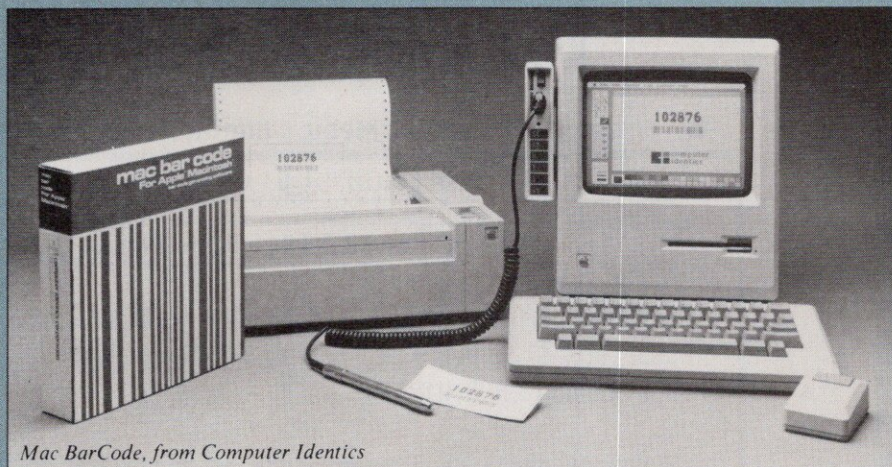
CIRCLE 906 ON READER SERVICE CARD

MegaMerge

A mail-merging program for the Macintosh, MegaMerge turns MacWrite into a powerful home and business word-processing system. Using MegaMerge, you can produce form letters and mailing lists and merge large blocks of text into your documents. MegaMerge can also be used in conjunction with MegaFiler, MegaForm, and MegaDesk.

MegaFiler is a simple file-management system that you can use to design your own forms, find a form based on any criteria, sort any field, and print reports. The form size is limited to what is visible on the screen, but an unlimited number of windows give you immediate access to other forms.

MegaForm allows you to design a form that is an exact replica of almost any document. You can then enter information directly into the form and specify mathematical relationships among the sections containing this in-



Mac BarCode, from Computer Identic

formation. A MegaForm report or form can also accept information from files created with MegaFiler.

MegaDesk consists of three desktop-accessory programs—a calendar, a card file, and reference cards. The calendar allows you to find MegaFiler forms that have been referenced by date and to enter appointment information onto them. The card file allows you to quickly survey MegaFiler files that are on a disk, and the reference-card program provides a basic list database. (List Price: MegaMerge, \$125; MegaFiler, \$195; MegaForm or MegaDesk, less than \$195)

Megahaus Corporation
5703 Oberlin Drive
San Diego, CA 92121
(619) 450-1230

CIRCLE 907 ON READER SERVICE CARD

Mac BarCode

With this program, Macintosh users can generate bar-code labels that meet the requirements of the automotive, health-care, and food-processing and packaging industries, as well as those of the U.S. Department of Defense's LOGMARS programs.

Mac BarCode makes use of the Macintosh's mouse, icons, and pull-down menus. Users enter bar-code data through the keyboard or through networking. (List Price: \$395)
Computer Identic Corporation
5 Shawmut Road
Canton, MA 02021
(617) 821-0830

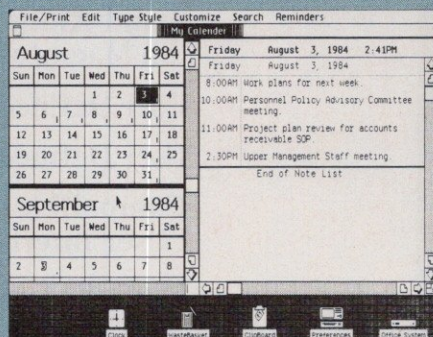
CIRCLE 908 ON READER SERVICE CARD

Desktop Calendar

A combination notepad and appointment book for the Lisa 2, Desktop Calendar integrates your daily schedules and important events with the Lisa Office System. You designate which notes you want to be reminded of later, and Desktop Calendar interrupts you with a reminder at the proper time, even if you are using another program. (List Price: \$295)

Videx, Inc.
1105 N.E. Circle Blvd.
Corvallis, OR 97330
(503) 758-0521

CIRCLE 909 ON READER SERVICE CARD



Desktop Calendar, from Videx

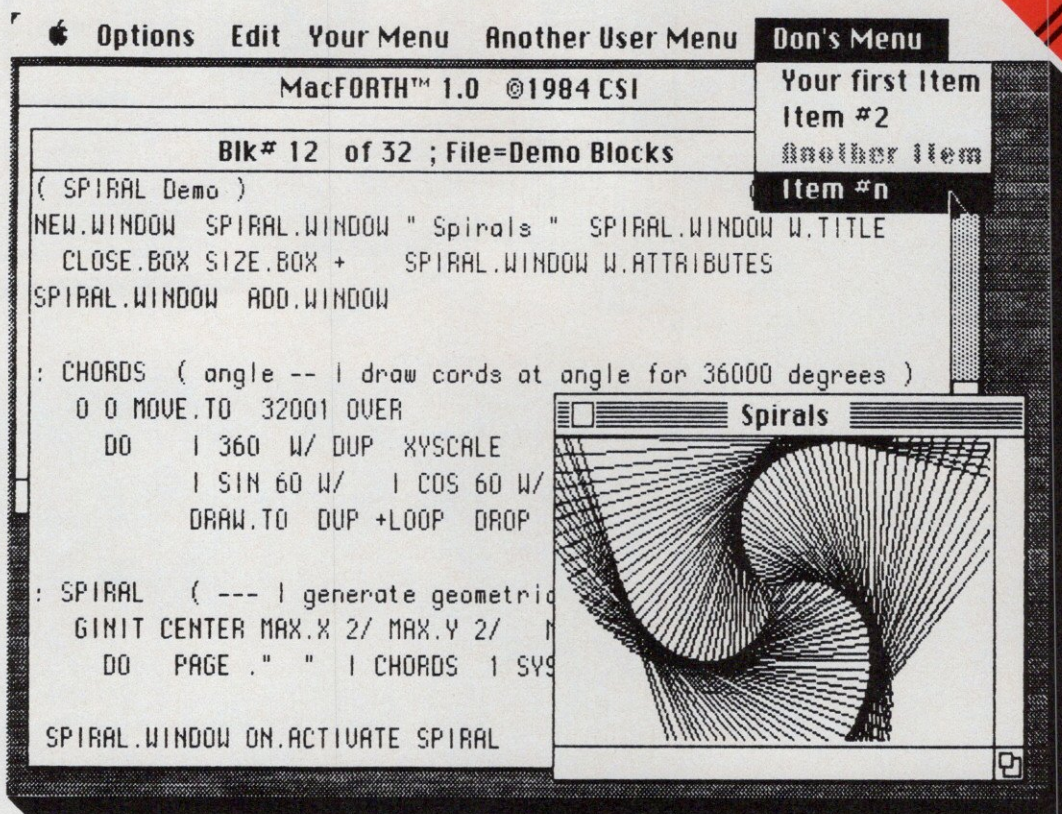
Lock-It-Up

This disk copy-protection system for the Macintosh is menu-driven and gives several levels of security that render standard disks virtually uncopiable by even the most sophisticated pirating methods, including advanced nibble-copy programs.

The system, which Double-Gold Software leases to users, includes a software-duplication system that al-

MacFAST
MacFEATURES

MacFORTH[®]



- Stand Alone Programming on Macintosh
- User Defined MENUS
- User Defined WINDOWS
- Compatible with Macintosh User Interface
- Mac File Compatibility
- Interactive COMPILER & INTERPRETER
- User Access to TOOLBOX
- 32-bit FORTH system
- Large Installed Base with Local User Groups
- Available NOW. . . \$149.00

Contact Your Local Apple Dealer:

OR:



CREATIVE SOLUTIONS

4701 Randolph Road Suite 12
Rockville, Maryland 20852
(301) 984-0262

UCSD PASCAL GOES MAC

And that's great news! Now you can write applications on your Apple™ Macintosh™ in the language programmers love:

UCSD Pascal® The original, fully developed industry standard, now runs on the Mac. Complete with extensions for system development and commercial applications programming. It even includes extensions to interface with a set of popular Macintosh features.

You can write and execute compiled programs in UCSD Pascal on the Macintosh, without fuss or complications.

SofTech Microsystems makes it possible. We created the micro-computer development environment praised by novice and professional programmers alike. Capitalize on today's technology as well as tomorrow's emerging standards. Our completely integrated environment offers you sophistication, coupled with ease of use. And it's modular, expanding to fit your needs.

Start with the basics: UCSD Pascal, a complete set of development utilities; a full-screen, full-function editor and a file manager.

Add another language. That's right! FORTRAN-77 is also available. In addition, our compilers generate compact code allowing you to write complex applications on the 128K MAC. Plus, our languages are truly integrated with the development environment.

Edit with ease. When an error is detected while compiling, the editor may be invoked and positioned at the statement in error.

For the first time, professional programmers now have available a full set of advanced development tools, including a 68000 Assembler and a symbolic debugger.

How do you get more information about our extensive line of products? Contact your local Apple dealer, clip and mail the coupon below, or call us at (619) 451-1230.

You'll find that UCSD Pascal goes MAC. And a lot of other places, too.

SofTech Microsystems, Inc.
16875 W. Bernardo Drive
San Diego, CA 92127

Please send me more information on your Macintosh products.

Name: _____

Title: _____

Address: _____

City: _____ State: _____ Zip: _____

Telephone: () _____

- Area of Activity
- | | |
|---|---------------------------------------|
| <input type="checkbox"/> Commercial Developer | <input type="checkbox"/> Personal Use |
| <input type="checkbox"/> Fortune 1000 | <input type="checkbox"/> Student |
| <input type="checkbox"/> Retailer | <input type="checkbox"/> Other |
| <input type="checkbox"/> Educator | |

Mail to:
Customer Sales and Support
SofTech Microsystems, Inc.
16875 W. Bernardo Drive
San Diego, CA 92127

LOVE AT FIRST BYTE

SOFTech
MICROSYSTEMS

UCSD Pascal is a registered trademark of The Regents of the University of California.

Apple is a trademark licensed to Apple Computer, Inc.

Macintosh is a trademark licensed to Apple Computer, Inc.

Pipeline

Macintosh
and
Lisa

ProPrint

ProPrint for the Macintosh is a printer-driver program that outputs text directly to letter-quality printers, making possible the preparation of professional-quality letters, reports, and documents. ProPrint uses pull-down menus and is compatible with Macintosh word-processing programs. It is available with or without a printer cable. (List Price: With printer cable, \$99; without cable, \$74) Creighton Development, Inc. 4931 Birch Street Newport Beach, CA 92660 (714) 476-1973

CIRCLE 900 ON READER SERVICE CARD

Keystroke Data Base

Keystroke Data Base for the Lisa functions as an electronic filing cabinet with which you can store, find, update, and print information, designing input forms on the screen and executing commands with the mouse. The program sorts reports in up to four fields with 28 columns. To simplify use, all references to storing and retrieving data are made in English—rather than in computer code—and Keystroke uses everyday business terms throughout. To run the Keystroke system, you need a Lisa with 1

megabyte of RAM memory, a hard-disk drive, and a Lisa Office System or Workshop. (List Price: \$595) Brock Software Products, Inc. P.O. Box 799 Crystal Lake, IL 60014 (815) 459-4210

CIRCLE 901 ON READER SERVICE CARD

Main Street Filer

An information-management program for the Macintosh, Main Street Filer uses pull-down menus, dialogue boxes, and mouse commands to perform file-design, record-retrieval, and reporting functions. Menus and help messages on most screens make the program easy to use.

The filing system and report generator can handle up to 65,000 records in each file, with up to 36 fields with a maximum of 40 characters in each record. Program features include a tree-index system; four different indexes for each file; and several print programs including customized reports, labels, envelopes, and card-file cards. (List Price: \$249.95)

Mainstreet Software
One Harbor Drive, Suite 304
Sausalito, CA 94965
(800) 824-8757

CIRCLE 902 ON READER SERVICE CARD

McPic

McPic is a picture library of 130 pictures created by professional artists for the Macintosh. Using MacPaint and MacWrite, users can reduce or expand the size of the artwork, combine it with other pictures or picture segments, change the tones and patterns, or add text.

The 130 pictures cover a wide range of categories including artwork for business, home, school, and recreational uses. With McPic you can create special letterheads, personal stationery, invitations, and greeting cards. (List Price: \$49.95)

Magnum Software
21115 Devonshire Street, Suite 337
Chatsworth, CA 91311
(818) 700-0510

CIRCLE 903 ON READER SERVICE CARD

MacTote

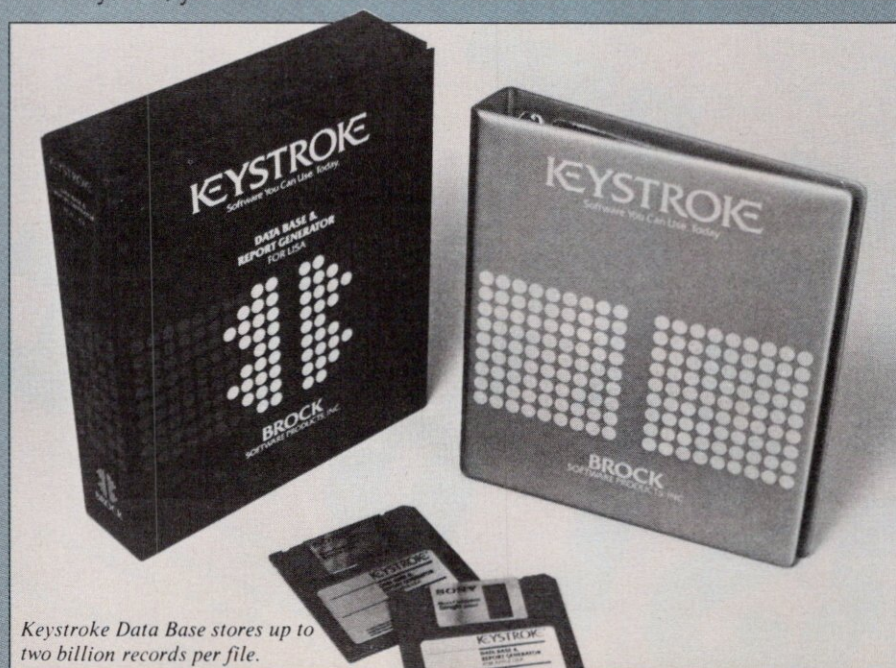
A high-quality, lightweight carrying case for the Macintosh and its peripherals, the MacTote incorporates such features as an adjustable, non-slip shoulder strap, a padded velcro handle (no snaps), and a side handle for added stability. The interior of the MacTote is lined with antistatic fabric and has padded pouches for the mouse, the disk drive, and the keyboard. On the exterior, there are two zippered pouches for disks on both sides of the case, an open pouch for manuals or notes, and an additional pouch for cords, a modem, or other accessories. MacTote measures 15½ × 12 × 15 inches and weighs less than two pounds. (List Price: \$99.95)

Optimum Computer Luggage
4445 Fiftieth Street
San Diego, CA 92115
(800) 447-0330; in CA (800) 632-4200

CIRCLE 904 ON READER SERVICE CARD

Sargon III

Sargon III, a chess program for microcomputers, is now available for the Macintosh. Using a series of pull-down menus, players can easily maneuver through the game. With the mouse, players can select options and playing levels or move chess pieces



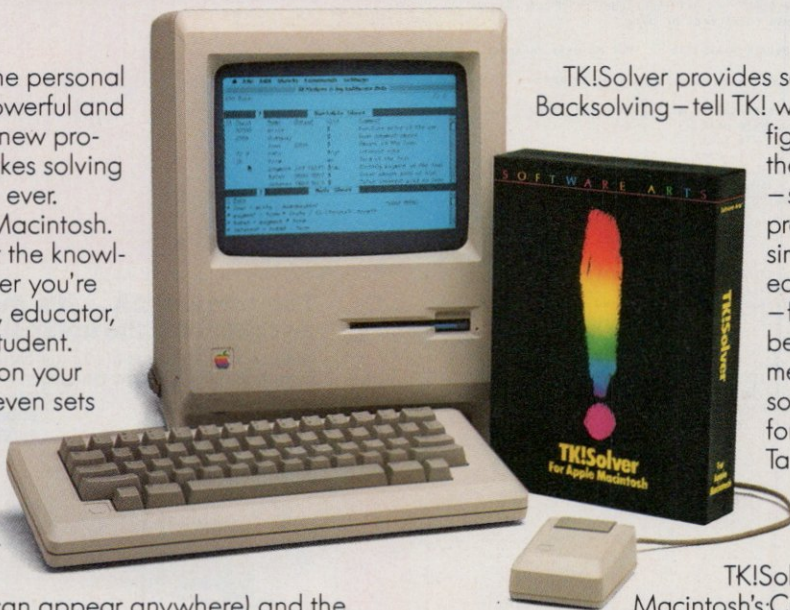
Keystroke Data Base stores up to two billion records per file.

MAKE SHORT WORK OF LONG EQUATIONS

**Introducing TK!Solver[®] for Apple[®] Macintosh[™].
An equation processing program that helps students and
professionals solve even their most difficult problems.**

For those who own the personal computer that's so powerful and easy to use, here's a new productivity tool that makes solving problems easier than ever. TK!Solver for Apple Macintosh. The complete tool for the knowledge worker—whether you're an engineer, scientist, educator, financial analyst or student.

Let TK!Solver take on your toughest problems—even sets of simultaneous non-linear equations. No matter how you're used to solving problems, just enter the equations (unknown variables can appear anywhere) and the known values. And click. You have the solution quickly. Without programming.



TK!Solver provides sophisticated features like Backsolving—tell TK! what you know, and it figures out the way to solve the problem. Iterative Solving—successfully attack even problems involving sets of simultaneous non-linear equations. Unit Conversions—for automatic conversions between different units of measurement. List Solving—solving a model repeatedly for lists of input values. Tables and High Resolution Plots—produce plots using symbols, lines or a combination of both.

TK!Solver takes full advantage of Macintosh's Cutting and Pasting, Pull-Down Menus, High Resolution Graphics, and also provides a friendly Help and Error Diagnosis System.

TK!Solver[®]
By Software Arts[™]

27 Mica Lane, Wellesley, Massachusetts 02181

CIRCLE 334 ON READER SERVICE CARD

```

6030 REM
6040 FOR BUFNUM=0 TO 1      two buffers so we can play one while didding other
6050 REM Set up four-tone sound Write parameter list
6060 LPOKE:=FNCODE!(LPOKE)
6070 REM IMPORTANT: NO NEW VARIABLES MAY BE USED AFTER THIS POINT
6080 REM
6090 FOR I=0 TO 49\2: PARAMLIST(I, BUFNUM)=0: NEXT I
6100 PARAMLIST(24\2, BUFNUM)=-4      Sound reference number
6110 CALL LPOKE!(VARPTR(PARAMLIST(0, BUFNUM))+32, VARPTR(SYNTHREC(0, BUFNUM)))
6120 CALL LPOKE!(VARPTR(PARAMLIST(0, BUFNUM))+36, 6!)      4-t rec. is 6 bytes
6130 REM
6140 REM Set up four-tone synthesizer record
6150 SYNTHREC(0, BUFNUM)=1      Positive number (>0) indicates four-tone
6160 CALL LPOKE!(VARPTR(SYNTHREC(1, BUFNUM)), VARPTR(SOUNDREC(0, BUFNUM)))
6170 REM
6180 REM Set up four-tone sound record
6190 FOR I=0 TO 24: SOUNDREC(I, BUFNUM)=0: NEXT I
6200 REM Select a wave pattern for each synthesizer voice
6210 CALL LPOKE!(VARPTR(SOUNDREC(17, BUFNUM)), VARPTR(WAVETHIRD(0)))
6220 CALL LPOKE!(VARPTR(SOUNDREC(19, BUFNUM)), VARPTR(WAVETRIANG(0)))
6230 CALL LPOKE!(VARPTR(SOUNDREC(21, BUFNUM)), VARPTR(WAVETRIANG(0)))
6240 CALL LPOKE!(VARPTR(SOUNDREC(23, BUFNUM)), VARPTR(WAVETRIANG(0)))
6250 NEXT BUFNUM
6260 REM
7000 REM Play the music from the lists
7010 REM
7020 LPEEK:=FNCODE!(LPEEK): IOWRITEASYNC:=FNCODE!(IOWRITEASYNC)
7030 PRINT: PRINT "Playing music."
7040 LISTPTR=0: BUFNUM=0      start at beginning of play list; first buffer
7050 WHILE DURLIST(LISTPTR)<>0      zero duration ends list
7060   BUFNUM=1-BUFNUM      switch buffers
7070   WHILE PARAMLIST(16\2, BUFNUM)<>0: WEND      Wait for next buffer available
7080   SOUNDREC(0, BUFNUM)=DURLIST(LISTPTR)      set duration of next note
7090   FOR I=0 TO 3      process four voices
7100     TP1:=VARPTR(SOUNDREC(I+1*4, BUFNUM))
7110     TP2:=VARPTR(TONELIST(0,I,LISTPTR))
7120     CALL LPEEK!(TP1!, TP2!)      put tone in sound record
7130     NEXT I
7140     CALL IOWRITEASYNC!(VARPTR(PARAMLIST(0, BUFNUM)))      play the notes
7150     LISTPTR=LISTPTR+1      next item in list
7160     WEND
7170 WHILE PARAMLIST(16\2, BUFNUM)<>0: WEND      Wait for final note to end
7180 REM
7190 PRINT: PRINT "Press a Key to play again..."
7200 WHILE INKEYS="": WEND      wait for a Keypress
7210 GOTO 7000
7220 REM
8000 REM Initialize the machine language subroutines
8010 REM
8020 REM HEX (Intel format) data for machine-language subroutines
8030 DATA "1C0000000000C002000300044005400624E560000204E000B3010204E000C3080BCA"
8040 DATA "1C001C004E5E4E754E560000204E000A30AE00084E5E4E754E560000204E0008BE"
8050 DATA "1C0038002010204E000C20804E5E4E754E560000204E000C20AE00084E5E4E7550"
8060 DATA "1C0054004E560000204E0008A0034E5E4E754E560000204E0008A034E5E4E75F4"
8070 DATA "000000000000"
8080 REM
8090 DIM CODEARRAY(200)
8100 DEF FNCODE!(OFFSET)=VARPTR(CODEARRAY(0))+OFFSET
8110 RESTORE 8030      Restore to machine-language HEX data statements
8120 MLLINE=8030      First DATA statement line number
8130 READ ML$      Read next line of HEX data
8140 MLCHK=0      Initialize checksum
8150 FOR I=1 TO LEN(ML$)-1 STEP 2      Scan by bytes (pairs of hex digits)
8160   MLCHK=(MLCHK+VAL("&H"+MID$(ML$,I,2))) MOD &H100      Compute checksum
8170   NEXT I
8180 IF MLCHK<>0 THEN CLS: PRINT CHR$(7);"Error in ML line ";MLLINE: STOP
8190 MLL=VAL("&H"+MID$(ML$,3,2)+MID$(ML$,1,2))      Get byte count of ML string
8200 MLS=VAL("&H"+MID$(ML$,7,2)+MID$(ML$,5,2))      Get start addr of ML string
8210 IF MLL=0 THEN GOTO 8280      Zero byte count ends ML data
8220 FOR J=0 TO MLL-1
8230   POKE FNCODE!(MLS+J),VAL("&H"+MID$(ML$,9+J*2,2))      Put ML data in array
8240   NEXT J
8250 MLLINE=MLLINE+10      Keep track of DATA line number, in case of error
8260 GOTO 8130
8270 REM Set up CALL address pointers - offsets are at beginning of array
8280 WPEEK=CODEARRAY(0): LPEEK=0      Two-byte peek
8290 WPOKE=CODEARRAY(1): WPOKE=0      Two-byte poke
8300 LPEEK=CODEARRAY(2): LPEEK=0      Four-byte peek
8310 LPOKE=CODEARRAY(3): LPOKE=0      Four-byte poke
8320 IOWRITE=CODEARRAY(4): IOWRITE=0      Synchronous Write ROM call
8330 IOWRITEASYNC=CODEARRAY(5): IOWRITEASYNC=0      Asynchronous Write ROM call
8340 RETURN
8350 REM
9000 REM This is the music to be played
9010 REM
9020 REM First data item is tempo, in standard metronome units
9030 REM (quarter-note beats per minute).
9040 REM Subsequent data items are quintuplets of duration and four notes:
9050 REM Duration is single letter
9060 REM (S[sixteenth], E[eighth], Q[quarter], H[half], or W[whole]).
9070 REM Note is note letter (C, D, E, F, G, A, or B),
9080 REM followed by octave digit
9090 REM (octave 4 starts with Middle C),
9100 REM optionally followed by # for sharp or ♭ for flat.
9110 REM Note may be single letter R to indicate rest.
9120 REM Final data item is single letter X.
9130 REM
9140 DATA 120
9150 REM
9160 DATA H,R,R,R,R
9170 DATA E,R,R,R,R
9180 DATA E,D5,R,R,R
9190 DATA E,D5,R,R,R
9200 DATA E,D5,R,R,R
9210 REM
9220 DATA H,G5,G4,B4,D5
9230 DATA H,D4,G4,B4,D5
9240 REM
9250 DATA E,C6,G4,C5,E5
9260 DATA S,B5,G4,C5,E5
9270 DATA S,A5,G4,C5,E5
9280 DATA H,G6,G4,B4,D5
9290 DATA G,D6,G4,B4,D5
9300 REM
9310 DATA E,C6,G4,C5,E5
9320 DATA S,B5,G4,C5,E5
9330 DATA S,A5,G4,C5,E5
9340 DATA H,G6,G4,B4,D5
9350 DATA G,D6,G4,B4,D5
9360 REM
9370 DATA E,C6,A4,C5,E5
9380 DATA S,B5,A4,C5,E5
9390 DATA S,C6,A4,C5,E5
9400 DATA H,A5,F4#,A4,D5
9410 DATA G,R,R,R,R
9420 REM
9430 DATA X
9440 END

```

We'll make your Apple* Grow Megabig!

COMING SOON
Macintosh
and
Lisa!



The Infax 101A subsystem can add 10 megabytes of storage capacity to your Apple, Apple II and Apple III.

That's megabig! The Infax removable disk cartridge subsystems provide performance, capacity, speed and convenience. Engineered specifically for the Apple owner, this system has a removable disk cartridge that is equal in capacity to 69 floppy disks. Contained in a newly designed cabinet, the Infax 101A features state of the art engineering that makes it more resistant to shock and vibration than any other fixed or removable disk drive. With its proven high performance Infax brings the Apple owner a removable disk cartridge subsystem that is second to none. The Infax 101A supports Apple III, S.O.S., Apple II, ProDOS, DOS 3.3, PASCAL and CP/M.

The Infax 102A...It's megabigger and designed for the up-scale Apple owner!

Imagine 20 megabytes of storage capacity in a cabinet barely larger than an electronic typewriter! Containing 2 disk drives, the Infax 102A features all of the engineering technology and support capacity of the 101A and more. Lightweight, this removable disk cartridge subsystem provides the same capacity of many less portable mainframe computers and at a fraction of the cost.



Infax is a registered trademark. Apple, Apple II, Apple III, Macintosh, Lisa, ProDOS and S.O.S. are registered trademarks of Apple Computer, Inc. CP/M is a registered trademark of Digital Research, Inc.

INFAX

Vufax Incorporated
5301 Covington Highway
Decatur, Georgia 30035

For your nearest dealer call (404) 981-6778.

Are You A MacManager™?

SIT DOWN at your desk in the MacManager office and take control of your own company. Find out if you have what it takes to build your own financial empire as you plan your winning strategy.



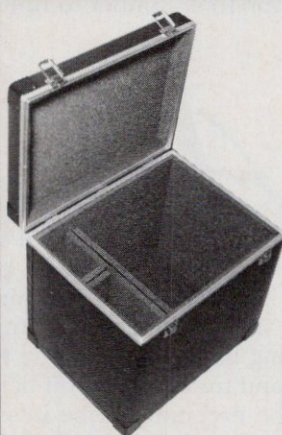
From the vantage point of your office, watch company headquarters grow as the fortunes of your company rise. Read MacTimes and analyze industry reports. Make your decisions (be sure you have enough cash to carry them out!) and watch the results.

A management simulation for the Macintosh \$49.95.
MacManager is available now. To order MacManager contact:

Harvard Associates, Inc.
260 Beacon Street, Somerville, MA 02143
(617) 492-0660

CIRCLE 349 ON READER SERVICE CARD

MACINTOSH™ OWNERS HAVE YOUR MAC TO GO



BASKET™ is a hard-sided, foam-lined, plastic, locking carrying case fitted for your main unit, keyboard, mouse, numeric keypad, and line cord.

\$100.00

Just Introduced
D-BASKET™ holds all that BASKET™ does plus external drive and modem..... **\$130.00**
C-BASKET™ holds the //c plus the monitor on its stand... **\$100.00**

Order from your dealer or directly from
JUSTIN CASE MANUFACTURING CORP.
334 MAIN STREET, PORT WASHINGTON, NY 11050
(516) 883-2299

MACINTOSH is a trademark licensed to Apple Computer Inc.
BASKET is a trademark of Justin Case Manufacturing Corp.

DEALER INQUIRIES INVITED N.Y.S. residents add sales tax.

CIRCLE 323 ON READER SERVICE CARD

Four-Tone Synthesizer Music Demonstration

```

1000 CLS: PRINT
1010 PRINT " Macintosh Four-Tone Synthesizer Music Demonstration"
1080 PRINT "Initializing - Please wait....."
1090 CLEAR A-Z
1100 DEFINIT A-Z / Default to integers for speed and space
1110 DIM PARAMLIST(49*2, 1) / Standard ROM Write parameter lists
1120 DIM SYNTAX(2, 1) / Mode word and pointer to sound record
1130 DIM SOUNDREC(24, 1) / Duration word, 4 longword triplets (tone, phase, wave)
1140 DIM DURLIST(300), TONELIST(1, 3, 300) / lists of durations and tones to play
1150 TP1:=0: TP2:=0 / temporary pointers for later use
1160 REM
1170 GOSUB 8000 / Go initialize the machine-language subroutines
1180 REM
2000 REM Build the tone frequency table
2010 REM
2020 PRINT: PRINT " Building tone tables....."
2030 DIM NOTEFREQ(87) / Simulate a piano keyboard (88 Keys)
2040 HALFSTEP:=2*(1#/12#) / ratio of musical half-step
2050 NOTEFREQ(0)=440#/16# / 4th A below middle C (A above middle C = 440 Hz)
2060 FOR I=1 TO 11
2070 NOTEFREQ(I)=NOTEFREQ(I-1)*HALFSTEP / fill in base octave
2080 NEXT I
2090 FOR I=12 TO 87
2100 NOTEFREQ(I)=NOTEFREQ(I-12)*2# / fill in rest of array
2110 NEXT I
2120 REM
2130 REM Set up table of synthesizer step rates corresponding to frequencies
2140 DIM NOTERATE(1, 87)
2150 STEPSPERHZ#=(256#*(704#/15667200#))
2160 FOR I=0 TO 87
2170 RATE#NOTEFREQ(I)*STEPSPERHZ#*65536#
2180 LPOKE#FNCODE(LPOKE): CALL LPOKE!(VARPTR(NOTERATE(0, I)), RATE#)
2190 NEXT I
2200 REM
3000 REM Build various waveform tables
3010 REM
3020 PRINT: PRINT " Building waveform tables....."
3030 REM
3040 REM Set up a square-wave waveform table
3050 DIM WAVESQUARE(127)
3060 FOR I=0 TO 127
3070 POKE VARPTR(WAVESQUARE(0))+1, 255
3080 NEXT I
3090 FOR I=128 TO 255
3100 POKE VARPTR(WAVESQUARE(0))+1, 0
3110 NEXT I
3120 REM
3130 REM Set up a triangle-wave waveform table
3150 DIM WAVETRIANG(127)
3160 FOR I=0 TO 63
3170 POKE VARPTR(WAVETRIANG(0))+1, 128+(I*2)
3180 NEXT I
3190 FOR I=64 TO 191
3200 POKE VARPTR(WAVETRIANG(0))+1, 255-((I-64)*2)
3210 NEXT I
3220 FOR I=192 TO 255
3230 POKE VARPTR(WAVETRIANG(0))+1, (I-192)*2
3240 NEXT I
3250 REM
3260 REM Set up a sine-wave waveform table
3280 DIM WAVESINE(127)
3290 PI#3.14159265#
3300 FOR I=0 TO 255
3310 AMPLITUDE#SIN((I/256#)*2#*PI#)
3320 POKE VARPTR(WAVESINE(0))+1, FIX(127.5#*AMPLITUDE#*127#)
3330 NEXT I
3340 REM
3350 REM Set up a fundamental plus third-harmonic waveform table
3370 DIM WAVETHIRD(127)
3380 FOR I=0 TO 255
3390 AMPLITUDE#(SIN((I/256#)*2#*PI#)+SIN((I*3)/256#*2#*PI#))/2#
3400 POKE VARPTR(WAVETHIRD(0))+1, FIX(127.5#*AMPLITUDE#*127#)
3410 NEXT I
3420 REM
4000 REM Build the note translation table
4010 REM
4020 PRINT: PRINT " Building translation tables....."
4030 DATA "CDEFGAB0123456789#": REM note names, octave numbers, accents
4040 DATA 0, 2, 4, 5, 7, 9, 11: REM relative positions of unaccented notes
4050 DATA -9, 3, 15, 27, 39, 51, 63, 75, 87: REM locations of octave beginnings
4060 DATA +, -, !: REM biases for accents (sharp and flat)
4070 RESTORE 4000
4080 READ NOTENAMES#
4090 DIM NOTEINDEX(LEN(NOTENAMES#))
4100 FOR I=1 TO LEN(NOTENAMES#)
4110 READ NOTEINDEX(I)
4120 NEXT I
4130 REM
4140 REM Build duration table
4150 DURNAME#="SEQH#": duration names (Sixteenth thru Whole)
4160 DIM DURVALUE(LEN(DURNAME#))
4170 DURVALUE(1)=1 / relative length of a sixteenth note
4180 FOR I=2 TO LEN(DURNAME#)
4190 DURVALUE(I)=DURVALUE(I-1)*2 / each duration is 2X the previous
4200 NEXT I
4210 REM
5000 REM Compile the music into duration and tone lists
5010 REM
5020 PRINT: PRINT "Compiling music....."
5030 RESTORE 9000
5040 READ TEMPO
5050 TICKSPER16TH#900/TEMPO / translate tempo to ticks per sixteenth-note
5060 LISTPTR=0
5070 DURLIST(LISTPTR)=0 / zero will terminate list
5080 READ DURATIONS: IF DURATION#="X" THEN GOTO 5140 / end of music data
5090 DURLIST(LISTPTR)=TICKSPER16TH#DURVALUE(INSTR(DURNAME#, DURATION#))
5100 FOR I=0 TO 3 / loop to process four tones
5110 READ NOTE#: IF NOTE#(">")#R THEN GOTO 5140 / not a rest
5120 LPOKE#FNCODE(LPOKE) / about to set up a rest
5130 CALL LPOKE!(VARPTR(TONELIST(0, I, LISTPTR)), 0): GOTO 5200
5140 INDEX=0 / process a note - initialize index value
5150 FOR J=1 TO LEN(NOTE#) / build index value from note characters
5160 INDEX=INDEX+NOTEINDEX(INSTR(NOTENAMES#, MID$(NOTE#, J, 1)))
5170 NEXT J
5180 LPEEK#FNCODE(LPEEK) / about to put tone value in play list
5190 CALL LPEEK!(VARPTR(TONELIST(0, I, LISTPTR)), VARPTR(NOTERATE(0, INDEX)))
5200 NEXT I
5210 LISTPTR=LISTPTR+1 / advance to next element of play list
5220 GOTO 5070
5230 REM
4000 REM Set up four-tone sound data structures
4010 REM
6020 PRINT: PRINT " Setting up sound data structures....."

```

*I know of no
other microcomputer
that provides so
much flexibility
and control over
the factors involved
in generating music.*

therefore sound qualities, from simple square-wave (organ-like) or sine-wave (flute-like) tones to complex mixtures of fundamental and harmonic tones, mimicking a wide range of musical instruments.

The program I present here plays a familiar tune in four-part harmony, with different "voices" in the melody and each harmony part. You can easily modify it to play a different tune and to use different waveshapes for the parts. For the details of the interface to the Macintosh sound system, see "The Mac Makes Music," *A+*, August 1984 (page 74).



Lines 2000 through 2200 of the program build a table of note rates (which you use to specify the pitch of each note) corresponding to the 88 keys of the standard piano keyboard. All note frequencies (pitches) are derived mathematically from the international standard of 440 Hz for A above middle C, with equal tempering.

Program lines 3000 through 3420 create a set of waveform tables, with various shapes. Sine, square, and triangle waves are set up (the latter have a stringlike quality), and lines 3350 through 3410 create a sine-wave fundamental plus third-harmonic wave, as an example of a more complex waveform. Later in the program, you'll find references by name to these waveform tables. Modifying one of the supplied waveforms or adding new ones is easy.

Lines 4000 through 4210 create tables that you'll use to "compile" the music to be played, translating it from a natural notation of note letters, accents, and so forth into the numeric form that the program needs in order to play the music. Lines 5000 through 5230 do the actual compiling, reading the music from DATA statements at the end of the program, producing a list of note durations in the array DURLIST, and creating a list of "step-rate" quadruplets (which specify the pitch of each of the four tones) in the array TONELIST.

In lines 6000 through 6260, the

data structures required for playing the music—parameter lists and synthesizer records—are set up. The program creates two of each, so that when the Mac plays the music, one set can be playing while the other is being set up with the data for the next note. This technique is necessary because the four-tone synthesizer plays only one note (comprising four parts) each time it is called. We'd get an undesirable staccato effect if we played a note, then computed the next one, then played a note, and so on. Use of the Macintosh asynchronous Write ROM call (see my August column) makes it easy to overlap playing and computing the next note.

Lines 6210 through 6240 are where you specify the waveform that corresponds to each part—just edit in different waveform table names to change the "voicing" of the program.

Lines 7000 through 7220 are where the action is. This section of the program plays the music, advancing through the duration and note lists and calling the four-tone synthesizer. If you decide to incorporate four-tone sound into another program, restructure these lines as a subroutine and call them when you want to play a tune.

Lines 8000 through 8350 set up the machine-language subroutines that provide word (two-byte) and longword (four-byte) peeks and pokes and that provide the interface between BASIC and the Write function in ROM for invoking the sound synthesizer.

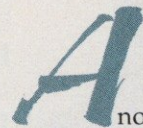
If you modify the program, don't introduce any new variables within lines 6060 through 6260, or within lines 7020 through 7220. A new variable would cause all the BASIC arrays to move in memory and invalidate the pointers that are set up at the beginning of these sections of code. If you need a new variable, initialize it (to a dummy value, if neces-

sary) outside of those sections.

The section of the program that starts on line 9000 contains the coded representation of the music to be played—the REM statements at the beginning describe the coding scheme and format. When the tune I've provided begins to drive your family to thoughts of MacSabotage, just replace the DATA statements with a new tune. If you code a tune with more than 300 notes, the array sizes in line 1140 will have to be increased to accommodate the longer tune, and the CLEAR statement in line 1090 may need modification to clear more memory space. The program may become too large for you to execute directly by double-clicking it from the desktop. If that happens (as indicated by an Out of memory at line 0 message when you try to run the program), you'll have to set up a "runner" program. Assuming you've saved the program under the name Four-tone, create another BASIC program consisting of the following two lines:

```
10 CLEAR , 20000  
20 RUN "Four-Tone"
```

Save it under the name Four-Tone Runner. (If you've increased the CLEAR size in the main program, modify line 10 of the runner program correspondingly). Then just double-click on Four-Tone Runner to run the program.



Another idiosyncrasy of the Macintosh that has just surfaced is that the modem port somehow interferes with the music programs. To avoid problems, make sure nothing is plugged into the modem port and turn the Mac off before running the program. I'll be investigating this irregularity, so check my future columns for a further discussion of the problem.

If you have any comments on this column, or Macintosh tips or techniques to pass on, write me care of *A+* (11 Davis Drive, Belmont, CA 94002), or send me electronic mail via CompuServe (ID 70065,172) or MCI Mail (ID DBROTHERS).



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 – one astounding megabyte. 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.

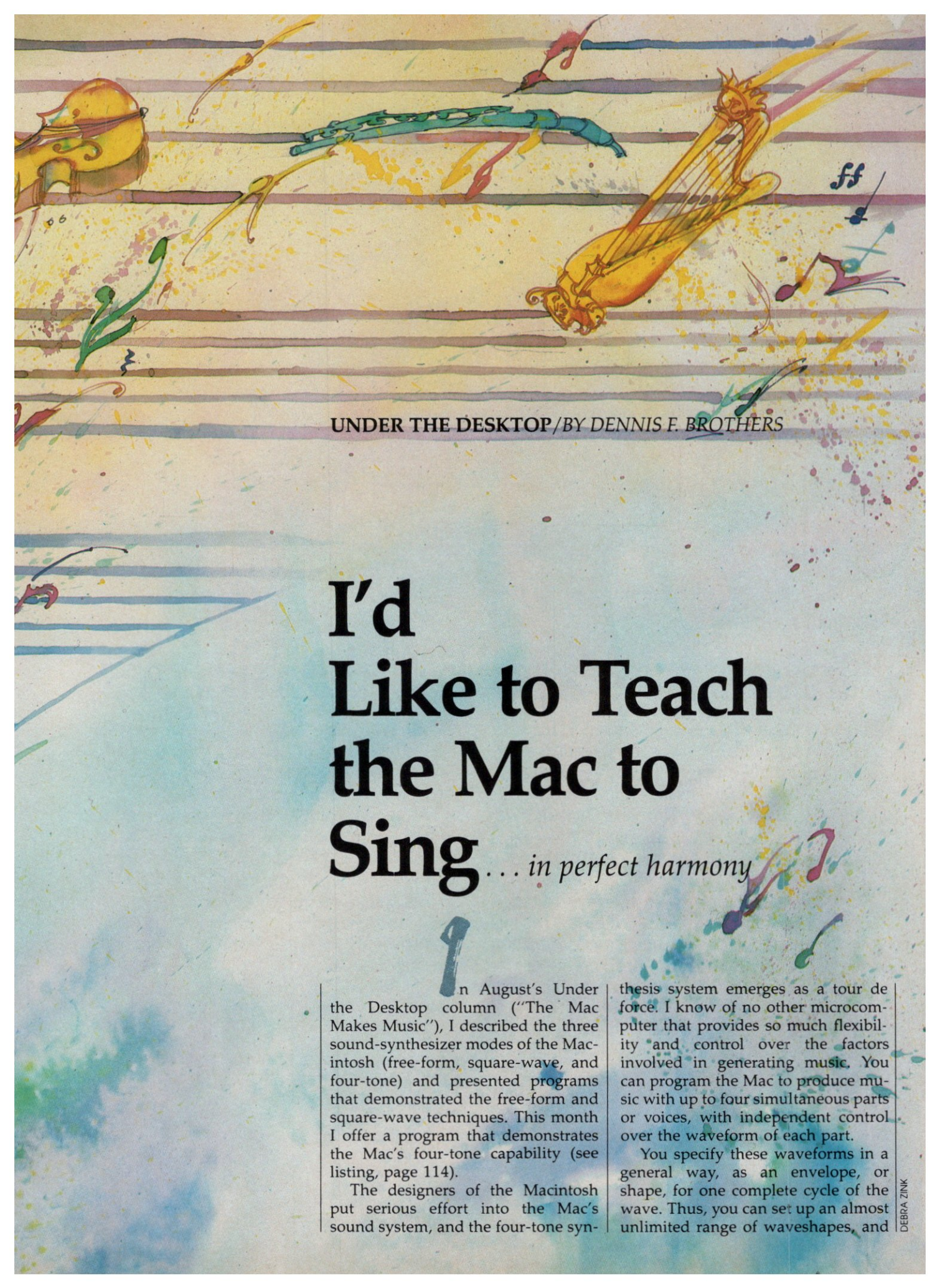
100% error-free. That's because we know, while each Micro FlexyDisk may only cost a couple of bucks, the hours and brain cells you put into it are priceless.

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.



CIRCLE 295 ON READER SERVICE CARD



UNDER THE DESKTOP / BY DENNIS F. BROTHERS

I'd Like to Teach the Mac to Sing . . . *in perfect harmony*

In August's Under the Desktop column ("The Mac Makes Music"), I described the three sound-synthesizer modes of the Macintosh (free-form, square-wave, and four-tone) and presented programs that demonstrated the free-form and square-wave techniques. This month I offer a program that demonstrates the Mac's four-tone capability (see listing, page 114).

The designers of the Macintosh put serious effort into the Mac's sound system, and the four-tone syn-

thesis system emerges as a tour de force. I know of no other microcomputer that provides so much flexibility and control over the factors involved in generating music. You can program the Mac to produce music with up to four simultaneous parts or voices, with independent control over the waveform of each part.

You specify these waveforms in a general way, as an envelope, or shape, for one complete cycle of the wave. Thus, you can set up an almost unlimited range of waveshapes, and



THE WORLD'S MOST POPULAR

UNIX

SYSTEM

FOR THE

IBM PC

AND

LISA 2

Now, SCO brings the world's most popular version of AT&T's UNIX™ Operating System — and a comprehensive line of applications software — to the IBM® Personal Computer and the Apple® Lisa® 2.

XENIX™ from SCO is simply the best microprocessor-based UNIX you can buy. **No one else in the UNIX business provides you with better support, and no other version of UNIX gives you all these features:**

VISUAL SHELL:

The XENIX visual shell provides you with a screen-oriented, menu-driven interface—with selectable color for the IBM PC.

MULTISCREEN™:

SCO's Multiscreen™ allows you to run multiple programs simultaneously and view each program's screen with a touch of a key.

MICNET:

Micnet local area networking doesn't require a systems programmer to set up or added hardware to run.

MULTIUSER:

With XENIX, 3 or more users may efficiently use a single IBM PC or Lisa 2 simultaneously.

MOST COMPLETE:

XENIX is the most complete version of the UNIX System available for micros — including Microsoft's commercial enhancements and key extras from Berkeley 4.2 UNIX.

PC-DOS:

XENIX lets you read and write PC-DOS files on the IBM PC—and a cross-development environment will be available soon.

MOST APPLICATIONS:

With nearly 80% of all micro-based UNIX systems running XENIX, more applications are available for XENIX than for any other version of UNIX.

DOCUMENTATION:

SCO's XENIX documentation is written to meet the needs of the small systems marketplace — well-organized, clear, concise.

The powerful family of XENIX systems software and applications is available today from SCO — your UNIX Systems Software Company since 1978 — to set a new standard for personal computer productivity.

SCO
THE SANTA CRUZ OPERATION

500 CHESTNUT STREET
P.O. BOX 1900
SANTA CRUZ, CALIFORNIA 95061


YOUR UNIX SYSTEMS SOFTWARE COMPANY

408/425-7222

Let's go to work.

Bell Laboratories
Trademark of International Business Machines Corp.
Registered trademarks of Apple Computer, Inc.
Microsoft Corp.
Copyright © 1985, Santa Cruz Operation, Inc.
Santa Cruz Operation, Inc.



ON READER SERVICE CARD

Yeah for MacPaint™! But boo! Most of us draw like this:  So Hooray


for Axlon's new Art Portfolio!  Over 120 art elements to create

with  and lots of tips, hints and examples to jazz your

imagination. A veritable  of ideas. For letterheads,

announcements,  weight-watchers,  telling

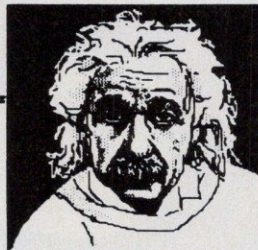
people where to go,  or keeping them on target. 

All on disk, all for only \$59.95, including lots of  So hustle to

your dealer and, in a loud voice, demand:

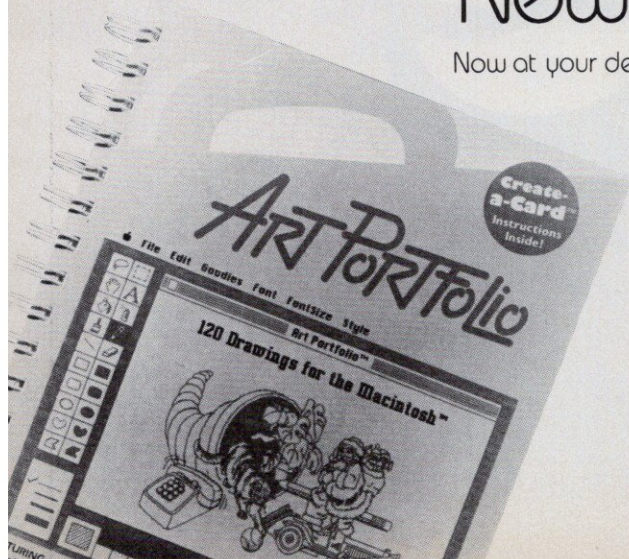
I WANT MY ART PORTFOLIO!

Wish I'd Thought
of that!!!



The Art Portfolio™ for your MAC. New from Axlon.

Now at your dealer, The Card Shoppe for your Mac.



Note: All Art Portfolio contains original artwork handdrawn by a professional commercial artist using MacPaint™ on the Macintosh!™
1287 Lawrence Station Rd., Sunnyvale, CA 94089 (408) 747-1900

MacPaint is a trademark of Apple Computer, Inc.
CIRCLE 305 ON READER SERVICE CARD

MOUSE MEETS MODEM.

The first mouse wanted a modem that would be very Macintosh-like. Icons and all.

The second mouse wanted a modem that could talk to its brothers at IBM.

The third mouse wanted a modem that could take over while its owner was sleeping.

The fourth mouse wanted a 1200 baud modem that could be inexpensively upgraded to 2400 baud.

The fifth mouse wanted a modem that worked error-free on anybody's phone service, even the discount ones he was afraid to use.

A difficult series of requests, to be sure.

But not impossible. Because today, there is a modem that will make your mouse very, very happy. It's called MACMODEM. It's made just for the Macintosh. And it's the only modem that can satisfy mouse 1, mouse 2, mouse 3, mouse 4 and mouse 5.

Two clicks and your mouse will be in and out of your favorite data base with exactly the information you want. A job that takes an awful lot of clicking and keystrokes with any other modem.

To see it in person, visit your local Apple dealer and ask for MACMODEM. If he hands you something else, don't go for the bait. Call 1-800-322-3722. Microcom, Inc., Norwood, MA 02062.

MACMODEM™
MICROCOM

CIRCLE 140 ON READER SERVICE CARD

MACINTOSH IS A TRADEMARK OF APPLE COMPUTER, INC.
IBM IS A TRADEMARK OF INTERNATIONAL BUSINESS
MACHINES CORPORATION
MACMODEM AND MICROCOM ARE TRADEMARKS OF
MICROCOM, INC.



cive to manipulation with MacPaint—it has enough of a variety to satisfy most needs. CLIP 1's images are consistent with classic clip art, but this volume does not contain the arrows, borders, and symbols that many users will probably want to enhance business reports, newsletters, and the like. Mac the Knife has good borders, symbols, and fonts, but not many "pictures." It is the most eclectic package of the four. ClickArt is a portfolio of pictures, with limited use.

If you can use clip art, you may want to select one or two of these packages to start your collection and then wait to see what the second volume of each has to offer.

ADDENDUM

At the time I was writing this article, releases of two other clip-art packages, Cut'N'Paste from Dreams of the Phoenix and Art Portfolio from Axlon, were announced. Christopher Allen, of Dreams of the Phoenix, informed me that Cut'N'Paste was not yet ready for review. According to Allen, each volume will be faithful to the tradition of clip art and will feature a specific subject, such as people, nature, or computers. The publisher is planning noncommercial distribu-

PRODUCT INFORMATION

ClickArt

T/Maker Graphics Company
2115 Landings Drive
Mountain View, CA 94043
(415) 962-0195

List Price: \$49.95

McPic

Magnum Software
21115 Devonshire Street, Suite 337
Chatsworth, CA 91311
(818) 700-0510

List Price: \$49.95

Mac the Knife

Miles Computing, Inc.
7136 Haskell Avenue
Suite 300
Van Nuys, CA 91406
(818) 994-7901

List Price: \$39 (available by subscription at a discounted price)

CLIP 1

Frazier, Peper & Associates
P.O. Box 3019
Santa Cruz, CA 95063
(408) 476-2358

List Price: \$29.95 (Series discounts and subscriptions will be offered.)

Cut'N'Paste

Dreams of the Phoenix, Inc.
P.O. Box 10273
Jacksonville, FL 32247
(904) 396-6953

List Price: \$39.95 (available by subscription—six volumes for \$199)

Art Portfolio

Axlon, Inc.
1287 Lawrence Station Road
Sunnyvale, CA 94089
(408) 747-1900

List Price: \$59.95

tion—i.e., it will encourage users to copy and distribute the software to friends and colleagues, expecting that those who receive a copy will send in the requested users' fee. Diversi-dos, for the Apple II line of computers, is distributed this way.

Art Portfolio from Axlon contains more than 120 images and symbols. It has a 150-page spiral-bound manual that has reproductions of the images on the diskette, as well as tips and instructions on using the images for creating greeting cards. +



The Prodigy Comes Of Age!



ExperTelligence™
559 San Ysidro Rd.
Santa Barbara, CA 93108
(805) 969-7874

ExperLogo for the Macintosh™ is a powerful adaptation of the Logo computer language. ExperLogo excels at Logo's traditional role as an educator in our homes and schools, while it assumes a new role as a powerful programming development tool.

ExperLogo is loaded with innovative features. In addition to standard Turtle graphics, ExperLogo introduces *Bunny Graphics*™ where bunnies frolic on the surfaces of spheres and cubes and race through 3-D space. Incidentally, we call them bunnies because they move incredibly fast, at speeds up to 100 times that of the turtle in other Logos.

Easy to use, powerful and most of all fun. . . *ExperLogo. . . a computer language in the spirit of the Macintosh!* Ask your local Apple™ dealer for a demonstration today.

Have an ExperLogo experience!

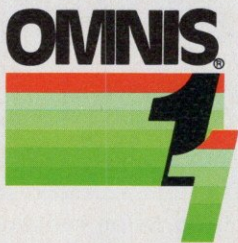
Introducing OMNIS from OSC. Powerful, progressive, friendly.

Three powerful, upgradeable database programs take you from file management to a sophisticated relational/hierarchical system.

OMNIS[™] 1, OMNIS 2, and OMNIS 3. The new family of database software that grows with you. From basic file management to sophisticated information management. From applications development through comprehensive database management.

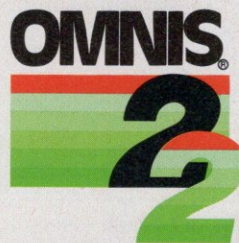
The OMNIS trio offers more power, more features than other leading database packages costing much more. Each OMNIS program is upward compatible. And each is easily upgradeable—you pay only the difference in program cost plus a handling charge.

OMNIS 1, OMNIS 2, and OMNIS 3 are available for IBM[™] PC, IBM XT, Apple[™] IIE, Apple III, DEC[™], Sirius[™], Sage[™], and Apricot[™] microcomputers. OMNIS 2 and OMNIS 3 are also available for Macintosh[™] and Lisa[™].



The File Manager.

An easy-to-use entry level product with HELP screens. Ideal system for a variety of file management tasks. Full calculation capability. Comprehensive report facility with standard, built-in letter/mail merge. Upward file and data compatible with OMNIS 2 and 3.



The Information Manager. A

sophisticated information management system. Capable of advanced error checking on data entry via a wide range of logical functions and operators. Multiple update and delete facilities. Upward file and data compatible with OMNIS 3. Supports hard disk systems and multi-user operation on local area networks.



The Database Manager.

A complete database management system. Supports up to 12 open files at any time. Operates as a relational or hierarchical database system. Flexible screen and report formatting and user-defined entry sequences allow screen overlays, custom messages, and menus. Can generate complete turn-key systems. Supports hard disk systems and multi-user operation on local area networks.

Compare the OMNIS family, Europe's best-selling microcomputer database software, with these database products:

	Retail price	Records per file	Fields per record	Open files	Max. char. per record	Built-in Letter/label merge	Calculation fields	Customized menus & messages	User interface	DIF compatible	Hardware	Multi-user LAN
OMNIS 1	\$95	unlimited	120	1	3000	yes	yes	no	menu	yes	1,2,3,4	yes
PFS-File [™]	120	32K	32	1	1600	no	no	no	menu	no	1,2,3,4	no
PFS-Report [™]	120	-0-	-0-	-0-	-0-	no	Report only	no	menu	no	1,2,3,4	no
OMNIS 2	195	unlimited*	120	1	9600	yes	yes	no	menu	yes	1,2,3,4,5,6	yes
Database Manager II	295	unlimited*	40	1	2400	no	yes	no	menu	yes	1,2	no
DB Master [™] App. IBM	350 595	250K 1000K	100 250	1 1	1020 3000	no no	yes yes	no no	menu menu	yes no	3,4 1,2	no no
OMNIS 3	295	unlimited	1440	12	25000	yes	yes	yes	menu	yes	1,2,3,4,5,6	yes
dBase [™] II	695	65K	32	2	1000	no	yes	yes	comm	yes	1,2,3,4	no
CONDOR [™] 3	650	64K	127	6	1024	no	yes	no	comm	no	1,2,3,4	no
R:BASE [™] 4000	495	unlimited	400	40	1530	no	yes	yes	menu	yes	1,2	no

*Limited only by disk capacity

Chart compiled from published information

1—IBM PC
2—IBM XT
3—Apple IIE

4—Apple III
5—Macintosh
6—Lisa

Now available for Macintosh!

OSC

For more information, contact Organizational Software Corporation, 2655 Campus Drive, Suite 150, San Mateo, CA 94403, (415) 571-0222.

CIRCLE 360 ON READER SERVICE CARD

ORDER FORM

- Please rush more information.
- Please rush: _____ OMNIS 1 program(s)
_____ OMNIS 2 program(s) _____ OMNIS 3 program(s)
- Check/MO enclosed \$_____ (Add \$3.50 per program for delivery and handling.) Computers. _____
- VISA MasterCard Acct. No. _____
- Expires _____ Signature _____

(name)

(phone)

(street)

(city)

(zip)

OSC

**Organizational
Software
Corporation**



infinite number of printed images that are already available, as well as actual photographs of people, places, and objects. In the Luna folder, for example, we get photographs of the first moon walk. The old etchings of flora and fauna, reproduced in *Plants and Animals*, can never find their equal in contemporary renderings. The manual credits some of the images to Dover Books and Hart Publications, well-known publishers of clip art.

Using digitized art also has its disadvantages. Digitizing an image breaks it down into dots, resulting in pictures that are not as "clean" or sharp as line drawings, nor as conducive to MacPaint manipulating. Recognizing that filling these dotted images with patterns would be impossible (the patterns would spill out through the spaces between the dots), the publisher added "fill-corrected" versions. I recommend leaving these images intact, rather than shrinking,

stretching, and otherwise playing with them.

Summing Up

If you are looking for miniature engravings to enhance your Macintosh documents, CLIP 1 will start off your collection. This package does not contain the arrows, borders, and symbols commonly associated with clip art, but it will definitely add class to your letters, bulletins, and other documents.

CONCLUSIONS

I am an artist and have set high standards for judging the software packages here. If I were looking at them as Macintosh art galleries—"See what people can draw with a Mac"—I would be less critical, but the software is being released as electronic clip art. When we purchase software, we have every right to expect that the package will contain exactly what it advertises. Clip art must be useful, or its purpose is negated.



Opening and closing documents or moving and renaming scrapbooks to get pictures onto the clipboard is tedious and time-consuming. One method isn't necessarily better than the other. You will probably find it less intimidating to work with MacPaint documents than to remove scrapbook files from the system folder and replace them. With the current memory restrictions of the Mac, I doubt that a more elegant solution to the problem is possible.

To find particular images in these packages, you have to look through a MacPaint catalog that shrinks and merges each document onto a single page, resulting in indistinct images. A full-page printout of each document would be more useful.

Documents that contain images that are related in theme and consistent with the titles of the document are the easiest to use. When you need pictures of animals, you should not have to open three or four files to get all the animals offered.

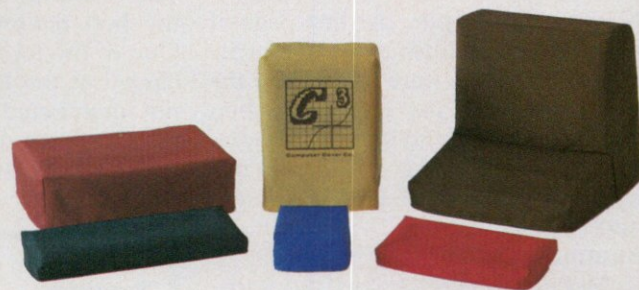
None of the packages mentioned here includes all the existing types of clip art, so none will fulfill all of your clip-art needs. McPic has an assortment of images that are most condu-

COVER UP

with

Trouble Free Software

If you are concerned about dust accumulation or spilled liquids and the potential problems they pose to your system, then cover up with Computer Cover Company's trouble free software. Made from 400 Denier Rip Stop Nylon with a Polyurethane backing. Our covers are custom designed for your system or components and come in six attractive colors: Blue, Black, Brown, Red, Beige, and Rust.



(Logo Optional)

SETS INCLUDE COVERS FOR:

Mac, Imagewriter, Keyboard	\$30.00
Mac, 15" Imagewriter, Keyboard	\$32.00
Mac, Imagewriter, Keyboard w/10 key	\$32.00
Mac, Imagewriter, Keyboard, Aux disk	\$34.00
Apple IIe (apple monitor)	\$30.00
Apple IIe w/duodisk (pro. model)	\$30.00
Lisa w/profile hard disk (piggy back)	\$26.00
Lisa 2, 2/5, 2/10	\$25.00

SINGLE PIECES

	PRICES
15" Imagewriter	\$14.00
Macintosh Keyboard w/10 key	\$ 9.00
Apple IIe External disk drive	\$ 7.00
Macintosh Aux. disk drive	\$ 6.00

We accept Visa and MasterCard. Please add \$3.00 shipping and handling charge.

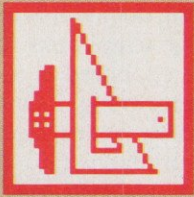
Dealers: Your Store or Corp. Logo Provided at No Extra Charge with a Minimum Order.

For more information or to place an order contact:



Computer Cover Co.
P.O. Box 3080
Laguna Hills, CA 92654
(714) 380-0085

Macintosh, Lisa, Apple IIe are all registered trademarks of Apple Comp. Inc.



disk onto your program disk, however. The number of scrapbook files you can put on your disk at one time depends on how much room you have. Usually, you will need only one or two images from a scrapbook, so, after you have put the selected scrapbooks on your disk, you can page through them, clearing out the images you don't want. This technique leaves more room on your work disk—room you will need for MacPaint, MacWrite, and other files.

When you call for a scrapbook, the Finder gives you the one that is in the systems file of the *startup* disk, so you must replace that scrapbook file with one that you selected from McPic—a laborious process.

McPic has 12 scrapbooks, compiled by category, such as Business,



Nature, and People. The first page of each scrapbook displays a list of its contents. Images were pasted into the scrapbook with the lasso, so when you copy them onto your document, they are free-floating. Placing the images in the scrapbook has advantages and disadvantages.

Summing Up

McPic is well organized and documented. The images are, for the most part, professional in quality, useful, and receptive to MacPaint's editing options.

MAC THE KNIFE

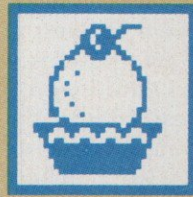
Mac the Knife is the most useful of the four packages in terms of providing borders and other images for business purposes, but it still needs improvement and is not as well rounded as McPic.



The manual is thorough, with step-by-step instructions for using the images in Mac the Knife, as well as hints on using the Macintosh in general. Occasionally, the style of writing gets "friendly" in a way that I find unappealing, out of context, and particularly inappropriate for professional application software.

The Software

Mac the Knife is more a package of graphic aids than a clip-art package. It has 18 MacPaint documents, each including a unique set of fill-pattern



textures (all of the figures on this and the preceding page are from Mac the Knife documents). Two documents contain enough border designs to satisfy anyone's needs. The page of corporation symbols and two pages of international icons should be useful for certain business applications. The package includes two new fonts, as well as an enhanced version of New York, called Manhattan, which adds new option-key characters—every icon from MacPaint and MacWrite. The inclusion of new fonts is one of the best features of Mac the Knife. One of the fonts must have been included at the last minute, since it is not mentioned in the manual, nor does it appear on the document called Font Charts. Paint Tools has rulers for use with MacPaint documents, blank



diskette labels, and a blank "pattern chart."

The "friendliness" of the documentation carries over into the software. Gallery #2 has an amateurish rendering of a clown credited to the contributor with this annotation: "When I saw the balloons in the MacPaint manual, I just knew they had to have a clown at the other end of their strings." A picture of an invitation, on Gallery #3, invites users to contribute to future volumes of Mac the Knife. Artists whose work is chosen will re-



ceive \$20 and a free copy of the volume in which their work appears. Volume 2 of Mac the Knife will contain 30 to 50 new fonts.

Summing Up

Mac the Knife has the potential to be an excellent package, but it has room for improvement. The documentation especially needs some work and shouldn't be "cutesy."

CLIP 1

I received a prototype of CLIP 1 for this review. The disk contents were finalized, but the manual was incomplete.

The Documentation

According to the publisher of the software, each CLIP product will include a disk in a plastic holder, in a high-quality, three-ring, loose-leaf binder. Each disk will include print-



ed, categorized images, and each manual will include some practical Mac instructions, describe new Mac tricks, and offer suggestions for using the contents of that CLIP disk.

The Software

Future CLIP products will contain original Mac art as well as digitized images, but all the images in CLIP 1 are digitized, meaning that they are not original drawings contributed by artists working on the Macintosh. Instead, the images are photographs that are broken down with special equipment from shades of gray into pixels and then translated to the computer screen. If you have seen T-shirts with photographs of people on them, then you have seen digitized art.

The advantage to using digitized art is obvious: It allows you to use the



How can you get your Macintosh™ to print with a daisywheel, letter quality printer?

By using the MAC · DAISYWHEEL · CONNECTION!

From the team who wrote MacWrite™ comes a powerful application program that allows you to print your text with any popular daisywheel, letter quality printer.

The new MAC · DAISYWHEEL · CONNECTION comes with the interface cable you'll need, the software program and a quick start-up guide. The application program is straightforward and maintains the visual fidelity of your file even when you mix text and graphics.

The MAC · DAISYWHEEL · CONNECTION supports MacWrite and Multiplan™ and other Macintosh software products. The MAC · DAISYWHEEL · CONNECTION is as easy to use as your Macintosh mouse. Just point and print!

The MAC · DAISYWHEEL · CONNECTION is now available through your local Apple Computer Dealer. List price \$99.

Or call toll-free: 1-800-MAC-5464

In California, toll free: 1-800-421-0243

In Canada, direct-dial: 408-446-0797

Other quality products available from Assimilation Process:

- MAC · SPELL · RIGHT—Spelling checker program based on Webster's Dictionary, available now.
- MAC · TURBO · TOUCH—High speed input device for Macintosh, available next month.
- TEN-PACK of blank 3 1/2" diskettes for your Macintosh, available now.



Assimilation Process™

CIRCLE 213 ON READER SERVICE CARD

Meet Your New Business Team. Macintosh & Davong.



Apple's new Macintosh™ is the most exciting development in personal computing since the original Apples started it all.

Teamed with Davong peripherals, the incredibly easy to use Macintosh becomes a powerful, flexible and expandable business tool.

Available at more than 1,000 Davong dealers nationwide is the new Davong Mac Disk system, providing from 5 to 32 megabytes of hard disk storage. Mac Disk gives you the increased capacity and enhanced functionality you need for your business applications. All at a very reasonable price and with no sacrifice in the speed and ease of use built into your Macintosh.

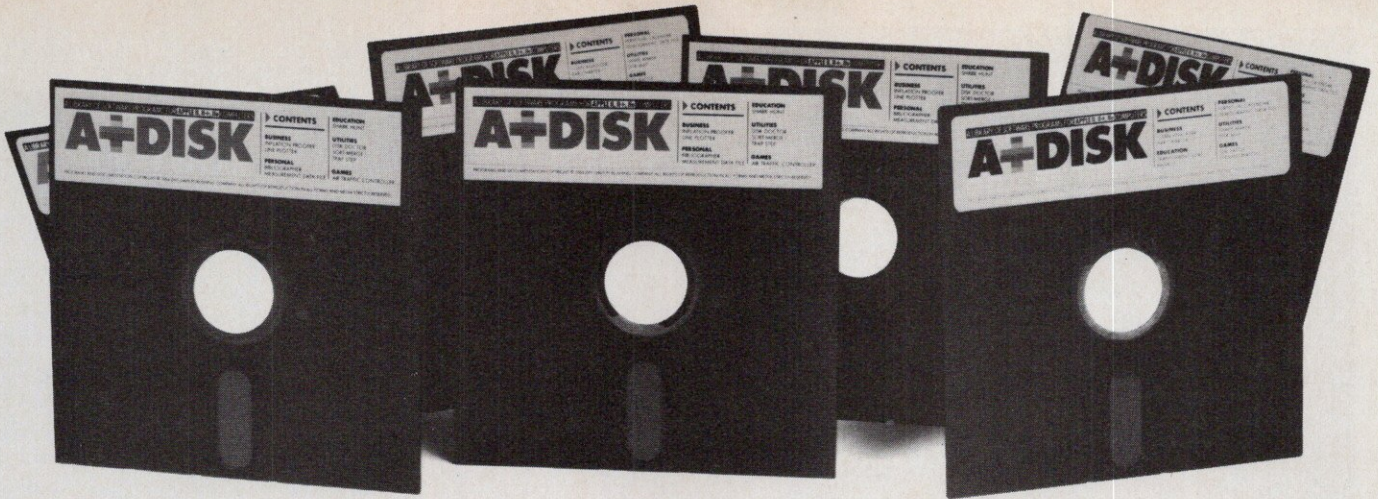
And coming very soon from Davong are a 28 megabyte streaming tape backup system, for fast and secure backup of your files, and a multi-tasking **local area networking system** to allow all of the Macintoshes in your organization to share information, programs, and the advantages of Mac Disk.

See your local Davong Dealer today for details.



Davong Systems, Inc.
217 Humboldt Court
Sunnyvale, CA 94089
(408) 734-4900
Telex: 176386

CIRCLE 138 ON READER SERVICE CARD



BUILD A \$1400 SOFTWARE LIBRARY FOR \$149.

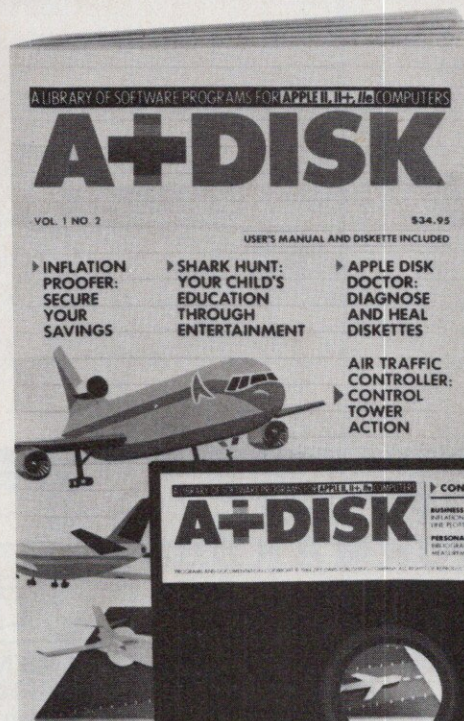
When you subscribe to A+ DISK, you'll add new Education, Business, Utility, Personal Productivity and Recreational Programs to your library of software—SAVING HUNDREDS OF DOLLARS IF PURCHASED INDIVIDUALLY!

Every 6 weeks you'll receive your tested, ready-to-run floppy disk, complete with a fully illustrated user manual to make each program come to life on your monitor! Expand the functions of your Apple II series or compatible computer with A+ DISK, your continuous software library of new programs and utilities! Subscribe today and save over \$60!

- Programs will run on Apple II series computers using DOS 3.3 and require a minimum of 48K. Most programs will be written in Apple soft BASIC—however, some machine language code may be used.
- Programs and documentation are copyrighted by Ziff-Davis Publishing Company. All rights of reproduction in all forms and media are strictly reserved.
- All programs are guaranteed to run.

For fast subscription service, call toll-free, 1-800-932-0017. (In New Jersey only 1-800-624-0497).

YOU CAN FIND A+ DISK AT YOUR LOCAL COMPUTER STORE OR BOOKSTORE, LOOK FOR THE LIST OF AUTHORIZED A+ DISK RETAILERS IN THIS MAGAZINE.



A+DISK

P.O. Box 5925, Cherry Hill, NJ 08034

YES!

Please accept my subscription to A+ DISK for: One issue for \$34.95. (payment must accompany order) Three issues for \$84. SAVE OVER \$20! Six issues for \$149. SAVE OVER \$60!

Savings based on \$34.95 single issue price.

AD8Z03

Please begin my subscription with Vol. # _____ Issue # _____

Mr. / Mrs. / Ms. _____ please print full name

Company _____

Address _____

City _____ State _____ Zip _____

Check one: Payment enclosed \$ _____

Charge my: American Express Visa MasterCard

Card No. _____ Exp. Date _____

DEDUCT AN ADDITIONAL 10% WHEN YOU USE YOUR CREDIT CARD OR ENCLOSE PAYMENT.

Bill me later. (Not valid for one issue offer.)

Add \$5 per disk in Canada and all other foreign countries for shipping Air Printed matter. Please allow 30 to 60 days for delivery of first issue.

ATTENTION

Macintosh Aficionados

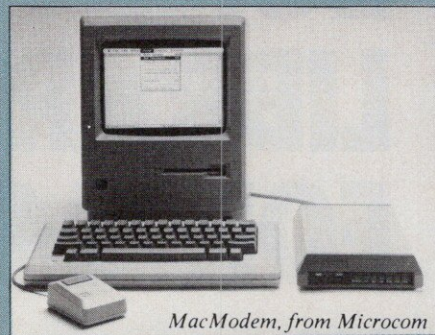
A+ would appreciate receiving any tips, hints, shortcuts, or suggestions that you have for using the Macintosh computer. We would like to publish these pearls in our MacTips feature in our Macintosh section. You'll receive credit in the magazine, and we'll pay \$50 for each MacTip that we use.

Send your tips to:
MacTips
A+ Magazine
ATTN: Fred Davis
11 Davis Drive
Belmont, CA 94002

Pipeline

pulse dialing, a speaker to monitor calls, and a complete set of LED status indicators on the front panel. Users requiring higher-speed operation can upgrade MacModem to 2400 bps.

The MacModem communications software allows users to store telephone numbers, communications parameters, and log-on sequences; program unattended operations such



MacModem, from Microcom

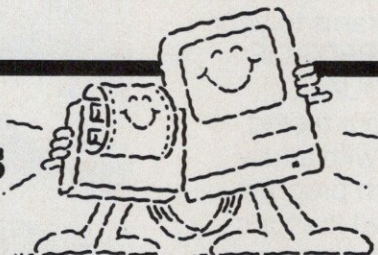
as logging onto a host computer and downloading files; and select menu items using the Macintosh mouse. It can also redial a number if it encounters a busy signal. MacModem supports both ASCII communications and Microcom Networking Protocol.

(List Price: \$699)

Microcom, Inc.
1400A Providence Highway
Norwood, MA 02062
(617) 762-9310

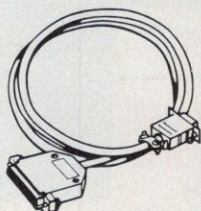
CIRCLE 925 ON READER SERVICE CARD

PERIPHERAL MATCHMAKERS FOR YOUR MAC.



NEW FROM SCOOTER®: PRINTER AND MODEM CABLES FOR MACINTOSH* COMPUTERS.

FOR MAC PRINTERS:
SCOOTER gives Mac printers room to move with five and ten-foot high-grade interfaces.
5-ft. (MAC925PP5): \$22.95
10-ft. (MAC925PP10): \$24.95



FOR MAC MODEMS:
High quality modem cable designed for MACTEP as seen in the May issue of A+.
5-ft. (MAC-MODEM): \$19.95

SCOOTER®
High Grade Cable Assemblies
ohm/electronics
746 Vermont • Palatine, IL 60067
(312) 359-6040

All prices suggested retail.
Visa and MasterCard accepted.

*Macintosh is a registered trademark of Apple Computer Co.

FREE SCOOTER T-SHIRT WITH ANY SCOOTER CABLE ASSEMBLY

Send us your SALES RECEIPT OR your ORDER with this coupon to:
ohm/electronics, 746 Vermont St., Palatine IL 60067
(Illinois residents, when ordering, add 7% sales tax.)

Visa MasterCard Check or Money Order

Model #: _____ Price: _____ T-Shirt Size: _____

Card #: _____ Exp. Date: _____

Signature: _____

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

AP-1084

CIRCLE 161 ON READER SERVICE CARD

MassFile

A high-performance, large-capacity disk-drive system with integrated tape backup for the Lisa, MassFile consists of an 86-megabyte, hard-disk drive; a 45-megabyte, 90-inch-per-second, streaming-tape cartridge; an intelligent 8088 controller that performs storage management on behalf of the Lisa; and a Lisa bus-adaptor card and cable. It resides in a stand-alone cabinet, and provides reliable storage for processing large amounts of data. (List Price: \$8995)

Tecmar, Inc.
6225 Cochran Road
Solon, Ohio 44139
(216) 349-0600

CIRCLE 927 ON READER SERVICE CARD

Macintosh	Our Price
BLUE CHIP SOFTWARE	
Millionaire	45.00
CONTINENTAL SOFTWARE	
Home Accountant	69.00
CREATIVE SOLUTIONS	
MacFORTH	115.00
DAVONG	
Winchester Disk Systems	Call
HABA SYSTEMS	
Habadox	139.00
HAYDEN SOFTWARE	
Sargon III	29.00
DaVinci — Landscapes	37.00
DaVinci — Buildings	37.00
DaVinci — Interiors	37.00
HUMAN EDGE SOFTWARE	
The Sales Edge	179.00
INFOCOM	
Zork I	27.00
Zork II or III	34.00
Deadline	41.00
Witness	41.00
Starcross	47.00
Suspended	41.00
Enchantor	27.00
Planetfall	27.00
Infidel	34.00
Sorcerer	34.00
Seastalker	27.00
LIVING VIDEOTEK	
Think Tank	99.00
MacGRAW HILL	
1st Base	145.00
MAIN STREET SOFTWARE	
Main Street Filer	165.00
MEGAHAUS	
MegaFiler	145.00
MICROSOFIT	
Multiplan	145.00
MAC BASIC Interpreter	109.00
MILES COMPUTING	
Mac The Knife	31.00
MOONGRAM	
Dollars & Sense	99.00
ODESTA	
Helix Decision Support System	279.00
OMNIS	
Omni 2	145.00
Omni 3	219.00
PALANTIR	
MacType	38.00
PENGUIN SOFTWARE	
Pennsylvania	27.00
Pensate	27.00
Coveted Mirror	27.00
The Quest	27.00
Xyphus	27.00
SCARBOROUGH SOFTWARE	
Run For The Money	37.00
SIMON & SCHUSTER	
Typing Tutor III	37.00
SOFT LIFE CORPORATION	
Mac Slots	59.00
SOFTWARE PUBLISHING	
PFS: File	84.00
PFS: Report	84.00
PFS: File Report Combo	145.00
STONEWARE	
DB Master Macintosh	145.00
TECMAR	
Macintosh Hard Disk (5MB)	1599.00
TELOS	
Filevision	145.00
THINK EDUCATIONAL SOFTWARE	
MacEdge	38.00

Macintosh Discs	Our Price
Memorex (10)	39.00
Maxell (10)	41.00
BASF (10)	44.00
SONY (10)	45.00

Hobby	Our Price
Fat Cat	23.00
Beagle Graphics	39.00
Triple Dump	27.00
Silicon Salad	17.00
Disk Quick	20.00
Beagle G.P.L.E.	34.00
Beagle Basic	24.00
Double Take	24.00
Pronto Dos	24.00
Typefaces	14.00
Frame Up	20.00
Flex Text	20.00
Apple Mechanic	20.00
Tip Disk	14.00
Alpha Plot	26.00
Dos Bos	16.00
Utility City	20.00
Bag of Tricks	28.00
AppleSoft Compiler (Microsoft)	119.00
Einstein Compiler	90.00
Compiler Plus (Hayden)	42.00
Orca/M	99.00
Lisa V2 6	58.00
Lisa Educational System	198.00
Merlin Assembler	45.00
Merlin Pro	55.00
Merlin Combo Pack	79.00
Verible Computer: 6502	32.00
The Graphics Magician	39.00
New Complete Graphics Sys.	54.00
Pix-It	38.00
Take I	46.00
Zoom Graphics	34.00
Sideways	45.00
Fontrix	50.00
Font Pak 1, 2, 3, 4, 5	15.00
Printographer	29.00
Font Downloader	29.00
Paper Graphics	37.00
Cat-Graphics	27.00

Blank Media	Our Price
Verbatim SS/DD (10)	23.00
Maxell SS/DD (10)	23.00
BASF SS/DD (10)	22.50
Memorex SS/DD (10)	21.00
Fuji SS/DD (10)	21.00
3M SS/DD (10)	25.00
Elephant SS/DD (10)	17.50
Generic SS/DD (100)	145.00

PROGRAMS Plus

429 Honeyspot Road • Stratford, Connecticut 06497

Corporate and School Purchase Orders Accepted

Mon.-Fri. 9-6; Sat. 10-6

ORDERS ONLY
TOLL FREE 1-800-832-3201

Inquiries & Conn. residents call (203) 378-3662 or 378-8293

30% to 50% off retail

MACINTOSH COMPUTERS Call
APPLE //c, //e COMPUTERS Call
KNOW DRIVE 128K RAM w/Play-Back & Back-to-Back 375.00

Business	Our Price
ARKTRONICS	
Jane	139.00
Jane w/Mouse	219.00
APPLE	
Apple Works	215.00
Apple Writer // (//e, //c)	128.00
Quick File // (//e, //c)	79.00
Access // (//e, //c)	65.00
APPLIED SOFTWARE TECHNOLOGY	
Versaform	195.00
ARTSCI	
Magic Window II	95.00
MagicCalc	95.00
Magic Memory	65.00
ASHTON TATE	
dBase II	299.00
BLUE BUSH	
Speed File	95.00
BPI SYSTEMS (II - or //e)	
GA, AR, AP, PR or INV. ea	265.00
BUSINESS SOLUTIONS	
The Incredible Jack	105.00
Jack II	Call
CONTINENTAL SOFTWARE	
The Tax Advantage	45.00
F.C.M./FL	65.00
G.A. AR, & P. Payroll ea	155.00
Home Cataloger	34.00
CREATIVE PERIPHERALS	
Time Trax	75.00

Educational Software	Our Price
APPLE	
Apple Logo // (//e, //c)	85.00
BARON'S	
Computer SAT	59.00
BPI	
BPI Speed Reading II+	65.00
CBS	
Mastering the SAT	97.00
Mastering the GRE	97.00
Success w/Math (ea)	19.00
Goren's Bridge	52.00
Micro Speed Reading	84.00
CONTROL DATA CORP.	
Plato Series	Call
COUNTERPOINT	
Early Games	22.00
Matchmaker	22.00
Piece of Cake	22.00
Fraction Factory	22.00
DAVIDSON & ASSOCIATES	
Speed Reader II	47.00
Word Attack!	34.00
Math Blaster	34.00
Spell-It	34.00
DESIGNWARE	
Spellcopter	27.00
Crypto-Cube	27.00
Math Maze	27.00
Spellakazam	27.00
EINSTEIN CORP.	
Einstein Memory Trainer	65.00

Accessories	Our Price
Kensington System Saver	65.00
Cool + Time	69.00
Hayes Microdrom //e	239.00
Hayes 1200 Baud Smartmodem	499.00
Novation Apple Cat II	229.00
Novation 212 Apple Cat II	429.00
Pro Modem 1200	359.00
ERA 2 by Micromom	349.00
Networker (Zoom Telephonics)	105.00
Networker/Netmaster Combo	145.00
Microsoft 16K Ramcard	69.00
Microsoft Premium System //e	335.00
A.L.S. Cards	179.00
Videx Videoterm	250.00
Videx Ultraterm	250.00
Videx Keyboard Enhancer	105.00

DECISION SUPPORT	
The Business Accountant	159.00
DOW JONES SOFTWARE	
The Market Analyzer	250.00
Market Manager	215.00
HAYDEN	
Pie Writer V2.2	99.00
HOWARD SOFT	
Tax Preparer 1984	179.00
Real Estate Analyzer II	159.00
KENSINGTON MICROWARE	
Format II Enhanced	99.00
LIVING VIDEOTEK	
Think Tank II - or //e	99.00
MICROLAB	
Data Factory 5.0	215.00
Payroll Manager	215.00
MICROPRO	
Wordstar	280.00
Infostar	280.00
Calstar	117.00
Wordstar w/Z-Card	349.00
MICROSOFT	
Multiplan	145.00
A.L.D.S.	89.00
PRACTICORP	
PRACTIC II	54.00
QUARK	
Word Juggler Lexicheck //e	139.00
Catalyst //e	119.00
Terminus //e	72.00

DLM	
Spelling Wiz	23.00
Demolition Division	23.00
Alligator Mix	23.00
Number Farm	21.00
Alphabet Circus	21.00
EDU-WARE/PEACHTREE	
PSAT Word Attack Skills	34.00
SAT Word Attack Skills	34.00
Spelling Bee w/Reading Primer	26.00
Spelling Bee Games	22.00
Compu-Read	19.00
Compu-Math: Arithmetic	33.00
Compu-Math: Fractions	33.00
Compu-Math: Decimals	33.00
Algebra 1, 2, 3, or 4	26.00
Algebra 5 or 6	35.00
Hands-on BASIC Programming	54.00
HARCOURT, BRACE	
Computer SAT	54.00
LEARNING COMPANY	
Juggler Rainbow	20.00
Bumble Games	26.00
Bumble Plot	34.00
Gertrude's Puzzles	29.00
Gertrude's Secrets	29.00
Rocky's Boots	33.00
Word Spinner	24.00
Addition Magician	24.00
Reader Rabbit	27.00
MECA	
Basic Building Blocks	57.00
The Running Program	57.00

Saturn 128K Ramcard	349.00
Neptune 80 Col. 64K Card	195.00
Accelerator //e	429.00
Corvus Hard Disks	309.00
Synetix Supersprite	79.00
Mockingboard A Board	79.00
Mockingboard C Board	145.00
Echo II Speech Synthesizer	110.00
The Cricket //c	145.00
S.A.M. Automatic Mouth	69.00
Hayes Mach II Joystick //e	33.00
Hayes Mach III Joystick //e	41.00
Kraft Joystick	35.00
TG Paddles	24.00
TG Joystick	32.00
TG Select-A-Port	28.00

SENSIBLE SOFTWARE	
The Sensible Speller	79.00
Bookends	79.00
Report Card	42.00
Graphics Department	87.00
Image Printer II	35.00
SIERRA ON-LINE	
The General Manager II	145.00
The Screenwriter //e	82.00
SILICON VALLEY	
The Word Handler II (II+, //e, //c)	54.00
The List Handler (II+, //e, //c)	54.00
The Handlers (II+, //e, //c)	115.00
SOFTWARE PUBLISHING	
PFS: File	79.00
PFS: Graph	79.00
PFS: Report	79.00
PFS: Write // (//e, //c)	87.00
PFS: Proof // (//e, //c)	54.00
PFS: Access // (//e, //c)	45.00
STONEWARE	
DB Master Version Four Plus	229.00
DB Master Utility 1 or 2	84.00
DB Master (Corvus)	324.00
SUNDEX	
Certified Personal Accountant	79.00
Certified Personal Investor	79.00
VISICORP	
Flashcalc II+ //e, //c	69.00
VisiSchedule	105.00
Visitrend/Visiplot	69.00

MICROLAB	
English SAT	21.00
Math SAT	21.00
SCARBOROUGH SYSTEMS	
SongWriter or PictureWriter	27.00
Phi Beta Filer	34.00
Run for the Money	34.00
SCHOLASTIC WIZWARE	
Fact and Fiction Tool Kit	27.00
Story Tree	27.00
Turtle Tracks	27.00
SPINNAKER	
Kindercomp	26.00
Grandma's House	23.00
President's Choice	27.00
Kidwriter	23.00
Fraction Fever	23.00
Snooper Troops 1 or 2	29.00
In Search of	26.00
Kindercamp	19.00
Alphabet Zoo	19.00
Hey Diddle Diddle	19.00
Facemaker	23.00
Delta Drawing	34.00
TERRAPIN	
Terrapin Logo	67.00
XEROX	
Stickybear ABC	27.00
Stickybear Numbers	27.00
Stickybear Shapes	27.00
Stickybear Opposites	27.00
Picture Builder	27.00
Beach Landing	27.00

Apple Super Serial Card	129.00
SenAll Interface Card	135.00
PKaso/II Interface	135.00
Grappler +	115.00
Buffered Grappler +	175.00
Nice Print (Spies Labs)	147.00
Finger Print	119.00
Print-It	169.00
Thunderclock +	115.00
Chalkboard Power Pad	75.00
Grappler Starter Kit	35.00
Koala Pad	85.00
Key Tronic Keyboard	249.00
Trackhouse Key Pad	115.00
Elephant Trunk	20.00
Flip & File (50)	25.00

Printers	Our Price
APPLE	
ImageWriter	519.00
ImageWriter (Wide Carriage)	629.00
Scribe Printer	269.00
BROTHER	
HR-25	695.00
HR-35	935.00
DYNAX	
DX-15	399.00
EPSON	
RX-80	312.00
RX-80 F/T	355.00
FX-80	479.00
FX-100	729.00
LQ-1500	1149.00
IDS	
Prism 80 (Basic)	1065.00
Prism 80 (Full)	1435.00
Prism 132 (Basic)	1225.00
Prism 132 (Full)	1655.00
P-480 Micropism	425.00
JUKI	
6100	425.00
MANNESMANN TALLY	
MT-160L	609.00
MT-180L	799.00
MT-Spirit	299.00

OKIDATA	
Microline 82A	325.00
Microline 83A	565.00
Microline 92P	425.00
Microline 93P	625.00
Microline 84P	869.00
PROWRITER (C. Itoh)	
ProWriter 8510 AP	339.00
ProWriter 1550 AP	539.00
ProWriter 8510 SP	489.00
StarWriter A10-20P	529.00
SILVER REED	
EXP-500P	375.00
EXP-550P	445.00
EXP-770P	879.00
STAR MICRONICS	
Gemini 10X	279.00
Gemini 15X	395.00
Delta 10	399.00
Delta 15	549.00
Powertype	345.00
TOSHIBA	
P-1351	1399.00

Disk Drives	Our Price
APPLE	
Disk II Drive	299.00
Duo Disc w/Acc. Kit	669.00
ProFile w/Acc. Kit	1185.00
MICRO SCI	
A2 143K	199.00
A20 164K (New!)	175.00
A80 328K (New!)	335.00
Micro Sci C2 Controller	65.00
RANA	
Elite I	249.00
Elite II	379.00
Elite III	448.00
Rana Disk Controller	80.00
QUENTIN	
AP 100A Full Height	215.00
AP 105A Slim Line	225.00
AP 110A Twin Pak	415.00

Monitors	Our Price
AMDEK	
Color I Plus	275.00
Color II Plus	429.00
Video 300G Green	135.00
Video 300A Amber	149.00
DVM RGB Interface (II or III)	132.00
BMC	
Color Plus Monitor	239.00
Green Screen	95.00
TEKNICA	
MJ-22 RGB Color	425.00
SAKATA	
SC-100 Color	249.00
SC-200 RGB Color	459.00
SG-1000 Green	95.00
SA-1000 Amber	105.00
STS-1 Stand	39.00
TAXAN	
RGB Vision III (Hi-Res)	420.00
210 13" Color (Lo-Res)	275.00
Green (Hi-Res)	125.00
Amber (Hi-Res)	135.00
410-64 RGB-2 Interface	199.00

Home	Our Price
Home Accountant	48.00
Dollars and Sense (II+, //e)	69.00
Dollars and Sense (//c)	79.00
The Accountant	64.00
Time is Money	85.00
Money Street	75.00
Managing Your Money (ME	



COMPUTER DISCOUNT PRODUCTS

Stocking HUGE Inventories of APPLE & IBM Products SINCE 1977

★ GUARANTEED Fair Pricing Is Our Policy ★



KOALA
For il/c & PCjr

Muppet Learning Keys
il/c 59.99

Koala Touch Pad
il/c & PCjr 95.99

DISKETTES

DYSAN 5" SS/DD	31.99	299.99
DYSAN 5" DS/DD	38.99	369.99
MAXELL 5" SS/DD	27.99	259.99
MAXELL 5" DS/DD	37.99	359.99
VERBATIM 5" SS/DD	21.99	205.99
VERBATIM 5" DS/DD	28.99	269.99

MEMOREX 3 1/2" (MAC) 41.99

DISKBANK
Media Mate

HOLDS 50

5 1/4" \$12.99

RECENT RELEASES!
Call For More Information

ORANGE MICRO For Your IBM PC
Mr. Chips - 4 Function Board • Chipmunk - 9 Function Board

TRILLIUM Adventure Games For Apple
Farenheit 451 • Rendezvous with Rama • Shadowkeep

WINDHAM CLASSICS Adventure Games For Apple & IBM
Wizard of Oz • Gulliver's Travels • Swiss Family Robinson

SPINNAKER
FOR APPLE & IBM

ALPHABET ZOO HEY DIDDLE	ea21.99
DELTA DRAWING	32.99
FACEMAKER	23.99
FRACTION FEVER	24.99
KINDERCOMP	21.99
MOST AMAZING THING	26.99
RHYME & RIDDLE	19.99
SNOOPER TROOPS I & II	29.99
STORY MACHINE	23.99

APPLE SOFTWARE

BPI (GL, AP, AR, PAY, INV)	ea275.99
BRODERBUND Arcade Machine	39.99
Bank Street Writer	44.99
Drol, Loderunner	ea24.99
DLM Alien Addition, Alligator Mix	ea22.99
Demolition Division	22.99
Dragon Mix	22.99
Meteor Multiplication	22.99
Minus Mission	22.99
Verb Viper/Word Invasion	ea31.99
Word Radar/Spelling Wiz	ea31.99
EDUWARE (Now Peachtree)	
Algebra I-III	ea31.99
Counting Bee	23.99
Decimals / Fractions 3 0	ea33.99
PSAT Word Attack	33.99
SAT Word Attack	33.99
JACK REPORT	74.99
LEARNING Format II	109.99
LEARNING CO Bumble Games	26.99
Bumble Plot/Magic Spell	ea26.99
Gertrudes Puzzie/Secret	ea29.99
Mopltown Parade/Hotel	ea26.99
Rocky's Boots	34.99
MASTERTYPE	31.99
MICROLAB Miner 20-49er	27.99
MICROSOFT Multiplan	165.99
DOLLARS & SENSE (Il/c)	79.99
ODESTA Chess	45.99
PFS Report	79.99
File	89.99
Graph	89.99
Write	89.99
SENSIBLE SPELLER	79.99
SUBLOGIC Night Mission Pinball	32.99
Flight Simulator II	37.99
ULTIMA III	39.99

ACCESSORIES

FINGERPRINT (Epson Enhancement)	44.99
FLIP/N FILE (original)	14.99
FLIP/N FILE w/Locktray (25)	17.99
FLIP/N FILE w/Locktray (50)	27.99
HAYES 300 Baud Smartmodem	219.99
1200 Baud Smartmodem	495.99
LIBRARY CASE	1.99
KENSINGTON PC Saver	29.99
PRINTERS C-TOH	379.99
Epson FX80	499.99
Epson FX80	329.99
Okidata 82-93	\$CALL
PRINTER STAND Sm. (plxgls)	24.99
PRINTER STAND Lg. (plxgls)	29.99
RIBBONS-Brother	\$Call
MX & FX 80	4.99
MX & FX 100	7.99
OKI 82, 83, 92, 93 & Gemini	2.99

OKIDATA 92P For IBM Only
Includes Plug 'n Play 459.99

IBM

ALPHA Typefaces	79.99
ASHTON TATE dBase II	399.99
Friday	184.99
Cyclopedica	59.99
AST I/O Plus	\$CALL
Mega Plus	289.99
Six Pack Plus	279.99
26.99	
BRODERBUND Serpentine	26.99
Lode Runner	24.99
CAI Masters	ea31.99
Subjects	ea16.99
CROSSTALK	139.99
EDUWARE (Now Peachtree) Algebra I	34.99
HAYES 1200B Modem	439.99
JOYSTICK Kraft or TG	44.99
LIFETREE Volkswriter	119.99
LOTUS 1-2-3	\$CALL
MASTERTYPE	34.99
MICROLAB Miner 20-49er	27.99
MICROSOFT Flight Simulator II	35.99
Mouse	129.99
Multiplan	165.99
MONOGRAM Dollars & Sense	119.99
NORTON Utilities	55.99
PC CRAYON	49.99
Tutor	47.99
PFS Write	99.99
File	99.99
Report	89.99
Graph	99.99
SERRA ON-LINE Frogger	26.99
SIR-TECH Wizardry	44.99
SUBLOGIC Night Mis. Pinball	32.99
TEAC 1/2 Height DS/DD Drive	239.99
TITAN 64K BOARD	499.99
VISICORP. Visicalc	164.99
Schedule.	ea199.99

PLANTRONICS ColorPlus 375.99

Beagle Bros
Micro Software Inc.

ALPHA PLOT	25.99
APPLE MECH. FLEX TEXT	ea19.99
BEAGLE BASIC. DOUBLE TAKE	ea23.99
DOS BOSS	17.99
FRAME-UP	19.99
GIPLE	32.99
PRONTO DOS	19.99
TIP DISK #1	15.99
TYPEFACES	15.99
UTILITY CITY	19.99

Continental

FCMFL 1st CLASS MAIL (AP)	59.99
FCMFL 1st CLASS MAIL (IBM)	71.99
HOME ACCOUNTANT (AP)	44.99
HOME ACCOUNTANT+ (IBM)	84.99
PROPERTY MGMT. (AP, IBM)	299.99
TAX ADVANTAGE (Ap)	39.99
TAX ADVANTAGE (IBM)	49.99
ULTRAFILE (IBM)	119.99

HOME ACCOUNTANT
Il/c 57.99 Mac 75.99

APPLE HARDWARE

1/2 HEIGHT DRIVE	219.99
AUTO REPEAT KEY	19.99
DAN PAYMAR Lower Case 1 (rev 1-6)	25.99
Lower Case 2 (rev 7)	19.99
EASTSIDE Wildcard II	111.99
HAYES Micromodem IIe	239.99
KOALA PAD	85.99
KRAFT Joystick	44.99
MICRO-SCI A-2 Drive	219.99
MICROSOFT Softcard	229.99
MOUNTAIN Rampus + 32K	159.99
MOCKINGBOARD	109.99
ORANGE MICRO Grappier +	114.99
Buffercard	119.99
Buffered Grappier +	179.99
PADDLE ADAPPLE	24.99
TITAN TECH 128K Ram	379.99
Saturn 64K	279.99
Accelerator II	449.99
Neptune 64K	199.99
TG Joystick	39.99
Paddles	29.99
THUNDERCLOCK	99.99

MOCKINGBOARD (Il/c) 99.99

APPLE HARDWARE

1/2 HEIGHT DRIVE	219.99
AUTO REPEAT KEY	19.99
DAN PAYMAR Lower Case 1 (rev 1-6)	25.99
Lower Case 2 (rev 7)	19.99
EASTSIDE Wildcard II	111.99
HAYES Micromodem IIe	239.99
KOALA PAD	85.99
KRAFT Joystick	44.99
MICRO-SCI A-2 Drive	219.99
MICROSOFT Softcard	229.99
MOUNTAIN Rampus + 32K	159.99
MOCKINGBOARD	109.99
ORANGE MICRO Grappier +	114.99
Buffercard	119.99
Buffered Grappier +	179.99
PADDLE ADAPPLE	24.99
TITAN TECH 128K Ram	379.99
Saturn 64K	279.99
Accelerator II	449.99
Neptune 64K	199.99
TG Joystick	39.99
Paddles	29.99
THUNDERCLOCK	99.99

MOCKINGBOARD (Il/c) 99.99

INFOCOM

FOR APPLE & IBM
For CP/M Versions - \$CALL

DEADLINE	32.99
ENCHANTER	32.99
PLANETBALL	32.99
SORCERER	37.99
STARCROSS	24.99
SUSPENDED	32.99
WITNESS	32.99
ZORK	24.99

SEASTALKER 31.99

KENSINGTON

SYSTEM SAVER
\$65

Sierra ONLINE INC

BC QUEST FOR TIRES	27.99
FROGGER (Ao)	21.99
GENERAL MANAGER	146.99
HOME WORD	49.99
OILS WELL	23.99
SCREENWRITER II	81.99
ULTIMA II	36.99

QUADRAM

APIC (APPLE // PARALLEL)	129.99
eRAM 80 column 64K IIE	129.99
MICROFIZER (All Configurations)	149.99
QUAD 512 + (64K)	229.99
QUADBOARD I or II (No K)	219.99
QUADBOARD I or II (64K)	269.99
QUADCOLOR I	205.99
QUADCOLOR I UPGRADE	209.99
QUADLINK	479.99

QUADCHROME
Hi-Res Color Monitor \$529.99

Novation

103 Smart Cat	169.99
103/212 Auto Cat	399.99
J Cat	109.99
Access 123 (IBM)	435.99
Applecot Upgrade 1200 Baud	309.00
Cat Modem	135.99
Expansion Module	29.99

APPLECAT II
1200 Baud Modem 259.99

QUALITY MONITORS

AMDEK 300A Apple	159.99	TAXAN 12" Amber IBM	169.99
AMDEK 310A IBM	179.99	TAXAN 12" Green 20MHZ	129.99
PRINCETON RGB HX-12	475.99	USI Pi 1 9" Green 20mh	99.99
TAXAN 420 RGB	489.99	USI Pi 4 9" Amber 20 mh	109.99
TAXAN 12" Green IBM	159.99	USI 1400C Color Composite	279.99

TAXAN 12" Amber For Apple 20MHZ 139.99

MicroPro

INFOSTAR	259.99
MAILMERGE	139.99
SPELLSTAR	139.99
WORDSTAR	259.99
WORDSTAR PRO	369.99
PRO OPTIONS PACK	182.99

Videx

ENHANCER II	109.99	PRE-BOOTS Apple Writer	14.99
FUNCTION STRIP	31.99	Apple Writer for Ultratram	23.99
HARDSWITCH	16.99	Visicalc	39.99
MICROMODEM CHIP	24.99	Visicalc/Memory Expansion	71.99
PSIO	169.99	Visicalc for Ultratram	54.99
SOFTSWITCH	25.99	ULTRATRAM	259.99
ULTRAPLAN	129.99	VIDEOTERM w/SS + INV	219.99

COMPUTER DISCOUNT PRODUCTS
860 So. Winchester Bl., San Jose, CA 95128

- CALL (408) 985-0400 -

Retail Showrooms In California
San Jose • San Mateo • San Francisco

- No Charge For Credit Cards
- Prices Subject To Change
- Software Sales Are Final
- International Orders Welcome
- Min. UPS Chg. \$4 + Ins.
- Min. US Postal Chg. \$10
- P.O.'s Welcome - \$CALL

VISA AMERICAN EXPRESS MasterCard



MONEY MATTERS BY KENNETH M. LANDIS

Calculating your return
on zero coupon
bonds



TIGRS & CATS IN THE BOND JUNGLE

How old are you? If you're younger than 40, you probably think that it's too early to begin preparing for your retirement. You're right. "Preparing" for your retirement involves picking where you want to live and travel and what you want to do.

It's not too soon to begin *planning* for your retirement, though. Without proper financial planning, you're not going to be able to retire, because you won't be able to afford it.

Financial planning is a term that is often used interchangeably with *investing*. Everyone wants to buy something today that will be worth more in the future.

For those of you who expect that inflation will continue to go down, high-interest-rate, long-term bonds are an attractive investment for the future. If inflation does go down, bonds will be

worth more, and if inflation goes up, bond prices will fall.

Bond Basics

Ever since the era of the flapper, bonds have been a popular, even presti-

Although Gatsby is no longer with us, bonds are—and they're still considered a good investment for long-term income growth.

gious, investment. The Great Gatsby himself was "a bond man." Although Gatsby is no longer with us, bonds are—and they're still considered a good investment for long-term income

growth, especially compared to the wild and woolly stock market.

Bonds are not what they once were, though. Starting in the late 1970s, when interest rates began to change faster than foreign governments, bonds became a very risky business.

Because bonds pay interest on a specified capital amount (a 12%, \$1000 bond pays \$120 per year in interest, plus the par value back at maturity), their value has to change to keep the bond in sync with changes in interest rates. Take our 12% example. If interest rates went up, then the value of the bond would have to drop to make the \$120-a-year interest payments competitive. Conversely, if interest rates fell, the value of the bond would go up.

For many of you, this little lesson has been a simple refresher in bond basics. Now, get ready to enter the jungle, and

KIRK CALDWELL



HOW TO UNSCRAMBLE YOUR NEST EGG.

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

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

And you're looking at it.

Making sense of your dollars.

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

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

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

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

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

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

Many happy returns.

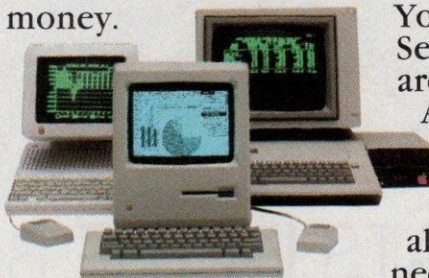
You can use Dollars and Sense around the house or around the office.

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

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

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

To keep Uncle Sam from raining on your parade.



Macintosh™ version
in stores now.

MONOGRAM

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

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

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

CIRCLE 106 ON READER SERVICE CARD

beware of the TIGRS and CATS.

The Jungle

TIGRS (Treasury Investment Growth Receipts), which come from Merrill Lynch, and CATS (Certificates of Accrual on Treasury Securities) from Salomon Brothers are bonds, but not the domesticated type you are used to dealing with. For the calendar year that ended March 31, 1984, conventional 30-year government bonds fell in price 3%, but bonds such as TIGRS and CATS fell 25%.

The generic name for TIGRS and CATS is zero coupon bonds (zeros). Unlike conventional bonds, zeros do not pay interest; instead, they are heavily discounted. If the prevailing market in-

▶ With a zero coupon, you don't see a penny of interest until the bond matures, so you don't have the option of reinvesting.

terest rate is 12% and a ten-year zero is "priced to market" or yields 12%, it will cost approximately \$312, whereas a conventional ten-year, 12% bond that has a semiannual interest payment will cost approximately \$1000.

Why? Because the interest you would receive from the zero coupon bond (if it were a conventional bond) is subtracted from the bond's par value to arrive at its price.

Just like other bond buyers, zero-coupon buyers assume that interest rates won't go up, but down. Thus, they try to lock in today's high rates and know that if inflation falls, their bonds will be worth more.

The zero-coupon feature drastically lowers the price of bonds and makes them attractive to people who might not otherwise buy bonds. With all this going for them, why are zeros financial dynamite? The problem lies in the interest income from the bond.

Remember, a 30-year government bond pays interest semiannually, but a zero coupon bond does not pay interest until maturity. If rates do go up, you can mitigate the effect by investing the interest you receive from a conventional bond into another instrument (other bonds, money-market funds, and so on) that are yielding the new, higher rate. With a zero coupon, you don't see a penny of interest until the bond ma-

OUR NEW PRODUCT WAS DESIGNED FOR THEIR NEW PRODUCT.

The CRICKET adds natural female voice output, an unlimited vocabulary robotic voice, sound effects and stereo music, plus a clock to the new Apple IIc. Hear it at leading Apple dealers.

Street Electronics
1140 Mark Ave.
Carpinteria, CA 93013
(805) 684-4593



Apple is a registered trademark of Apple Computer, Inc.

CIRCLE 324 ON READER SERVICE CARD

Business as Usual?

Business as usual these days means a computer that's up and "humming." But if your computer were stolen or damaged, you wouldn't have business as usual.

YOU'D HAVE TROUBLE!

You can get fast replacement for your entire system and be back in business in a hurry by protecting your computer with SAFEWARE Personal Computer Insurance. It's the only coverage designed specifically for personal computers used for business — in your office, shop or home.

SAFEWARE protects ALL hardware, ALL purchased software and ALL media against theft, accidental damage, natural disaster, power surge, etc., regardless of use, after a low \$50 deductible.

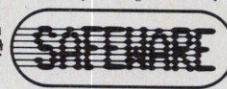
(Not without your computer it wouldn't be.)

Fast, courteous claims handling prevents your losing valuable business computing time.

Find the premium price for the coverage you need listed in the table below, available for as low as \$35 per year. Fill in the coupon today. Your coverage will begin as soon as your payment is accepted. Or, for even faster coverage, call our toll-free number.

1-800-848-3469

(In Ohio call 1-614/262-0559)
Phones open 8 a.m. to 8 p.m.
Monday through Saturday



Total Hardware, Media & Software System Value	Annual Premium
Up to \$ 2,000	\$ 35
\$ 2,001-\$ 5,000	\$ 60
\$ 5,001-\$ 8,000	\$ 75
\$ 8,001-\$11,000	\$ 90
\$11,001-\$14,000	\$105

Call toll-free for rates on higher coverage. Coverage differs in Texas.

It is an underwriting requirement that you insure your system for its full value. Call for student rates.

Mail to: SAFEWARE, P.O. Box 02211, Columbus, OH 43202.

Before I'm out of business,

please issue my SAFEWARE Insurance Coverage.

Name _____

Street _____

City _____ State _____ Zip _____

System value \$ _____ Check Enclosed VISA MasterCard

Card # _____ Exp. Date _____

Signature _____

No risk. You may return contract for full refund within 10 days. Coverages and units are subject to the terms, conditions and exclusions in the contract.

A+

tures, so you don't have the option of re-investing. You're locked in to the same interest rate, which could go well below future market rates, for the life of the bond.

As we have already learned, if interest rates go up, the value of the bond goes down, and in the case of zeros, it goes way down! Of course, your losses are only on paper, unless you sell the bond. According to Pacific Investment Management of Newport Beach, California, a 10-year zero is nearly twice as volatile in price as a 10-year conventional bond, a 20-year zero is nearly three times as volatile, and a 30-year zero is about four times as volatile as a 30-year conventional bond.

Even with this high degree of volatility, zeros can be a good investment, especially for self-directed Individual Retirement Accounts (IRAs) or in custodial accounts (such as a child's edu-

cation fund). The advantage of a zero coupon bond is that you automatically earn interest on your interest at a set rate, even if interest rates fall. For example, on a 20-year 12% zero coupon bond, one-quarter of the total interest is on the initial cash investment, and three-quarters is interest on interest. That's what makes these bonds so attractive for retirement. In a market where the prevailing interest rate is approximately 12.45%, a 30-year zero coupon bond costs approximately \$300. Twenty years later you'll get \$1000.

Tax Considerations

For our analysis, we will look at zeros as IRA investments, so we can ignore the effects of income tax. If you "break" the IRA, however, or are evaluating bonds as a standard investment, be advised—with conventional bonds, the bondholder has to pay tax on received income (interest payments).

With a zero coupon bond, the bondholder pays taxes on the theoretical interest accretion.

A Spreadsheet Model

Now that you have a basic understanding of what goes on with zeros, we are going to build a spreadsheet model that analyzes how an investment in zeros can help or hurt you (see figure 1). In no way does our analysis presuppose that zeros are a bad investment. On the contrary, for investors who will hold them for the long term, they lock in interest rates that are historically high. You can use any spreadsheet program you want for this model, because it uses common commands.

The value of a conventional bond is the sum of the present value of the interest paid each year plus the present value of the par, or maturity, value, which is typically \$1000 per bond. The present value of a zero is based only on the par value of the bond. Remember, there is no periodic interest payment, only full settlement at maturity.

Let's look at the formulas in the spreadsheet and see what we are doing. Luckily, we can use standard formulas for computing the present value of each dollar we will get in the future (the par value of the bond) and the present value

$$B10: (C0) + \$D\$1 - ((\$D\$1/\$B\$20) * (((\$D\$1 * \$D\$4) / 2) * (1 - (1 / ((1 + (B9/2)) ^ (\$D\$2 * 2)))) / (B9/2) + (\$D\$1 * (1 / ((1 + (B9/2)) ^ (\$D\$2 * 2)))))) - ((\$D\$1/\$E\$20) * \$E\$20 - (\$D\$1 * (1 / ((1 + (B9/2)) ^ (\$D\$2 * 2))))))$$

Figure 1: This spreadsheet formula analyzes how an investment in zero coupon bonds can help or hurt you. Note: \$ = a constant formula (reference), whereas no \$ means the reference changes when replicated.

NOW... APPLE IMAGEWRITER* COMPATIBLE!

From Screen to Paper at the Touch of a Button

Serial and Parallel
The new Apple* - compatible parallel printer interface card from Texprint is the **ONLY** way to get fast, easy printouts of ANY screen, at ANY time, with ANY program - in color and black & white.

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 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** . 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*** 80 column cards
- Printers - All of the most popular printers, including color, are easily selected with a dip switch

PRINT-IT!™ is available at your local computer store now! If they don't have it in stock, ask them to get it for you.

PRINT-IT!™ is also available for \$199 directly from Texprint with an unconditional money-back guarantee. Just return it in good condition within 30 days of purchase, post-paid, for a full refund. Qualified educational and dealer discounts available.

Texprint's Model 2 (with most PRINT-IT!™ functions, except the push button pause/print feature) is the next best printer interface available anywhere, and for only \$149.

- *Apple Computer
- **Digital Research
- ***Videx, Inc.

TEXPRINT

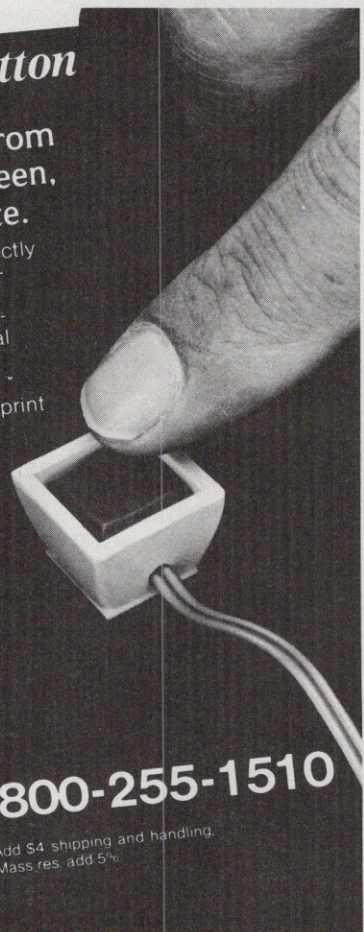
Subsidiary of Computer Products Inc.
220 Reservoir Street
Needham Heights, MA 02194
Tel. (617) 449-5808

To Order

Call Toll Free 1-800-255-1510



Add \$4 shipping and handling.
Mass. res. add 5%.



of each dollar of the interest income, which is also called an annuity.

The formula for each calculation is basically the same. The only variable that changes is the interest rate. The areas shaded yellow in the formula are for computing the present value of the bond's par value. We compute a factor, which tells us what each dollar is worth, and then multiply it by our investment, which gives us the total present value of the par value of the bond.

The areas shaded pink compute the present value of the interest annuity on a conventional bond. Notice that we divide the interest rate and the coupon payment in two because of the semiannual interest payment, which, with bonds, has a higher value than does a yearly payment.

The blue area is a "leveler." Because we are using the theoretical market price for the bonds, we have to calculate how many bonds we can afford for our investment. By dividing our investment by the theoretical market price, we come up with a decimal factor that "levels" our calculations to our investment amount.

The green area is also a leveler. Because zeros are drastically different in price from conventional bonds, we have to develop an equivalent means of comparing them—an apples-to-apples, rather than apples-to-oranges, comparison. To do so, we divide the theoretical price of a zero coupon bond into the total investment and multiply our valuation calculations by it.

At the bottom of the spreadsheet, we compute the estimated present value of a conventional bond, as well as a zero coupon bond. We use these calculations to compute the change in price of both bonds as the interest rate increases. (Figure 2 shows how the spreadsheet will look on your computer.)

Risk or Reward?

The risk analysis calculates the additional loss you may sustain with a zero coupon bond compared to a similarly priced conventional bond if interest rates go up. At each interest rate, we take the original investment in each type of bond and subtract it from the bond's "new" price (the new price is based on the interest rate shown in figure 2 above the estimated loss). The formula then multiplies the difference by the respective levelers to get the equivalent loss on each bond.

Finally the formula subtracts the change in price of the zero coupon bond from the change in price of the conventional bond. The result is the additional

loss that you would incur on a zero coupon bond over a conventional bond as rates rise.

To build the spreadsheet, set up your headings to correspond to the row-and-column references in figure 2. Key the formula in figure 1 into cell B10, making sure that you keep the relative vs. the constant references the same. Then use your spreadsheet's Copy or Replicate commands to copy the formula B10 into cells C10-F10, B13-F13, and B16-F16. Finally, key the formula in

The bond market, just like the stock, currency, and commodity markets, is an auction market.

figure 3 into cell B20 and the formula in figure 4 into cell E20.

To use the spreadsheet, all you have to do is enter the necessary information—the investment, the number of years until the bond matures, the prevailing interest rate (prime or T-bill rate) at the time of the offering, and the coupon rate of the bonds—in the input section (the first four lines of the spreadsheet entry), making sure that the numbers go into cells D1-D4. The model will do the rest.

The risk analysis shows you what your additional loss will be at .25% intervals, all the way up to 4% above the


prevailing market rate. By changing the interest and coupon assumptions, you can see the sensitivity of the bond.

If you have bought some zeros, you can plug in the prevailing interest rate and coupon rate that were in effect when you bought them and look at what's happened to them. Remember to adjust the years to maturity. A seven-year bond you bought one year ago has only six years left to maturity.

The closer the bonds get to maturity, the less the difference in their pricing, thus less additional loss. Try it on the spreadsheet, and you'll see the prices gradually merge together.

As with any analysis, we have made some simplifying assumptions. In this case, we have ignored brokerage commissions and taxes and have based the analysis on theoretical prices, rather than on historical market changes.

The bond market, just like the stock, currency, and commodity markets, is an auction market. As anyone who has ever been to an auction can tell you, emotion plays a big part in determining prices. It is this emotion that we have not quantified in our formulas, which is why the prices are "theoretical." We could probably incorporate emotion, but it would make the formulas, and thus the spreadsheet, more complex and difficult to use.

Build the spreadsheet on your Apple and give it a try. Knowing how much you may lose is a lot better than losing money you can't afford to lose. 

	A	B	C	D	E	F
1	INVESTMENT			\$1,000		
2	YEARS TO MATURITY			10		
3	INTEREST RATE AT TIME OF OFFERING			11.50%		
4	COUPON RATE ON BONDS AT OFFERING			12.25%		
5	*****					
6	RISK ANALYSIS- ESTIMATED LOSS ON ZEROS VS. CONVENTIONAL BONDS					
7	IF INTEREST RATES RISE					
8						
9	INT. RATE	11.75%	12.00%	12.25%	12.50%	12.75%
10	EST. LOSS	(\$9)	(\$18)	(\$26)	(\$35)	(\$42)
11						
12	INT. RATE	13.25%	13.50%	13.75%	14.00%	14.25%
13	EST. LOSS	(\$58)	(\$65)	(\$72)	(\$79)	(\$85)
14						
15	INT. RATE	14.75%	15.00%	15.25%	15.50%	15.75%
16	EST. LOSS	(\$98)	(\$103)	(\$109)	(\$115)	(\$120)
17	*****					
18						
19	CONVENTIONAL BOND PRICING				ZERO COUPON PRICING	
20		\$1,044			\$327	

Figure 2: Sample spreadsheet display with zero-coupon analysis

$$((\$D\$1 * \$D\$4) / 2) * (1 - (1 / ((1 + (\$D\$3 / 2)) ^ (\$D2 * 2)))) / (\$D\$3 / 2) + (\$D\$1 * (1 / ((1 + (\$D\$3 / 2)) ^ (\$D2 * 2))))$$

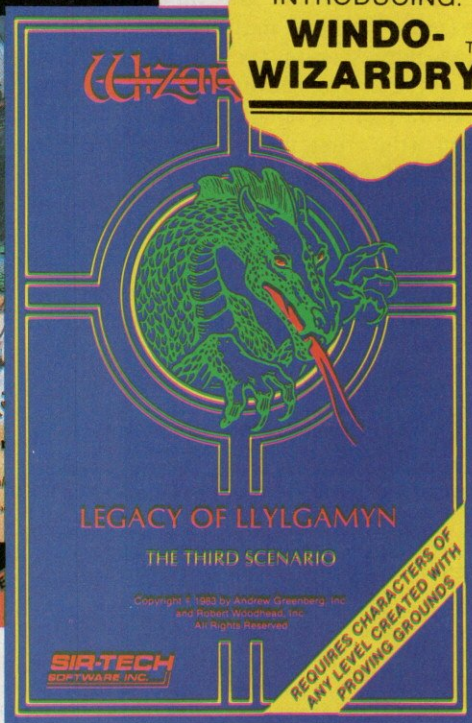
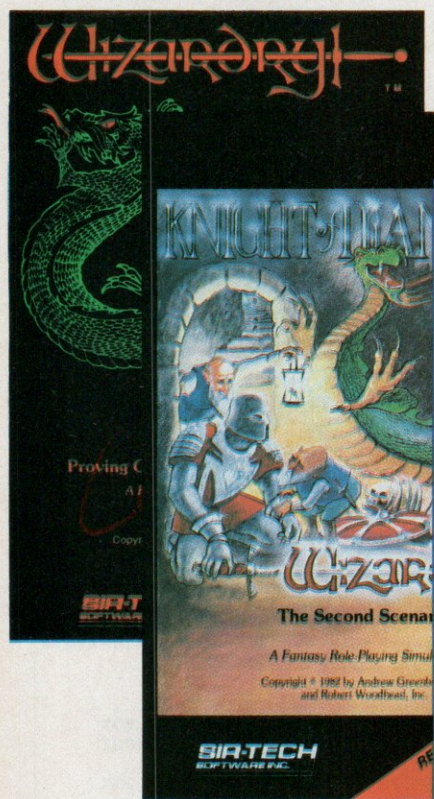
Figure 3: Formula for determining conventional-bond pricing

$$\$D\$1 * (1 / ((1 + (\$D\$3 / 2)) ^ (\$D2 * 2)))$$

Figure 4: This formula gives you zero-coupon pricing.

COMMITTED TO EXCELLENCE:

OUR COMMITMENT IS YOUR GUARANTEE OF SOFTWARE THAT CHALLENGES, ENTERTAINS, AND INTRIGUES!



The WIZARDRY Phenomenon
Continues!

INTRODUCING:
WINDO-TMWIZARDRY

Now, better than ever, the Wizardry adventure continues with LEGACY OF LLYLGAMYN. Cast spells, work your way through a 3-D maze and enjoy the thrill of Wizardry with our newest software innovation--WINDO-WIZARDRYTM. Its Lisa-like windows help you play faster and more efficiently than ever before! All the information you'll ever need is at your fingertips' command. SOFTALK's Review Editor, Roe Adams, calls LOL "...an excellent game! It's a landmark in graphics advancement." LEGACY OF LLYLGAMYN is a new world of excitement!

"The Best Yet!"

Margot Comstock Tommervik,
Editor, SOFTALK

SIR-TECH SOFTWARE INC.

Apple is a registered trademark of Apple Computer, Inc. SIR-TECH SOFTWARE INC., 6 MAIN STREET, OGDENSBURG, NY 13669, (315) 393-6633

ALL SOFTWARE AVAILABLE FOR THE APPLE AT YOUR FAVORITE RETAILER.

CIRCLE 260 ON READER SERVICE CARD

A+ ▶ THAT'S

ENTERTAINMENT

▶ GAME REVIEWS

TITAN EMPIRE

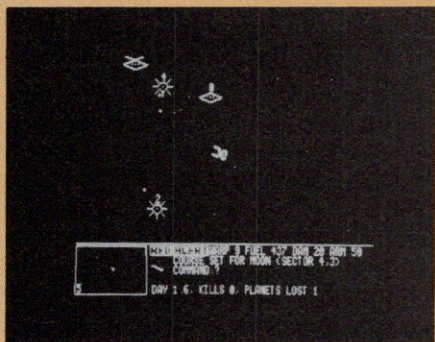
Muse Software
347 North Charles Street
Baltimore, MD 21201
(301) 659-7212

List Price: \$34.95

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

CIRCLE 471 ON READER SERVICE CARD

Yet another horde of aliens imperils Earth, and the powers that be call for a daring, intrepid Captain Kirk-like hero to save Terra from the space terrors.



Only this time, the enemy isn't the Klingons, but the evil denizens of Titan, one of Saturn's moons. These infamous invaders want to conquer the solar system, and guess who's been recruited to clash with the Titans?

Titan Empire, a tedious combination arcade and strategy game, places you in command of a starship. Another entry in the "Star Trek-with-the-innovative-twist" competition, this game fails to capture the wonder and excitement of the original game.

Titan Empire actually contains two twists. The first one makes our solar system the field of play, that is, from

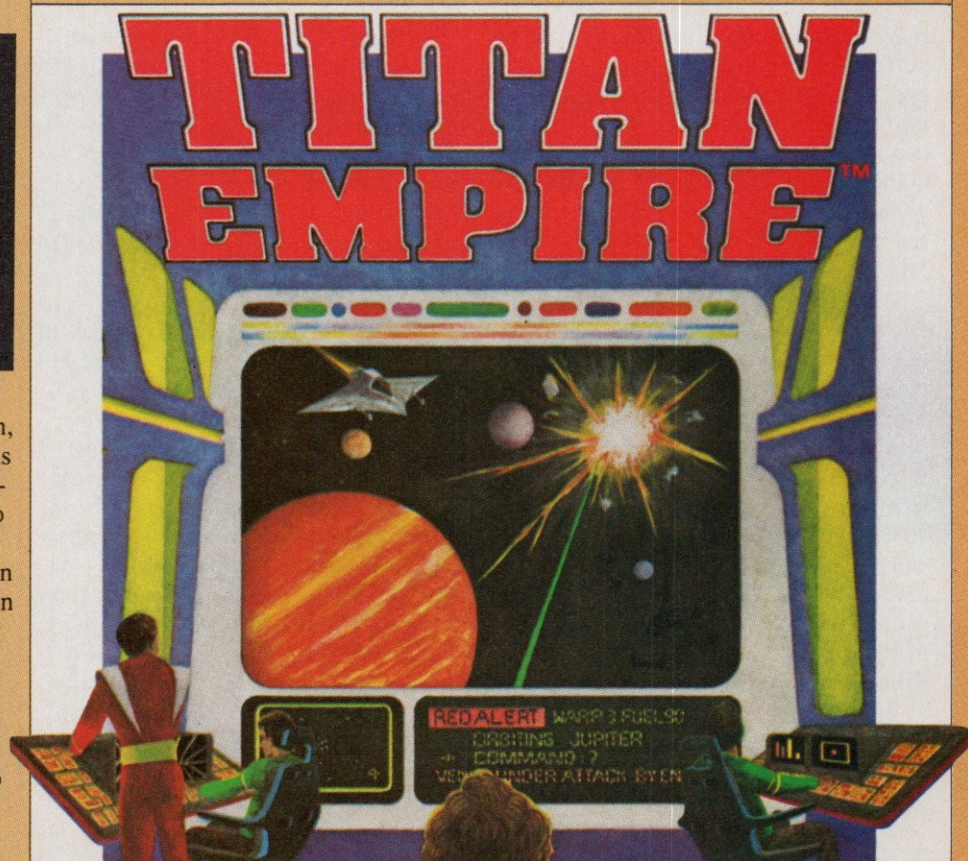
scorching Mercury to icy Pluto. Players can visualize familiar planets and moons.

The other twist borders on the mundane. Titan Empire places armies at your disposal, supposedly for conquering and defending planets. As any arm-chair general knows, he who controls the air, which is outer space, controls the ground, that is, the planet. You can annihilate all armies stationed on a planet by placing your starship in orbit and launching a ground bombardment.

As the starship commander, you have a five-year mission to conquer strange Titan worlds, to seek out and

destroy Titan life-forms and Titan civilization.

At your disposal is an Earth starship armed with photon torpedoes and tracking missiles, but, alas, no phasers. It does come with shields and an extensive set of sensors. The ship holds 500 units of fuel; and each time you fire the weapons or put up the shields, fuel units are subtracted. The ship is capable of speeds up to warp 9, that is, nine times the speed of light, but not impulse power, which is sublight speed. The faster the speed, the higher the fuel consumption. If destroyed, the ship reincarnates over a friendly planet.





The solar system contains 9 planets and 21 moons. Each planet or moon holds 1023 units of fuel and a maximum of 255 armies. At the start, Earth controls 22 of these heavenly bodies, with the Titans controlling the balance. Your starship begins play orbiting Earth.

Captain's Commands

The keyboard commands are swift and responsive and break down into five types: movement, combat, display, pilot, and orbiting. You can move either manually, that is, altering course by pressing one of the four direction keys, or automatically, by specifying a course to a particular planet or moon. You can alter the warp speed at any time, but even

▶ **The programming is competent, but the game design is seriously flawed.**

at warp 9, traveling between planets is slow and monotonous.

The firing, display, and pilot commands require only a single keystroke to perform their functions. In general, the program carries out the commands swiftly. Some of the more thoughtful commands include a Help menu, Pause Game, Save Game, and Clear All Previous Commands. The game saves high scores in the Titan Empire Hall of Fame.

Meanwhile, the Titans, those interplanetary nasties, are fanning throughout the solar system, conquering distant planets and moons and trying to overwhelm you with numerical superiority. As they take more planets, however, their offensive spirit lessens and they send out their forces piecemeal. This change of tactics probably occurs because the program compensates for the material imbalance, or perhaps it is because you've vaporized so many of the little buggers.

Stone-Age Graphics in the 23rd Century

Titan Empire's graphics are predominantly black and white, presenting an abysmal lack of color and creativity. Two effects, the scrolling purple-and-orange star field in the background and

the colorful explosion of a Titan ship, look pretty good. Unfortunately, that's about all the color the game contains.

The game's sound effects, though simple, are more effective than the graphics. The red alert beeps, photon hits register as grating sounds, and if the Titans destroy your starship, the game plays a funeral dirge.

Designer E. Zaron apparently tried to make a more graphics-oriented version—with a couple of twists—of the original Star Trek game. The programming is competent, but the game design is seriously flawed.

Fueling up, repairing damage, and beaming armies up and down create minor delays that may be logical, but are not especially enjoyable. In addition, you experience a sort of rigor mortis as the warp-9 starship plods slowly between planets.

Even when you reach a planet, what difference does it make? Planets and moons are all the same, from an icy rock called Pluto, to a gas giant named Jupiter.

Armies seem to be a good idea at first, but they add an extra element of bookkeeping. Parking the starship in orbit and bombarding the Titan armies with missiles is more effective than beaming down an invasion.

I disagree with Titan Empire's designation as an educational game. I find no lessons in astronomy, physics, or other science.

As for information, the five pages in the booklet contain facts and figures that are easily forgotten and just as easily found in an encyclopedia. The National Aeronautics and Space Administration, through the Government Printing Office, publishes books, booklets, and posters that are far more informative, interesting, colorful, and inexpensive than Muse's Titan Empire.

Titan Empire falls light-years short of educating and entertaining you. Its yawn-provoking graphics and dull play make Titans only half as much fun to destroy as Klingons. If you can measure a game at warp speeds, Titan Empire plods along on impulse power.

Russ Lockwood

Discover Magic Office System at your local dealer:

Joe Clark • Computer Supermarket
1777 Main Street • Tewksbury, MA 01876
617/851-5317

Dale Lack • Computer Headquarters
10 Rider Ave. • Patchogue, NY 11772
516/654-8252

Randy Sharp • Gulf Coast Computer Shoppe
306 Perry Ave. SE • Ft. Walton Beach, FL 32548
904/244-8675

Howard Stovall • Lexington Computer Store
2909 Richmond Rd. • Lexington, KY 40509
606/268-1431

Charles Warner • The Softwarehouse
650 Maple Hill Dr. • Kalamazoo, MI 49009
616/344-0276

Bruce A. Billingsley • Cinarco-Elliott
234 West Third • Davenport, IA 52801
319/324-0639

Bob Hudson • The Computer Patch Inc.
2775 Maple Ave. • Lisle, IL 60532
312/420-8861

Cinarco-Elliott
2200 36th Ave. • Moline, IL 61265
309/797-0137

Ryan Hodge • Pawnee Computer
23822 W. Pawnee • Goddard, KS 67052
316/794-8745

Steve Gates • Computer SOS
5731 Youree Dr. • Shreveport, LA 71105
318/865-7188

Gene Holley • The Computer Store
3725 Call Field • Wichita Falls, TX 76308
817/691-4552

Vasant L. Abhyanker • Computers Plus Co
4218 E. Wilshire Dr. • Phoenix, AZ 85008
602/955-1404

Roger Mass • Software Supermarket
11960 Wilshire Blvd. • West Los Angeles, CA 90025
213/207-1494

Ken Welk • Apple Country Ltd.
2602 Washington • Julian, CA 92036
619/765-0239

Greg Chamberlain • SGC Computer Goods
700 Mowry Ave. • Fremont, CA 94536
408/490-3420

Santa Rosa Computer Center
521 Mondocino Ave. • Santa Rosa, CA 95401
707/528-1291

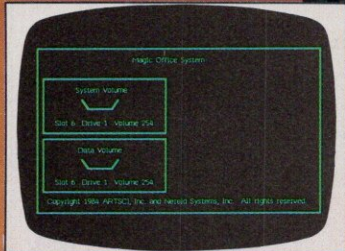
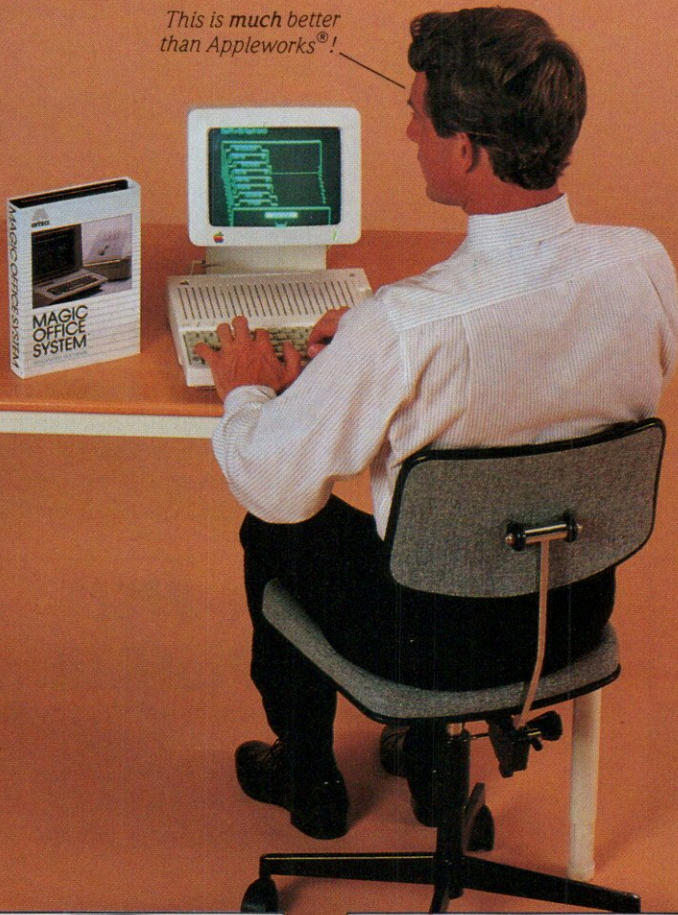
Stan Belzak • Juneau Electronics
1000 Harbor Way • Juneau, AK 99801
907/586-2260

artsci™

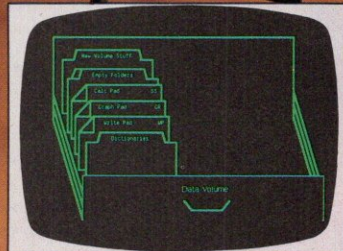
CIRCLE 108 ON READER SERVICE CARD

Here's the only integrated Apple program with all functions plus spelling checker on one disk: Magic Office System.™

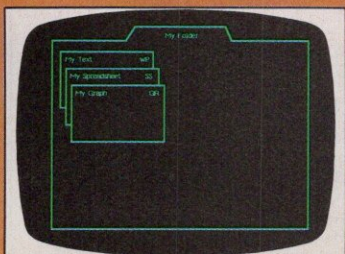
*This is much better
than Appleworks®!*



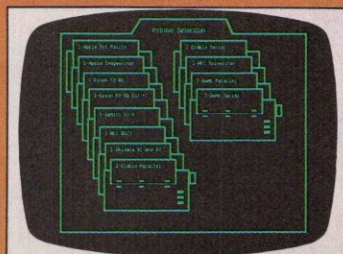
File Drawers contain...



Pads and Folders...which



organize your documents.



Printer selection is easy.

At last! The four most useful business programs in one integrated package for your Apple IIe and IIc.

Word Processing. Spreadsheet. Business Graphics. And an on-line Spelling Checker. All in Magic Office System.

One disk. No shuffle.

Now you can do presentations for your boss, your clients, your banker or investors—complete with spreadsheets and explanatory graphics and every word spelled correctly.

Or you can just do a simple letter—with every word spelled correctly.

You automatically raise the quality of your communications with a significant reduction of hassle.

WORD PROCESSING: *an enhanced version of a very popular program with automatic formatting and printing.*

SPREADSHEET: *more powerful than VisiCalc® and includes variable width columns and output formatting.*

BUSINESS GRAPHICS: *easy-to-create pie charts and multiple bar charts.*

SPELLING CHECKER: *first ever on-line automatic checker with room for any other words you wish to add.*

And Magic Office System's beautifully clear, simple icon menu organizes into visual file drawers with folders, documents and stationery for new material. You can move, edit, cut and paste with incredible ease. See the screens at left.

Want a Magic Office System right now? Check with your local dealer. If he doesn't have it, send in the coupon below.

*You'll need 64k, an 80-column display, two disk drives and a new outlook on using your computer:
takin' it easy!*

artsci™

I can't find Magic Office System at my local dealer.

Please send me more information right now.

Name _____

Business _____

Address _____

City/State/Zip _____

Telephone _____

Mail to: ARTSCI 5547 Satsuma Avenue
North Hollywood, CA 91601

Or call: 818/985-2922

API0

Magic Office System is a trademark of ARTSCI, INC. VisiCalc is a registered trademark of VisiCorp., Inc. Appleworks is a registered trademark of Apple Computer, Inc.



JURY TRIAL II

Navic Software
Box 14727
North Palm Beach, FL 33408
(305) 627-4132
List Price: \$49
Requires: Apple II, II Plus, or IIe; 48K RAM; one disk drive

CIRCLE 472 ON READER SERVICE CARD

The prosecuting attorney faced the witness on the stand. "Mr. John Onthespot, where were you the night of the 12th, at about 6:00 in the evening?"

"At the corner of 86th and 66th. I was out for a walk."

"And you saw someone exiting from a second-floor apartment through a window."

"Objection, your honor. The attorney is leading the witness," the defense attorney protested.

"Overruled."
"Describe that person."
"Yes. A big man, somewhat young, wearing an orange shirt, open collar, short sleeves. And red pants. He had a tattoo on his arm."

"And is this suspect the man you saw?"

"Yes, that's he."

"Your honor, the prosecution rests!"

Apple as Courtroom
Jury Trial II, a fascinating game of

You must gather clues about the crime, choose a jury, and argue the case in court.

legal strategy, packs a courtroom full of suspense into your Apple. The game is for two players—one takes the role of

the prosecuting attorney and the other the defense attorney. Additional players serve as witnesses, and the computer functions as judge and jury.

Like any good attorney, you must gather clues about the crime, choose a jury, and argue the case in court. The clues come from the police and a sheriff. You select the six-member jury from a pool of 12 people. The case is tried in front of the Honorable Judge Apple.

First, the police describe the scene of the crime, in this case a break-in at 86th and 66th streets. A paragraph details the time, date, weather, and what was stolen.

Next, the attorneys question a red-neck sheriff about the suspect. The sheriff may or may not answer, depending on his mood and on whether Deputy Fuzz has taken the case sheet or not. His answers concern the suspects' appearance, vehicle, and weapons.

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**

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 1983
\$39.95 complete **\$99.95 with Data Base Management**

MHH. Master Harness Handicapper™

Professional software designed to provide a thorough analysis of all trotter and pacer races in North America and Canada. Features:
Class Post Positions Time Finish
Driver Track Conditions Time Last Quarter
Days Since Last Trainer Track Rating
Gender Time ¼ Temp Allowance
\$159.95 complete with integrated Master Bettor™ **\$199.95**

MB. Master Bettor™

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

IBM™
APPLE™
TRS-80™
CPM™
COMMODORE™

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

BROCHURE AVAILABLE

CIRCLE 146 ON READER SERVICE CARD

Look Out PFS!* Here comes ProFILER...

FAST! WRITTEN ENTIRELY IN ASSEMBLY LANGUAGE.
8 TIMES FASTER THAN DOS 3.3

The New Data Manager for the Apple Computer...
Let's take a look...

	FEATURE	ProFILE	PSF File	
TICKLER FILES	Multiple Forms per Disk	YES	NO	EMPLOYEE RECORDS
	Maximum Records per File (65,000 w/ProFILE Hard Disk)	1500 + YES	1000 NO	
EMPIRE BLDG.	Report Generator Included	YES-FREE	NO (\$100 Extra)	PATIENT RECALL
	Pro DOS Operating System	YES-FREE	NO	
STOCK ANALYSIS	Full Screen Editor	YES	NO	CUSTOMER ACCOUNTS
	Works on APPLE II +, IIe, IIc, III, Franklin	YES	YES	
	Arrow Keys function OK	YES	NO	
	Multiple Index Files	YES	NO	
DATING ANALYSIS MATCHING	Supports 80 Column Displays	YES	YES	CHURCH/ CLUB MEMBERSHIP ANALYSIS
	Comprehensive User's Manual	YES	YES	
	Cost: Data Base	\$69.95	\$89.00 +	
	Report Generator	FREE	\$89.00 +	
TOTAL COST		\$69.95	\$178.00 +	

ProFILER available from selected computer stores or directly from:
CUSTOM COMPUTER PRODUCTS 355 Costa Mesa St., Costa Mesa CA 92627

P.S. The sellout Super Applesoft Line Editor is still available from:
CUSTOM COMPUTER PRODUCTS for only **\$24.94**. Specify DOS 3.3 or Pro DOS version.
(714)548-5429



TERMS:

Mastercard, Visa, Check or Money Order. Add \$3.00 for shipping. Calif. Customers add 6%

* Apple, Applesoft and ProFILE are registered trademarks of Apple Computer, Inc.
* PFS is a registered trademark of Software Publishing Corp.

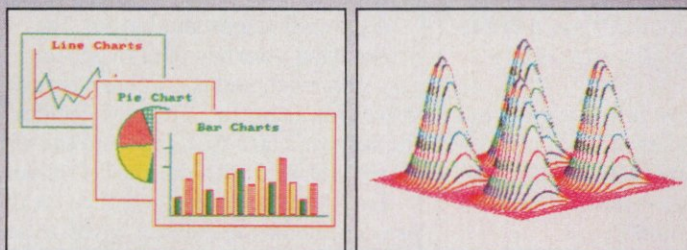
CIRCLE 375 ON READER SERVICE CARD

Now your Apple can print in color for just \$499.



Transtar 315
by **Vivitar**

Get everything you need to make your Apple® II, II Plus or IIe print in color. Vivitar's Transtar 315 printer, worth \$599. A free PICS Card, worth \$120. A total \$719 value for only \$499. You save \$220, thanks to our special volume purchase.

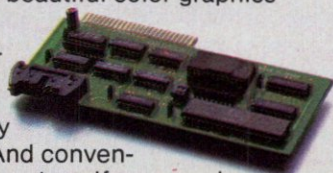


The 315 produces seven different colors and over 30 shades with a single pass, at a brisk 50 cps. It prints brilliant graphics on either friction or pin fed paper. You can print original artwork. Produce architectural plans. Prepare educational projects. Add drama to charts and graphs for business presentations. Print text in 80 columns, with highlighting or a second color for emphasis. All for only \$499.

Get a \$120 PICS Card. Free.

Your free parallel interface (PICS) card contains graphics dump firmware. It lets you print beautiful color graphics with just a touch of the printer copy button. A \$120 value, free.

Transtar is backed by Vivitar Corporation. So you get a generous six-month limited warranty for the 315 on parts and labor. And convenient service from four regional centers. If you need



CIRCLE 165 ON READER SERVICE CARD

help using your printer, there's a telephone support number you can call. Plus an unconditional, no-risk, money-back guarantee from Winslow Sales. Test your Transtar 315 for a full 30 days. If you're not satisfied, return it for a complete refund. No questions asked.

To get your complete color printing package for just \$499, simply call toll-free today. Or return the coupon below. This one-time offer ends when our supplies are exhausted. So don't let this great deal get away.

WINSLOW SALES

Credit card orders call toll free **1-800-821-6349** and ask about multi-purchase discounts! (except Alaska and Hawaii)

Or write: **WINSLOW SALES**, 2120 116th N.E., Bellevue, WA 98005.

Please send me _____ Transtar 315 Printer(s) by Vivitar at just \$499 each (plus \$11.00 shipping and handling for each printer), and include my FREE PICS Card. (Add 8.1% sales tax in Washington State.)

My printer comes with a six-month limited warranty* from Vivitar Corporation, plus a no-risk, money-back guarantee from Winslow Sales.

My check is enclosed for \$ _____
 Please charge my VISA MASTERCARD AMERICAN EXPRESS

Account Number _____ Expiration Date _____

Signature _____

Name _____

Company Name _____

Street _____ Apt./Suite _____

City _____ State _____ Zip _____

Phone (in case there's a question about my order): (_____) _____

*For a free copy of the manufacturer's warranty, write: Winslow Sales, 2120 116th N.E., Bellevue, WA 98005

AP10

SEE PAGE 10

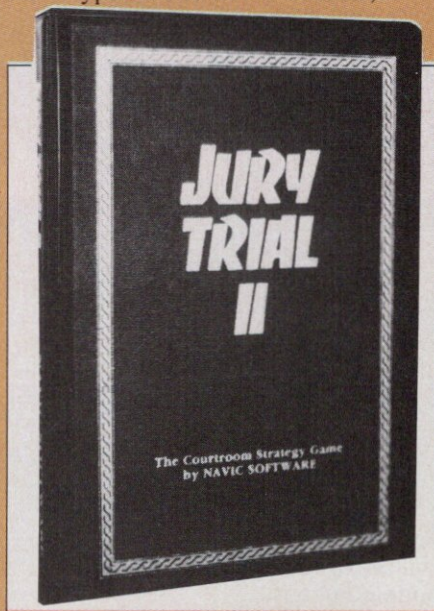
GUARANTEED

LOWEST
APPLE
PRICES



You need a six-member jury to start the trial. Jury selection is where the attorneys begin to lock horns over the case, and it affects the entire game.

The 12-page instruction booklet describes the jurors, complete with caricatures. All the jurors represent stereotypes of one sort or another, in-



cluding an Archie Bunker type, a brainless beauty, a stuffy aristocrat, and a real dipstick.

As the prospective jurors parade by, both attorneys must agree on a choice before that candidate is seated. Each attorney can challenge—that is—veto, the seating of two jurors.

Of course, the attorneys want to take advantage of these biases, so they try to stack the jury in their own favor. For example, the prosecution always wants to seat Mr. Hawgg, the Archie Bunker type, because he always votes to convict. On the other hand, the defense wants to seat kindly Ms. Eubank, who usually votes to acquit.

Questioning

During the trial, each witness appears for five questions of direct testimony and five questions of cross-examination. The attorneys do not ask their own questions. Instead, the computer displays a question on the screen, and the questioning attorney can choose to ask it or pass it by. The opposing at-

torney may object to any question, and the computer judge overrules or sustains the objection.

Questions come in three basic types: yes-and-no, one-word descriptions, and affidavits. A yes-and-no question, such as "Was the weapon a type of firearm?" requires a yes or no answer. Other questions, such as "What color was the getaway car?" require one-word answers.

Affidavits pose the toughest and most important questions. They usually ask the witness to describe the crime scene, suspect, or getaway vehicle. The opposing attorney cannot object to an affidavit.

The program is pretty clever at picking out the key words in the affidavit, so you cannot fool it. For example, one scatterbrained witness described the scene of the crime as a "ship at sea, 16th century galleon." The program rejected the affidavit as immaterial to the case.

The program accepts attorneys' and witnesses' input quickly, with new questions appearing almost instantaneously. Affidavits require a few seconds to tabulate but do not slow game play down measurably.

As in real courtroom battles, the prosecuting attorney tries to get the jury to convict, and the defense attorney strives for acquittal. The jury decides the suspect's fate by comparing the witnesses' answers with the sheriff's clues.

Each time a witness, whether for the prosecution or the defense, gives an answer that matches one of the sheriff's clues, the prosecution receives "one point for conviction." Each juror has a certain numerical threshold. If the total number of conviction points exceeds this threshold, the juror votes to convict. If not, the juror votes to acquit.

For example, the prosecution needs very few conviction points to convince Mr. Hawgg to convict the suspect. On the other hand, the prosecution requires many points to convince Ms. Eubank to vote to convict. You can see why jury selection is so important. Thus, witnesses on both sides must pay attention to the clues. The prosecution witnesses try to agree with the clues, and the defense witnesses try to disagree.



Creative Computing

the #1 magazine of computer applications and software

December 1983
Vol. 9, No. 12
\$2.95

Programming Techniques

In-Depth Evaluations:

- Kaypro 10
- Casio FX-700P
- Quadlink
- Koalapad
- Pixy Plotter
- Percom TI Disk Drive
- Apple Mechanic
- The Tool
- DiversiDOS
- Xedit
- Memory / Shift
- MULE
- Witness and Planefall
- Games for TS 1000
- Arcademic Learning Series
- Spacediscs
- Controller Update

High Precision Functions in Basic

CBasic Clinic

Basic Debugging

Input Line Editor

Plotting Tutorial

Preventive Maintenance Primer

CREATIVE COMPUTING

VOL. 9, NO. 12

DECEMBER 1983



SOFTWARE TO STIMULATE

Stimulate your mind every month with the #1 magazine of computer applications and software... CREATIVE COMPUTING! There is no other magazine like CREATIVE COMPUTING... WE TALK YOUR LANGUAGE!... Any make... any model... whether it's Apple, IBM, Radio Shack, TI, Mattel, Atari, Commodore... CREATIVE COMPUTING has monthly departments and articles you can use! You will receive a continuing education on *everything* related to personal computing with intriguing and useful applications for your personal computer. This is a magazine that will help you get more out of your computer—versatility, function and enjoyment—in easy-to-read and fully illustrated articles!

Subscribe to CREATIVE COMPUTING today and save up to 26%!

YES

creative computing

P.O. Box 5214, Boulder, Colorado 80322

CC8Z045



Please enter my subscription to CREATIVE COMPUTING for:

- | | | |
|--|--|---|
| <input type="checkbox"/> 8 issues
for \$13.97.
I SAVE 16%! | <input type="checkbox"/> 1 year (12 issues)
for \$19.97.
I SAVE 20%! | <input type="checkbox"/> 2 years
for \$36.97.
I SAVE 26%! |
|--|--|---|

Mr/Mrs/Ms _____ (please print name in full)

Company _____

Address _____

City _____ State _____ Zip _____

Check one: Payment enclosed Bill me later

Charge my: American Express Visa MasterCard

Card No. _____ Exp. Date _____

Savings based on full one-year subscription price of \$24.97.
Please add \$5 per year in Canada, \$10 per year in all foreign countries.
Please allow 30 to 60 days for delivery of first issue.

A+ THAT'S ENTERTAINMENT

During the trial, the screen displays the questions at the top, the answers underneath, and the jurors' ongoing reactions to the evidence at the bottom. As the prosecution gains and loses conviction points, the jurors change their opinions of the suspect's guilt or innocence.

When the jury returns a verdict, the losing attorney may appeal and try the case over again. If the defendant is guilty and appeal is waived, the judge pronounces a sentence proportional to the number of conviction points. If innocent, the defendant goes free.

Since Jury Trial II is a battle of wits and not fingers, its graphics consist almost entirely of text. The few examples of color are limited to a banging gavel and the opening and closing screens.

Jury Trial II is a silent program, containing few sound effects. A staccato buzzing accompanies descriptions of potential jurors. Another buzz signals

the banging of the gavel. Other than that, the game proceeds quickly.

Although Jury Trial II is designed for two or more players, I found the solitaire version as fascinating and chal-

▶ **Jury Trial II effectively presents the trials and tribulations of courtroom drama. Whether you play the game alone or with others, Jury Trial II is an appealing brain teaser.**

lenging as playing the game against an opponent. As both prosecuting attorney and witness, you try to remember all the facts and clues. If you can, you get the conviction. If not, the defendant walks.

The game contains some nice touches. It swears in all witnesses by asking if they "promise to tell the truth, the whole truth, and nothing but the truth." Incidentally, should you answer "no," you will be prohibited from giving testimony.

The game can give you a hung jury if the jurors fail to reach a unanimous decision. The judge then declares a mistrial, and you try the case again.

Jury Trial II effectively presents the trials and tribulations of courtroom drama. Whether you play the game alone or with others, Jury Trial II is an appealing brain teaser. The reviewer rests his case.

Russ Lockwood

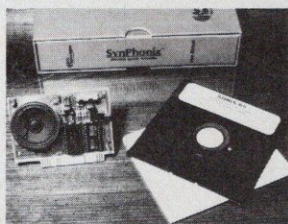
HAVE YOU HEARD?

SynPhonix™

Speech Articulator for the Apple!
Hardware Synthesis at Software Prices!

SynPhonix™ 100 features:

- SSI263 Phoneme Synthesizer
- SONIX™65©
- External Speaker Jack
- Volume Control
- Speech/Singing/Sound Effects
- Comprehensive User's Manual
- Demo Software/Spelling Tutor
- 90 Day Warranty
- On-Board Speaker, Optional
- Suggested Retail \$125.00



Unparalleled speech quality! Use in Education, Business, Entertainment, Aids for the Handicapped, Industry.

SynPhonix™100 can even amplify standard Apple sound effects and use the // e's internal speaker. The SONIX™ Speech Operating System provides easy manipulation of the speech sounds and parameters. SynPhonix™ is brought to you by professionals with over a decade of experience in speech synthesis products. Ask about our entire line of speech synthesis products.

Artic Technologies
"The Voice of Experience"

Dealer inquiries welcome!
2234 Star Ct. (313) 852-8344
Auburn Heights, Michigan 48057

Apple is a Trademark of Apple Computer, Inc.

FREE? DISKETTES

SAVE MONEY! Apple II series computers users can use the diskette flipside, if another 'write enable' notch is safely made. The **DISK-NOTCHER** by QUORUM quickly SOLVES that PROBLEM.

It's like getting FREE DISKETTES!



- Stainless Steel Guide
- Easy Leverage Handle
- Clippings Catcher
- Square Notch Cut
- Black Finish

"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..."
Curtiss Brennan - Sante Fe, NM

It's the Top-Notch Notcher!

Certifix™

BE SAFE! Your 'FREE' disk is CERTIFIED 100% ERROR FREE with CERTIFIX by QUORUM. It 'LOCKS OUT' DISK FLAWS and lets you use the rest. Displays status report & saves it to disk. Next, CERTIFIX automatically formats then offers to initialize with genuine Apple DOS 3.3. Records date on disk without a timecard. CERTIFY, FIX, & INITIALIZE every disk with CERTIFIX!

64 Write Protect Tabs
32 Diskette Labels.

FREE!
if both ordered.

Act Now!

Only \$29⁹⁵ for both!
DISK NOTCHER is \$14.95
CERTIFIX™ is just \$24.95
Add \$1.50 s/h • CA add 6% tax

SEE YOUR APPLE DEALER!
OR ORDER DIRECT FROM QUORUM

1-800-821-5226

24 Hours a Day Ext. 404
Orders only Visa/MC

100% Satisfaction Guarantee!

QUORUM INTERNATIONAL, Unltd.
INDUSTRIAL STATION P O BOX 2134-A P
OAKLAND, CA 94614

CIRCLE 388 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

Sega Star Trek	30.00
Sega Buck Rogers	30.00
Sega Congo Bongo	30.00
Centipede	27.00
PAC Man	27.00
Donkey Kong	27.00
Dig Dug	27.00
Sorcerer	30.00
Suspended	30.00
Zork I, II, III	24.00
Witness	30.00
Deadline	30.00
Planetfall	30.00
Enchanter	30.00
Infidel	30.00
Sea Stalker	Call
Ultima III	36.00
Caverns of Callisto	23.00
Lode Runner	24.00
Choplifter	24.00
Spare Change	24.00
Eagles	24.00
Objective Kursk	28.00
President Elect	28.00
Questron	35.00
Rails West	28.00
Queen of Hearts	26.00
Fortress	23.00
Pro Tour Golf	26.00
Ring Side Seat	26.00
Cosmic Balance II	28.00
Computer Baseball	28.00
Geopolitique 1990	26.00
Epidemic	23.00
North Atlantic 86	39.00
Germany 1985	39.00
Flight Simulator I	35.00
Night Mission Pinball	35.00
Wizardry I	32.00
Wizardry II (Night of Diamonds)	22.00
Wizardry III (Legacy of Lyligamyn)	26.00
Wizprint	19.00
Crypt of Media	22.00
Rescue Raiders	21.00
Cubit	25.00
Faxxon	21.00
Pooyan	18.00
The Spy Strikes Back	18.00
The Quest	18.00
Minit Man	18.00
Bouncing Kamangas	18.00
Coveted Mirror	22.00
Frogger	23.00
The Prisoner	20.00
Championship Boxing	20.00
BCS Quest for Tires	22.00
The Dark Crystal	26.00
Wizard of Id Touch Type	20.00
Fax	20.00
Jumpman	26.00
Stellar 7	24.00
Ken Uston's Blackjack	46.00
Caverns of Frietag	20.00
Castle Wolfenstein	20.00
Intellectual Decathlon	26.00
Millionaire	39.00
Spirit Simulator	26.00
Air Sim III	27.00
Sargon II	22.00
Sargon III	32.00
Miner 2049er	24.50
Death in the Caribbean	22.00
The Heist	24.50
Critical Mass	27.00
How about a nice game of Chess	22.00
The Serpent's Star	26.00
Computer Gin Rummy	23.00
Hard Hat Mack	25.00
The Last Gladiator	15.00
Pinball Conset Set	29.00
The Standing Stone	29.00
One-on-One	29.00
Archon	29.00
Skyfox	29.00
Murder on the Zinderneuf	29.00
Blank Media	
Elephant SS/DD	17.00
Verbatim SS/DD	24.00
Maxell SS/DD	23.00
Memorex SS/DD	21.00
Wabash SS/DD	18.00
Fuji SS/DD	23.00
BSF SS/DD	23.00

Educational

APPLE Logo	85.00
BARRONS Computer SAT	58.00
BPI Speed Read	140.00
CBS	
Mastering the SAT	97.00
Murder by the Dozen	22.00
COUNTERPOINT SOFTWARE	
Early Games For Young Children	20.00
Matchmaker	20.00
Piece of Cake	20.00
Fraction Factory	20.00
DAVIDSON AND ASSOCIATES	
Speed Reader II	45.00
Word Attack	32.50
Math Blaster	32.50
DESIGNWARE	
Spellcopier	26.00
Crypto Cube	26.00
Creature Creator	26.00
DLM	
Alien Adventure	22.00
Median Multiplication	22.00
Demonstration Division	22.00
Alligator Mix	22.00
Dragon Mix	22.00
EDU-WARE	
Compu-Read	18.00
Compu-Math	32.00
SAT Word Attack Skills	32.00
PSAT Word Attack Skills	32.00
Spelling 5 w/Reading Primer	25.00
Algebra 1 2 3 or 4	25.00
Algebra 5 & 6	32.00
Hands on Basic	50.00
Fractions	32.00
Decimals	32.00
EINSTEIN Memory Trainer	59.00
HARDY BRACE JOVANOVICH SAT	52.00
HAYDEN SOFTWARE	
Micro Math (Add-Sub)	21.00
Micro Math (Multi-Div)	21.00
LEARNING COMPANY	
Rocky's Boots	32.00
Number Stumper	26.00
Addition Magician	23.00
Reader Rabbit	26.00
Magic Spell	23.00
Juggle's Rainbow	19.00
Bumble Games	25.00
Bumble Plot	25.00
Gertrude's Puzzles	28.00
Gertrude's Secrets	28.00
MECA	
Basic Building Blocks	50.00
The Running Program	50.00
MICROLAB	
English SAT	19.50
Math SAT	19.50
PROGRAM DESIGN	
The New Step by Step	74.00
Step By Step II	74.00
Step By Step III	74.00
READERS DIGEST +	
Micro Habitats	26.00
Alphabet Beast & Company	21.00
SCARBOROUGH SYSTEMS	
Songwriter & Picturewriter	26.00
Phi Beta Phiiler	26.00
Master Type	26.00
SPINNAKER SOFTWARE	
Fraction Fever	22.00
Trains	22.00
Facemaker	22.00
Snooper Troops 1 & 2	28.00
Story Machine	22.00
Kindercomp	19.00
Delta Drawing	32.00
Kids on Keys	19.00
Alphabet Zoo	19.00
Hey Diddle Diddle	18.00
In Search of	26.00
Aerobics	28.00
Grandma's House	22.00
Kidwriter	22.00
SUNBURST	
The Factory	32.00
Teasers by Tobbs	32.00
TERRAPIN Logo	63.00
XEROX	
Sticky Bear ABC	25.00
Sticky Bear Numbers	25.00
Sticky Bear Bop	25.00
Sticky Bear Opposites	25.00
Sticky Bear Shapes	25.00
Sticky Bear Basket Bounce	25.00

Business

APPLE	
Appleworks	Call
Apple Writer IIe	160.00
Quick File IIe	78.00
ARTSCI	
Magic Calc	95.00
Magic Window II	95.00
ASHTON-TATE DB II	290.00
BLUE BUSH Speed File	73.00
BPI	
General Accounting	298.00
GL, AR, AP, PR or INVEA	260.00
CONTINENTAL	
Home Accountant	48.00
Tax Advantage	45.00
FCM/FI	85.00
G/L, A/R, A/P	150.00
DICKENS DATA SYSTEMS	
The Wall Street Plotter	94.00
The Super Plotter	53.00
DOW JONES SOFTWARE	
The Market Analyzer	225.00
Market Manager	195.00
HAYDEN Pie Writer	99.00
HOWARD SOFTWARE SERVICES	
Real Estate Analyzer II	160.00
KENSINGTON	
Format II Enhanced	95.00
LIVING VIDEO Think Tank II/IIe	94.00
MEGAHAUS	
MegaFinder	105.00
MegaSpell	45.00
MegaWriter	67.00
MICROPRO	
Wordstar	Call
Calclstar	280.00
Wordstar W/Z Card	Call
Word/Spell/Mail	540.00
MICROSOFT Multiplan	130.00
MID WEST SOFTWARE	
Write Away	115.00
PEACHTREE Peach Calc	92.00
QUARK	
Lexicheck Word	145.00
Juiculer IIe Combo	145.00
SENSIBLE SOFTWARE	
Sensible Speller	79.00
Bookends	75.00
Report Card	44.00
SIERRA ON-LINE	
The General Manager II	145.00
Homework	45.00
ScreenWriter IIe	80.00
SILICON VALLEY	
The Handlers Package	105.00
List Handler	47.00
The Word Handler II	47.00
SOFTLINK Practical Accountant	97.00
SOFTWARE PUBLISHING	
PFS: Access	Call
PFS: Write	75.00
PFS: File	75.00
PFS: Graph	75.00
PFS: Report	75.00
STONEWARE	
DS Master Version 4 Plus	Call
VISICORP	
Advanced Visicalc IIe	200.00
Visicalc IIe & II	164.00
Visitrend/Visiplot	66.00
MacIntosh	
PFS: File	75.00
PFS: Report	75.00
PFS: File/Report	120.00
Typing Tutor III	32.00
Millionaire	Call
Transylvania	20.00
Coveted Mirror	20.00
The Quest	20.00
Main Street Filer	153.00
Helix	Call
Sargon III	31.00
McPict	30.00
Click Art	29.00
Home Accountant	Call
Microsoft Multiplan	125.00
Microsoft Basic	90.00
Microsoft Chart	75.00
Microsoft Word	Call
Mac the Knife	Call
Zork I	24.00
Zork II & III	30.00

We fully support the Macintosh — call toll free
Apple Computers — call toll free

Printers

APPLE	
Imagewriter	495.00
Daisy Wheel Printer	1,770.00
BROTHER	
HR-25	745.00
HR-35	Call
DAISY WRITER 2000	Call
DIABLO	
620 (RS-232C)	850.00
630 (PC)	1,785.00
Ink Jet Printer	1,150.00
DYNAX DX-15	435.00
EPSON	
FX-80	Call
FX-100	675.00
RX-80FT	360.00
LQ-1500	Call
IDS	
Prism 80 (Basic)	1,065.00
Prism 80 (Full)	1,435.00
Prism 132 (Basic)	1,225.00
Prism 132 (Full)	1,655.00
P-480 Micro Prism	Call
JUKI 6100	445.00
MANNESMANN TALLY	
MT-160L	605.00
MT-180L	795.00
MT-Spirit	295.00
OKIDATA	
Microline 82	325.00
Microline 83A	570.00
Microline 92	425.00
Microline 93	685.00
PANASONIC	
KXP 1090	285.00
KXP 1091	335.00
KXP 1092	469.00
PXWRITER	
8510AP	Call
1550AP	530.00
8510SP	465.00
Starwriter A10-20P	490.00
Starwriter F10-40PU	1,020.00
QUME Printers	Call
SILVER REED	
500P	415.00
550P	515.00
770P	875.00
STAR MICRONICS	
Gemini 10X	Call
Gemini 15X	399.00
Radix 10 (200 CPS)	620.00
Radix 15 (200 CPS)	720.00
Power Type	355.00
Delta 10	395.00
Delta 15	549.00
TOSHIBA Printers	Call
TRANSTAR	
120P	425.00
130P	550.00
315	455.00
Pics Card	95.00
Disk Drives	
APPLE	
Disk II Drive	300.00
Duo Disk w/acc. kit	Call
Pro File Disk Drive	Call
IIc Add-On	Call
Mac Add-On	Call
INFAX	
101 10 Meg	2,145.00
102 20 Meg	3,350.00
Cartridges	60.00
INDUS GT Slimline	250.00
MICRO SCI	
A2 143K	225.00
A40 164K	270.00
A70 286K	340.00
Micro SCI Controller	73.00
Slimline	Call
QUENTIN	
AP 100A Full Height	215.00
AP 105 Slimline	Call
AP 101 Twin Pack	Call
RAWA	
Elite I	259.00
Elite II	420.00
Elite III	490.00
Monitors	
AMDEK	
Color I Plus	275.00
Color II S	Call
Video 300G Green	135.00
Video 300A Amber	147.00
DVM II or DVM III RGB Interface	130.00
DVM 80E RGB Interface	145.00
BMC	
Color Plus	Call
BM12 A/W Green	75.00
PANASONIC	
TR 120 Green	Call
TR 120 Amber	Call
DTD 1300 RGB	Call
SAKATA	
SC-1000 Color	245.00
SC-200 RGB Color	455.00
STS-1 Stand	35.00
TAXAN	
Green (Hi-Res)	120.00
Amber (Hi-Res)	135.00
210 13" Color (Lo-Res)	295.00
RGB Vision III	445.00
410-64 RGB-2 Interface	240.00
USI	
12" Amber	145.00
12" Green	140.00

Specials

EDD III	50.00
Locksmith 5.0	70.00
CIA Files	54.00
Copy II+	27.00
Wildcard II	Call
Dollars & Sense/Mac	88.00
Think Tank/Mac	99.00
MacFourth	Call
Home/Hobby	
BEAGLE	
Apple Mechanic	19.00
Beagle Basic	23.00
Disk Quick	20.00
Doss Boss	15.00
Double Take	23.00
Fat Cat	Call
Flex Type	19.00
Frame Up	19.00
GPLE	35.00
Pronto Doss	19.00
Silicon Salad	16.00
Type Faces	14.00
Utility City	19.00
BRODERBUND	
Bank Street Writer	46.99
Bank Street Speller	46.99
Print Shop	35.00
CREATIVE PERIPHERALS UNLIMITED	
Time Trax	77.00
DATA TRANSFORMS Fontrix	45.00
DECISION SUPPORT	
The Accountant	63.00
EINSTEIN Compiler	89.00
ELECTRONIC ARTS	
Music Construction Set	29.00
Cut & Paste	36.00
HAYDEN	
Orca/M	75.00
Orca/AM	43.00
Compiler Plus (Hayden)	43.00
LAZERWARE Lisa V 2.6	58.00
MECA Managing Your Money	130.00
MICROSOFT	
Applesoft Compiler	115.00
Typing Tutor II	18.00
Typing Tutor III	Call
MONOGRAM Dollars & Sense	68.00
PENGUIN	
The Graphics Magician	38.00
New Complete Graphics System	50.00
PHENIX Zoom Graphics	33.00
QUALITY Bag of Tricks	28.00
ROGER WAGNER ASSOCIATES	
Merlin Pro	46.00
Merlin Combo	79.00
SOFTRONICS Softterm II	134.00
TURNING POINT Time is Money	64.00
UNITED SOFTWARE OF AMERICA	
ASCI Pro	82.00
VIRTUAL COMBINATICS	
Micro Cookbook II/IIe	26.00
Accessories	
CORVUS Hard Disk	Call
DIGITAL RESEARCH	
CPM Gold Card	Call
HAYES Joysticks	Call
HAYES	
Microdrom IIe/w	235.00
Smart Com I	498.00
1200 Baud Modem	498.00
KENSINGTON System Saver	65.00
KEYTRONICS Keyboards	Call
KOALA	
Koala Pad	Call
The Gibson Light Pen	175.00
KRAFT Joystick	Call
MCT Speed Demon	225.00
MICROSOFT	
Ram Card	68.00
Soft Card	230.00
NOVATION	
Apple Cat II	228.00
212 Apple Cat II	364.00
ORANGE MICRO Grappler +	100.00
PKASKO w/interface	133.00
PROMETHIUS Pro Modem 1200	355.00
SATURN 128K Ram Card	345.00
SPIES LABS	
Super MX Interface Card	155.00
STREET ELECTRONICS	
The Cricket	Call
Echo II	124.00
SWEET MICRO	
Mockingboard w/Speech	145.00
SYNETICS	
Super Sprite	Call
Flash Card	Call
TEXTPRINT Print It	169.

QUARK ANNOUNCES
a clever way to store more than sixty-five floppies.

QC10™



A 10MB hard disk
for your Apple IIc, Apple IIe,
Apple III or Macintosh.

Quark's new QC10 hard disk lets you store the contents of more than sixty-five floppies. Even if you're using an Apple IIc. Which means you can have the equivalent of nearly five thousand pages of information ready for instant retrieval.

You'll have room for dozens of programs. From complex accounting software to sales analysis tools. With space left over for your answer to "War and Peace".

And because there's a distinction between those who need to know and those who want to know, QC10 lets you create password-protected "volumes" of any size you choose. So you can segment your data to suit your particular needs, and protect sensitive information.

Plus, if you have an Apple IIc or Macintosh—or a 128K Apple IIe with Apple's Duodisk dual disk drive—QC10 *requires no accessories*.* The drive simply plugs into the disk drive port. Two special switches let you set your QC10 for whatever computer you use.

And when you add Quark's Catalyst™ program selector, you can automatically load even copy-protected ProDOS

programs on QC10.** And switch between applications with a simple keystroke sequence. So you won't have to change floppies when you need to change programs.

Best of all, QC10 has a suggested retail price of only \$1,995. So ask for a demonstration today. Just call toll-free, 1 (800) 543-7711, for the name of the Quark dealer nearest you.

Quark
PERIPHERALS

A Subsidiary of
Quark Incorporated

Quark, QC10 and Catalyst are trademarks of Quark Incorporated. Apple, ProDOS and Duodisk are registered trademarks of Apple Computer, Inc. Macintosh is a trademark licensed to Apple Computer by McIntosh Laboratories, Inc.

*If you do not have a Duodisk, or use an Apple III, a special cable is available. See your dealer for details.

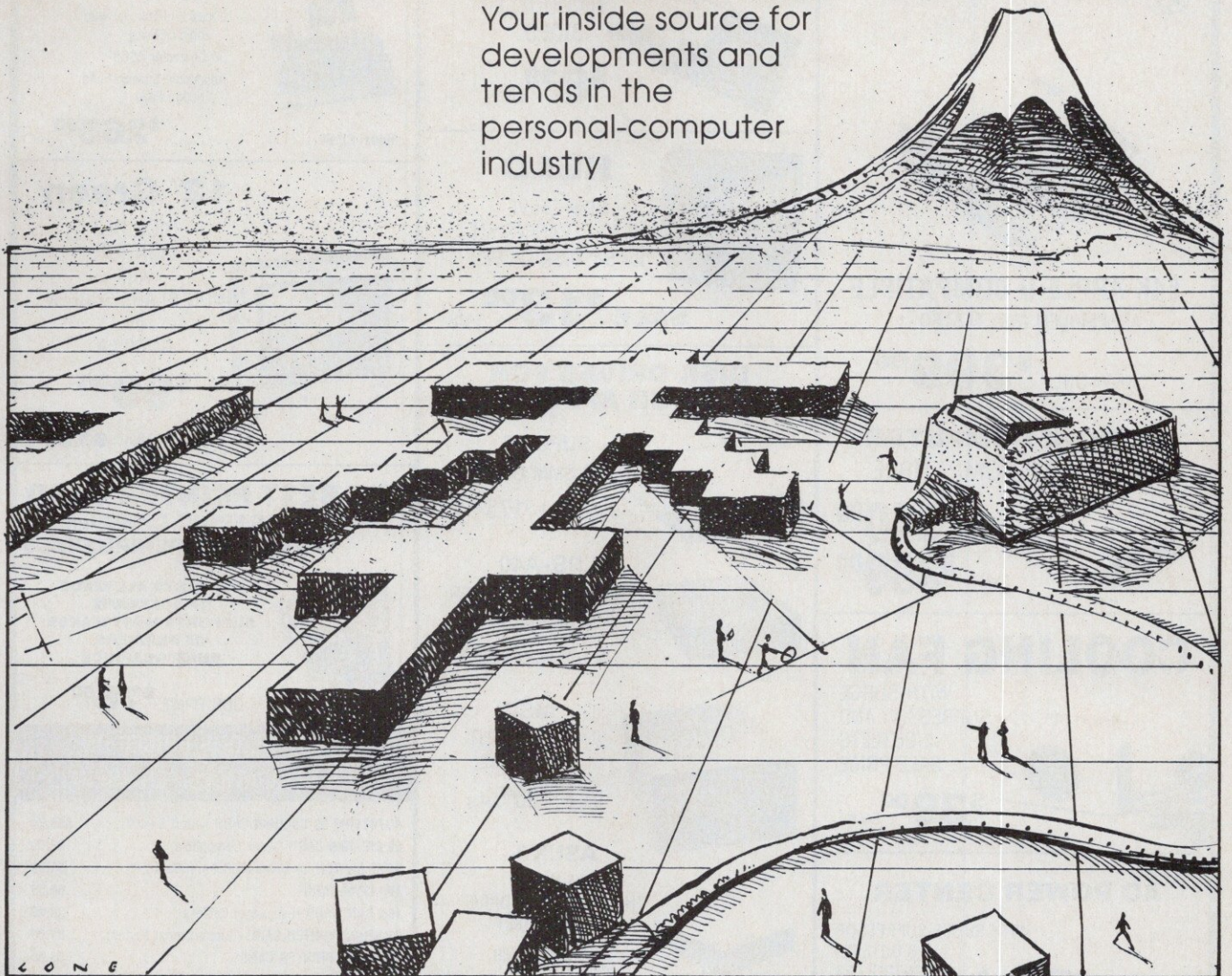
**Catalyst works on the Apple IIc, IIe and Apple III. It is not compatible with Macintosh.

Photography by Barbara Kasten

CIRCLE 310 ON READER SERVICE CARD

NEWS+
BY FREDERIC E. DAVIS

Your inside source for
developments and
trends in the
personal-computer
industry



► **THE MAC'S FUTURE**

I got a glimpse into what's ahead for the Macintosh at the MacForum given last summer in San Francisco by the market-research firm Future Computing. Among the more interesting aspects of this two-day event were various "promises" that John Sculley and Steve Jobs of Apple made. By 1986, they claim, optical-disk technology will be available; the Mac and the Lisa will come with full-page displays able to show an entire $8\frac{1}{2} \times 11$ -inch piece of paper at once; there will be a lap-size Macintosh that Jobs calls "Mac in a book"; and UNIX support will be available for the Mac and the Lisa.

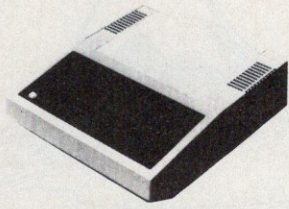
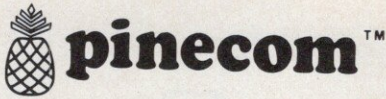
Even sooner, according to Sculley and Jobs, a laser printer that produces typeset-quality output will be on the market. The laser printer is so advanced that it contains more RAM and more chips than does the Mac itself.

Another surprise was that spokespeople from both Microsoft and Lotus Development Corporation claimed that their companies were placing a higher priority on producing Macintosh software than on producing IBM PC software.

Also at the MacForum, Chuck Colby of Colby Computer in Palo Alto, California, was showing off a modified Macintosh dubbed the Colby Mac. The Colby Mac is an actual Macintosh rebuilt into an Osborne-style carrying case that contains the Mac's circuitry, screen, and two disk drives. The main advantage of the Colby Mac is that it fits under airline seats, whereas the regular Mac cannot. John Sculley looked dubious when he first saw the Colby Mac (it's not as cute as the original Mac), but he was eventually sold on the idea and placed an order for several of the modified Macintoshes.

► **JAPANESE LIKE MAC**

Apple Computer Japan, Inc., has signed up more than 50 leading Japanese software producers to develop Macintosh application software in the Japanese language. Since the Japanese language is much more graphically complex than English, Japanese software producers feel that the Mac, with its excellent graphics capabilities, is much better suited to their language than the IBM PC type of computer. In order to help these firms get started, Apple is supplying them with a Japanese version of the Mac's operating system, the toolbox, and other development tools. The Japanese Mac has 512K RAM to handle the kana character set and comes with a special kana-syllabary keyboard. This keyboard has keys with graphic elements that combine to form the thousands of characters in the Japanese language.



64K APPLE II COMPATIBLE
ASSEMBLED AND TESTED

NOW ONLY **\$399⁰⁰**

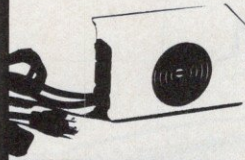
MICRO-II COMPUTER
100% APPLE COMPATIBLE



48K **\$340⁰⁰**
64K **\$399⁰⁰**

COOLING FAN

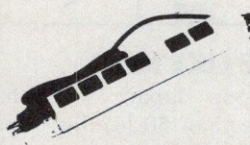
WITH SURGE SUPPRESSOR AND 2 OUTLETS
SALE PRICE



\$39⁰⁰ EACH

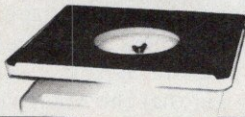
AC POWER CENTER

WITH SURGE-SUPPRESSOR
6 OUTLETS
4 CONTROLLED
2 UNCONTROLLED



\$14⁹⁵ EACH

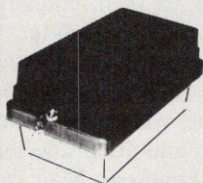
TILTABLE MONITOR STAND



\$30⁰⁰ EACH

DISK BOX

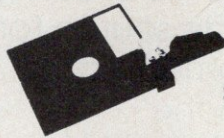
HOLDS 100 PCS.
5 1/4" DISKETTES
WITH REMOVABLE
TOP AND LOCKS



\$14⁹⁵

DISK HOLEPUNCH

CONVERTS YOUR
DISKETTES
TO DOUBLE
SIDED.



\$8⁹⁹ EACH

HEAD

DISK DRIVE
HEAD CLEANING KIT
for 5 1/4" DISK DRIVES

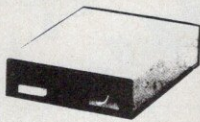


SALE **\$13⁰⁰** EACH.

**DISK DRIVES FOR
YOUR APPLE**

SUPER 5

T-40 SLIM DRIVE



OUR PRICE **\$175⁰⁰**

ALPS-A40

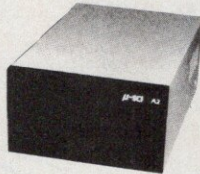
SINGLE SIDED DRIVER
HALF-HEIGHT



OUR PRICE **\$150⁰⁰**

MSCI

FULL HEIGHT
MODEL A2



SALE **\$190⁰⁰** EACH

ASUKA

HALF-HEIGHT
THE MOST QUIET DRIVE
IN THE MARKET



SALE **\$198⁰⁰**

**HEAVY DUTY
JOY STICK**

METAL CASE with
2 MICRO SWITCHES
for APPLE II+ or IIE



SPECIAL **\$19⁹⁵** EACH

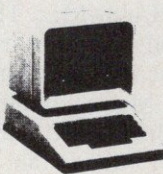
**SPECIAL
MINIATURE
COMPUTER CLOCK**

*LCD CLOCK WITH
TIME AND DATE

AN IDEAL GIFT!

BUY 2 FOR

ONLY **\$9⁰⁰**



PRINTER by Super-5

Parallel Interface (Centronics Compatible)
Standard Microprocessor
Electronics
80cps Bidirectional with
Logic Seeking
96 Character ASCII
Adjustable Sprocket and
Friction Feed



Model CP-80..... **\$265⁰⁰**

12" Green

HIGH RES
MONITOR
with
NON GLARE SCREEN
by
GORILLA



\$99⁰⁰

Monitor Cable **\$3.00**

**THE BEST PRINTER CARD
GRAPHIC CARD by:
PRACTICAL PERIPHERALS**



- SUPPORTS ALL KINDS OF SOFTWARE
- SUPPORTS MOST MAKES OF PRINTERS
- DUMP GRAPHICS

OUR PRICE **\$76⁵⁰**

**COMPARE OUR PRICES ON
APPLE COMPATIBLE PERIPHERALS**

AUTOTERM 80 COLUMN CARD w/Soft Switch	\$89.00
80 COLUMN CARD (Videx Compatible)	69.00
SOFT SWITCH for Videx 80 Column Card	35.00
Z80 CP/M CARD	69.00
16K RAM CARD (Language) Cables	39.00
GRAPHIC PRINTER CARD (Support most Printers)	89.00
PARALLEL PRINTER CARD	59.00
SERIAL INTERFACE CARD (RS 232)	59.00
SUPER SERIAL CARD (Communication Card)	120.00
DISK CONTROLLER CARD (Standard)	45.00
DISK CONTROLLER CARD (3-2, 3-3 Auto Select)	55.00
EPROM PROGRAMMER CARD (for 2716/2732/2764)	75.00
128K RAM CARD (Saturn Compatible)	199.00
TTL IC TESTER CARD (for most TTL IC)	160.00
RGB COLOR INTERFACE CARD	89.00
P.A.L. TV INTERFACE CARD (for European TV)	45.00
COPY CARD (Wildcard Compatible)	55.00
SPEACH SYNTHESIZER (SAM Card)	35.00
6809 INTERFACE CARD	170.00
CHINESE CRG GENERATOR CARD	CALL
8088 MS/DOS CARD	CALL

RF MODULATOR

Allows you to connect your
computer to your Television.
CH 3/4 Selectable



\$12⁹⁵ EACH



FORMULA INTERNATIONAL INC.

12603 Crenshaw Blvd., Dept. B, Hawthorne, CA 90250
For information (213) 973-1921 • Orders Only (outside Calif.) (800) 672-8758

IBM is a registered trade mark of IBM.
CPM is a registered trade mark of Digital Research.

MINIMUM ORDER \$10.00. CA Residents add 6.5% Sales Tax
Phone orders accepted on VISA or Mastercard only. No COD's
Prices subject to change without notice.

SHIPPING AND HANDLING CHARGES

	Under \$50.00 Purchase	Over \$50.00 Purchase
Inside CA	10%	5%
Outside CA	15%	10%
Outside USA	25%	20%

STORE HOURS

Mon.-Fri 10am-7pm
Sat. 10am-6pm

PLEASE NOTE: A 15% re-stocking charge will be made to customer for all returned merchandise.

► NETWORK BATTLE

The race to come out with local-area networks is heating up. Here are the players lined up at the starting gate: Davong Systems of Sunnyvale, California, with its MacLink and MacDisk for the Macintosh; Symbiotic Computer Systems of Fairfield, Connecticut, offering SyMBfile hard disks and SyMBnet networks for the II, II Plus, IIe, IIc, III, and Macintosh; Sunol Systems of Pleasanton, California, with its Sun*Disk hard disk, Sun*Net network, and Sun*Mac AppleBus network for the Macintosh and Apple II; Tecmar with its MacDrive and planned AppleBus network; and, last but not least, Corvus, offering OmniDrive for the Macintosh, which will be compatible with the company's OmniNet network for the Apple II series and the Apple III.

► MOUSE ALTERNATIVE

Although I personally like the mouse, quite a few people seem to dislike it. I always thought the logical alternative would be a touch-sensitive pad—you could tap the pad to simulate pressing the mouse button.

KA Design Group of Oakland, California, has come up with another interesting alternative called the Puck Pointer. The Puck Pointer is like a knobby little joystick that is not much larger than a key on a computer keyboard. In fact, you can integrate it into a keyboard quite easily, if you don't like to take your hands away from your keyboard to roll the mouse around.

The Puck Pointer uses a noncontact optical sensor in combination with a light-emitting diode (LED) light source to detect movements precisely. Although the device takes up only four square inches, it has a resolution of 2048 by 2048 points on the screen, which is better than that of most computer displays. To top it off, this device is quite inexpensive, selling for around \$15 wholesale.

► ROBOTS, ANYONE?

If you're interested in robotics, you may want to pick up a copy of the *International Robotics Industry Directory*, which lists more than 250 robot models. The directory is available for \$35 from Technical DataBase Corporation, P.O. Box 720, Conroe, TX 77305.

► TECHNOLOGY ADVICE

Uncle Sam wants to share information about technology with scientists, inventors, and researchers in private indus-

try. To help increase the flow of information, the government has published the *Directory of Federal Technology Resources*, which is available for \$25 from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161.

► CHIP CHAT

Apple's choice of the Motorola 68000 as the processor for the Macintosh and Lisa is turning out to be wiser than IBM's choice of the Intel 8088 family of processors. Not only is the current 68000 superior to the 8088, but the future of the 68000 family looks much rosier than that of the 8088 family. Intel is struggling to produce a smooth upward path for its processors, but Motorola is forging ahead at full steam.

The new Motorola 68020 is a feature-laden superchip with a full 32-bit architecture capable of accessing up to four billion bytes of data. It performs up to 20 times faster than the 68000 in the Mac and the Lisa. The 68020's advanced design uses state-of-the-art HCMOS technology, which consumes less power than the 68000 does. The chip has extended support for coprocessors and features dynamic bus sizing that supports 8-, 16-, and 32-bit bus ports. Thus, the chip can work in existing 8- or 16-bit systems. The best news for Apple is that all the precious Macintosh and Lisa object code written for the 68000 can execute without revision on the more powerful 68020.

► WOZ WANTED HART

Steve Wozniak, cofounder of Apple Computer, and Regis McKenna, head of Apple's public-relations firm, were both delegates for Gary Hart at the Democratic National Convention in San Francisco last summer. Although their candidate didn't win the nomination, the pair seemed to enjoy the convention and its lavish parties. Woz's participation represented a new interest in politics, but McKenna is an ardent Democrat of long standing.

Word has it that Woz did promote one winner. He was plugging Brøderbund's Print Shop program for the Apple II series, which creates typesetting-looking greetings cards, stationery, announcements, and banners. Print Shop is a great program at a great price (\$49.95), created by David Balsam and Marty Kahn of Pixellite Software in Berkeley, California. David tells me that a Macintosh version of Print Shop is now on the horizon. +

FANTASTIC LOW PRICES ON

BASF
QUALIMETRIC
DISKETTES!



BASF QUALIMETRIC DISKETTES have a lifetime warranty and are packed in plastic storage cases. TYVEK sleeves, reinforced hubs, user identification labels and write-protect tabs included.

\$139 ea. 5 1/4" SSDD Qty. 20
\$189 ea. 5 1/4" DSDD Qty. 20

SOFT SECTOR ONLY!

3M HEADCLEANING KITS

Stop swearing and start cleaning. This non-abrasive cleaning kit has everything you need for 30 applications. **\$18.00** + \$1.50 Shpng.

AMARAY MEDIA-MATE 50: A REVOLUTION IN DISKETTE STORAGE



Every once in a while, someone takes the simple and makes it elegant. This unit holds 50 5 1/4" diskettes, has grooves for easy stacking, nipples to keep diskettes from slipping and several other features. We like it.

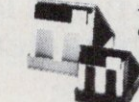
\$10.95 ea. + \$2.00 Shpng.

DISKETTE 70 STORAGE: STILL A GREAT BUY



Dust-free storage for 70 5 1/4" diskettes. Six dividers included. An excellent value. **\$11.95** + \$3.00 Shpng.

DISK CADDIES



The original flip-up holder for 10 5 1/4" diskettes. Beige or grey only. **\$1.65** ea. + \$2.00 Shpng.

PRINTER RIBBONS AT BARGAIN PRICES!

Brand new ribbons produced to manufacturer's specs.
Epson MX-70/80 **\$3.58** ea. + 25 Shpng.
Epson MX-100 **\$6.99** ea. + 25 Shpng.
Okidata Micro 83 **\$1.48** ea. + 25 Shpng.
Okidata Micro 84 **\$3.66** ea. + 25 Shpng.

Shipping: 5 1/4" DISKETTES—Add \$3.00 per 100 or fewer diskettes. Other items: Add shipping charges as shown in addition to diskette shipping charges. Payment: VISA and MASTERCARD accepted. COD orders only, add \$3.00 handling charge. Taxes: Illinois residents only, add 8% sales tax.

FOR ORDERS ONLY:

1-800-621-6827
(In Illinois: 1-312-944-2788)

INFORMATION & INQUIRIES:

1-312-944-2788 only!

HOURS: 9AM - 5PM Central Time,
Monday - Friday

WE WILL BEAT ANY NATIONALLY ADVERTISED PRICE ON THE SAME PRODUCTS AND QUANTITIES!

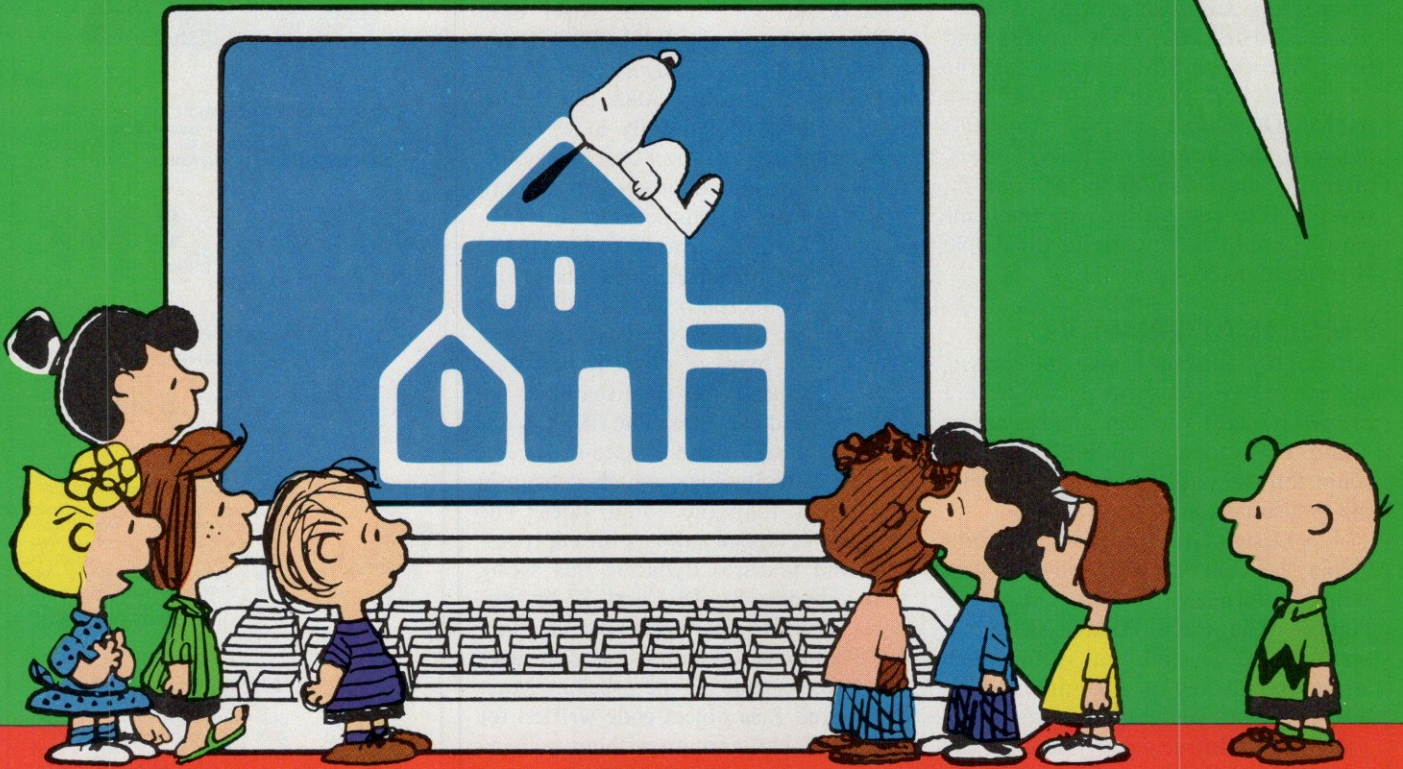
DISK WORLD!, Inc.

Suite 4806 • 30 East Huron Street • Chicago, Illinois 60611

DISK WORLD! Authorized Reseller
Information Processing **BASF**
Media

CIRCLE 361 ON READER SERVICE CARD

GOOD GRIEF!
LOOK WHO'S ON
RANDOM HOUSE
SOFTWARE!



PEANUTS Characters: © 1950, 1951, 1952, 1958, 1960, 1965, 1966, 1968, 1975, United Feature Syndicate, Inc.

One of the world's leading children's book publishers and the world's best-loved characters are together again.

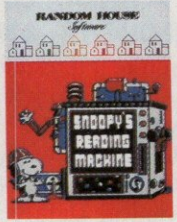
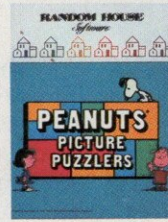
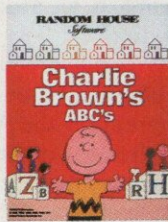
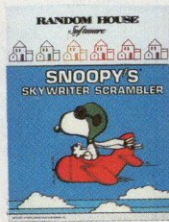
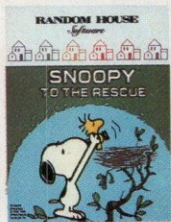
The results are these brilliant new PEANUTS® programs for your children.

They'll learn spelling, vocabulary, math and, above all, learn to love learning.

Each of these exciting

new programs uses vivid color graphics and truly lifelike animation designed for your home computer.† Plus they're on *two-sided* disks to give you *twice* the fun for the price of one.

Visit your neighborhood computer software dealer now and bring back some bright new friends for your children. The kind of friends who never have to go home.



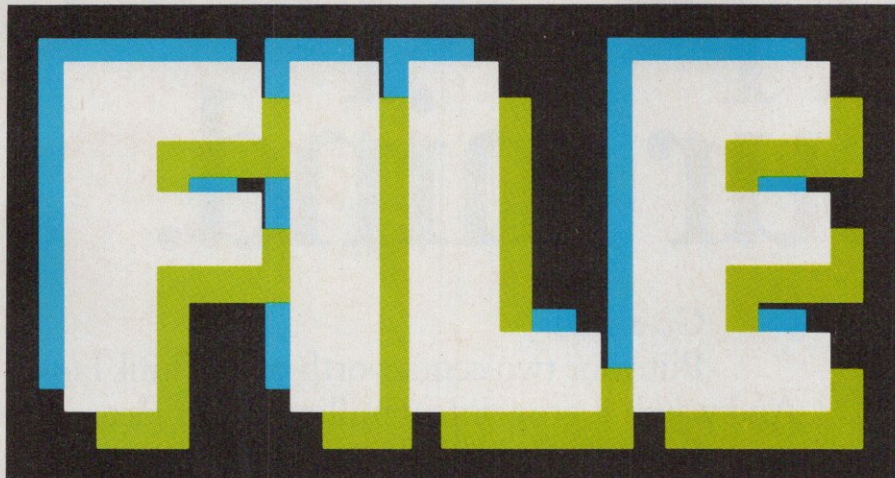
RANDOM HOUSE
Software

ALL THE BEST FROM OUR HOUSE TO YOUR HOUSE.

†For Apple II+, IIe, IIc. Soon for Commodore 64—disk drive only. (Trademarks of Apple Computer, Inc. & Commodore Electronics Ltd.) © 1984 Random House, Inc. All rights reserved.

CIRCLE 192 ON READER SERVICE CARD

ELECTRONIC



CABINET

THE FOURTH VERSION OF DB MASTER COMBINES LARGE CAPACITY WITH EASE OF USE

► SOFTWARE REVIEW/BY JILL MORGAN

DB Master, one of the early file-management programs for the Apple, shows welcome signs of maturity in its fourth version. The program lets you store information in such a way that it is available in several files at once and can be sorted into groups.

File-management programs such as DB Master have many complex uses, but the basic one I started with, two years ago, was creating a customer mailing list. Because of this program, I can send specialized mailings to targeted customers, based on their product interests and account activity, and my list now comprises 4000 names.

DB Master, Version 3, was the first program I bought for my Apple II Plus. I learned the program by reading the manual, and in my innocence, I didn't realize that the manual was complicated and poorly organized. Maybe that is why I started calling the program DB Monster.

Version 4 Plus is considerably easier to learn and use. The manual is a handsome, clearly written tome. Programmers may not regard DB Master as elegant, but it is useful for data management in small businesses or corporate departments. It also has the largest

capacity and the most options of the popular database programs for the unenhanced, non-CP/M Apple II.

What Is a Database?

"A data base is a collection of related information," says the first line of the introduction to the DB Master manual. The paragraph continues with a pithy definition: "A true data base manager is a computer programmer's tool, designed to handle information storage and retrieval within larger computer programs, and requiring advanced programming skills. A 'file management system' such as DB Master is a complete, self-contained program designed to help non-programmers manage information."

I am proof that a computer novice, with reasonable patience and the ability to follow a recipe, can set up DB Master. I knew that if I could grasp the program, I could train someone to enter names.

I initially spent 60 hours with DB Master and used it not only to learn about my new computer but also as a primer in data-management strategies. If I had had the well-written Version 4 Plus manual, I might have been able to cut my learning time in half. Because

of its instructive content and its depth, the manual could be a textbook in a business class.

To use DB Master, or any file-management system, you should understand a few standard terms. Consider a familiar form, such as a catalog mail-order form. It has lines for name, address, city, state, and ZIP code, as well as boxes to check and columns for item descriptions and prices. With DB Master, you can make your own form, which is called a record. On the form are lines and labels, called fields. Perhaps you will have a field for last name, another field for first name, four for the four elements of the address, another for the old phone number, and other fields for item descriptions, quantities ordered, cost per item, and total costs.

Each form is a record; a group of records makes up a file. Within a file are all the orders for each customer. You can sort the records, using any of the fields as criteria, such as by ZIP or alphabetically by name, and you can search the records to select only those that include certain items such as total purchase amounts. If you want to send a special mailing to everyone in ten states who ordered more than \$1000 in the past month, you can have a list or mailing labels within minutes. For organization and for speed in finding records, each record must have a primary key: a unique number or set of characters, such as a customer number or invoice number.

DB Master is like other business tools; it works best if one or two people learn how to set up the system and teach others how to handle the daily use.

A Manual for Everyone

The DB Master Version 4 Plus manual gives information that satisfies any reader's need to know or ability to absorb. Within the covers of its small three-ring binder, it is divided into logical sections. Instructions for novices on starting the computer are separate—more advanced people can skip that section and start with the tutorial. In seven lessons, the 178-page tutorial leads readers through a sample file set-up for Nose to the Grindstone Gravel Company. Messages that appear on the computer screen appear on the page in easy-to-spot bold type, which is helpful for experienced and novice users alike. The reference guide that follows the tutorial is a 96-page, alphabetical listing that succinctly defines DB Master terms and functions.

People who refuse to crack open the

Give Apple a piece of your mind.

- + 1984 Comedian's Convention
 - Location
 - Jokes about teenage children
 - Travel arrangements?
 - Invitations, coffee and donuts
 - New jokes about spouses
 - Get budget approval
 - Workshop: where to buy apparel wholesale
 - Jokes about new television programs

Inspiration is fleeting, so just let your thoughts flow. The flexible format makes it easy to rearrange them later into headings and a basic outline.

- + 1984 Comedian's Convention
 - + Location
 - Wonderama Resort Spa & Carwash
 - + Travel Arrangements
 - + Arrange air charter through travel agent
 - + Lotsa Luck Travel Service, Las Vegas
 - Ida Mistit, agent
 - + Agenda
 - + Day 1
 - + Workshops
 - + new jokes about
 - your spouse
 - your neighbor

Use as many headings and as much text as you need to develop the outline fully. ThinkTank's processing power can move whole sections of text with a single keystroke — something no word processor can do.

- + 1984 Comedian's Convention
 - + Location
 - Wonderama Resort Spa & Carwash
 - + Travel Arrangements
 - Arrange air charter through travel agent
 - + Agenda
 - Day 1
 - Day 2
 - + Budget
 - Submit proposal by August 15
 - + Publicity
 - Invitations
 - + Room Reservations
 - 85 rooms, double occupancy

When you want to scope the Big Picture, a simple command drops out everything but the main headings. Subheads and detailed text are stored for recall later.

Go ahead.

Put your two cents worth onto ThinkTank™. And watch it grow into a million-dollar idea.

Because ThinkTank is the first software designed to process ideas. Available on the Apple II family of computers.

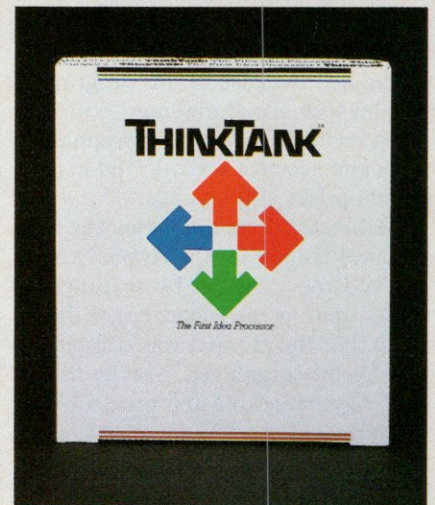
ThinkTank's flexible outline format lets you clearly see your idea from all angles. So you can sharpen up an inspired thought, weed out a weak one, set priorities, weigh alternatives.

It's like a spreadsheet for ideas.

While all this structuring helps your brain-child take shape, it won't inhibit the natural flow of creative juices. Because entering an idea onto ThinkTank is as easy as scribbling it on a cocktail napkin. All you need is simple English.

Just let your thoughts flow — from "pie in the sky" concepts to the "nuts and bolts" details. And build more professional proposals, marketing plans, legal briefs, case reports, engineering specifications, research notes, action items, hot lists and to-do lists.

Call 1-800-556-1234 Ext. 213 (in Calif., 1-800-441-2345 Ext. 213) for the store nearest you. And see what's really on your mind.



The First Idea Processor.

manual, preferring to learn the program through trial and error, will appreciate the programmers' tool. This graphically pleasing flowchart poster shows the structure of the program.

The manual's appendix offers helpful information, including the only instructions on what to do with the sample disk that comes with the program. I found this section only after I had managed to figure out what to do with the disk.

Stoneware, Inc., developer of DB Master, will send you a 23-page essay on the strategy of good file design, upon receipt of your registration card. The company wants to be sure it can send

I am proof that a computer novice, with reasonable patience and the ability to follow a recipe, can set up DB Master.

you updates and newsletters, so it emphasizes the necessity for customer registration. With Version 3 of DB Master, it sent backup disks for the program upon registration; with Version 4 Plus, a set of backups to the two-disk program comes in the package. Also enclosed is the sample files disk that contains four sample files and also allows you to convert files you've created with PFS software (from Software Publishing Corporation) or with Visi-File to DB Master files.

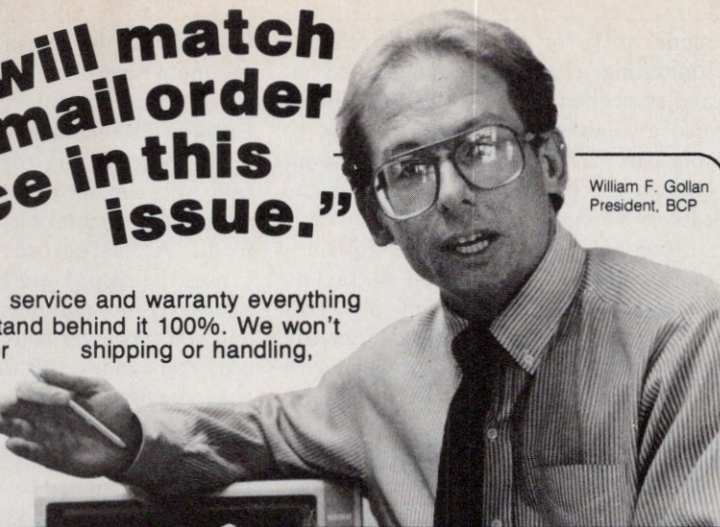
Don't be alarmed that DB Master comes on three disks. You need to use one of them only rarely to create a new file and to do some file housekeeping. The improvements in Version 4 Plus need the disk space and are well worth the occasional, minor inconvenience of inserting another disk.

In addition to the thorough manual, DB Master Version 4 Plus presents several major improvements to Version 3. All aspects of the program have at least one new function that remedies a previous drawback. When you create a file and its screen form, you can now edit freely—you don't have to restart whenever you want to change something. Making a new file form in Version 3 often gave me the edgy feeling of being in an amusement-park spook house. If I

"We will match any mail order price in this issue."

We'll support, service and warranty everything we sell and stand behind it 100%. We won't charge you for shipping or handling, nor will we penalize you for using a credit card.

William F. Gollan
President, BCP



COMPUTERS

Apple IIe Entry	CALL	Apple IIc	CALL
Apple IIe Pro	CALL	Apple Macintosh	CALL

MONITORS

Amdek 300 A	\$159.95	Amdek color 600 RGB	\$519.95
Amdek Color I +	299.95	NEC JB 1201 A	159.95

MODEMS

Hayes Smart 300	\$219.95	MicroCom ERA2	\$239.95
Hayes Smart 1200	499.95	Prometheus Pro 1200	389.95
Hayes Micro IIe w/sc	249.95	Quadmodem 1200	449.95

PERIPHERAL CARDS & ACCESSORIES

ALS Z80 CP/M 2.2	\$125.95	Street ECHO II	\$ 99.95
ALS Z80 CP/M 3.0 + Cent. Pt. Wildcard 2	109.95	Synetix	
IQ Smartcable	69.95	Flashcard 144 kb	309.95
Koala		Flashcard 288 kb	449.95
Graphics Pad	84.95	Sprite I	119.95
Gibson Light Pen	189.95	Sprite II	\$199.95
Kensington		Supersprite	309.95
System Saver	69.95	VideoSprite	749.95
Mac Surge	29.95	TG Joystick	34.95
Mac Swivel	22.95	TG Paddles	29.95
Mac Modem	109.95	Titan Technologies	
Kraft Joysticks	45.95	Accelerator III/IIe	429.95
Hayes Joysticks M 3	45.95	64k Ram II +	259.95
Microsoft		128k Ram II +	319.95
Z80 CP/M Softcard	229.95	Neptune 64k + 80	199.95
Premium Pack II +	459.95	Neptune 128k + 80	299.95
Premium Pack IIe	299.95	Neptune 192k + 80	339.95
PCPI		Videx	
Appli 6mz 64 Ex +	339.95	Videoterm w/ss	229.95
Appli 6mz 128 Ex +	399.95	Ulraterm	279.95
		Ultraplan	119.95

FLOPPY DRIVES

Rana Elite I 163kb	\$269.95	Micro Sci A2 143kb	\$249.95
Rana Elite III 652kb	469.95	Micro Sci A70 286kb	359.95

HARD DISKS

Corvus Omni Dr. 5	\$1649.95	Corvus Omni Dr. 45	\$4199.95
Corvus Omni Dr. 16	2849.95	Techmar 10mb Mac	1519.95

GRAPHIC INTERFACES & BUFFERS

Fingerprint	\$119.95	Grappler w/32k	\$194.95
Print-It	169.95	Grappler w/64k	229.95
PKASO/U	119.95	Quadram 32k Fazer	179.95
Grappler +	119.95	Quadram 64k Fazer	194.95
Grappler w/16k	179.95	Quadram 128k Fazer	274.95

PRINTERS DOT MATRIX

Apple Imagewriter	\$ 499.95	Gemini Delta 15	\$ 509.95
Apple Scribe	239.95	Gemini Radix 10	549.95
C. ITOH 8510	349.95	Gemini Radix 15	639.95
Epson LQ 1500	1099.95	Okidata 84	799.95
Epson RX 80 F/T	349.95	Okidata 92	439.95
Epson RX 100	559.95	Okidata 92 Image	529.95
Epson FX 80	469.95	Okidata 93	649.95
Epson FX 100	689.95	Quadram QuadJet	759.95
Epson JX 80 Color	CALL	Toshiba P1351	1299.95
Gemini 10x	289.95	Toshiba P1340	729.95
Gemini 15x	399.95	Transtar 315 Color	469.95
Gemini Delta 10	399.95		

PRINTERS LETTER QUALITY

DW 2000 33cps 48k	\$999.95	Silver Reed 400 12cps	\$319.95
Dynax DX 15 14cps	399.95	Silver Reed 500 14cps	389.95
Dynax DX 25 23cps	649.95	Silver Reed 550 17cps	469.95
Dynax DX 35 36cps	879.95	Silver Reed 770 35 cps	869.95
NEC 2010/2030 20cps	709.95	Star PowerType 17cps	359.95
NEC 3515/3530 30cps	1299.95		
NEC 7715/7730 50cps	1699.95		

SOFTWARE FOR IIe, IIc and MAC

Word Processing		Owlicat 15hr SAT	\$ 69.95
Bank Street Writer	\$ 49.95	Owlicat 60hr SAT	189.95
Bank Street Speller	49.95	ASCII Exp. Pro.	94.95
PFS:Write	79.95	Crosstalk	129.95
PFS:Proof	54.95	Crossword Magic	39.95
Homeward	49.95	Print Shop	39.95
Homeward Speller	39.95	Clickart Mac	39.95
Apple Writer IIe	164.95	Math Blaster	39.95
Sensible Speller IV	79.95	Word Attack	39.95
Screenwriter II	84.95	Speed Reader II	39.95
Word Handler	54.95	Alphabet Zoo	19.95
Wordstar w/Star	319.95	Story Machine	24.95
Wordstar Pro w/Star	419.95	Apple Logo	89.95
Format II Enh.	109.95	Terrapin Logo	69.95
Business * Personal		Grandma's House IIc	34.95
Multiplan	139.95	Graphics Magician	42.95
PFS: File	79.95	Sideways	42.95
PFS: Report	79.95	Microsoft Basic Mac	109.95
PFS: Graph	79.95	Beagle Basic	24.95
PFS Access	54.95	Beagle DiskQuick	19.95
Think Tank	109.95	Beagle Apple Mechanic	19.95
Home Accountant En	49.95	Data Capture 4.0	45.95
Tax Advantage	49.95	Flight Simulator II	39.95
Dollars & Cents	79.95	Lode Runner	29.95
Apple Works	209.95	Choplifter	29.95
Apple Q File IIe	89.95	Zork 1,2,3	29.95
Apple BPI Gen'l Acct.	324.95	Zork 1,2,3 Mac	34.95
Visicalc Adv.	199.95	Seastalker	29.95
Megamerge Mac	79.95	Sorcerer	39.95
dBase II	399.95	Deadline	34.95
DJ Inv/Eval.	99.95	Deadline Mac	39.95
DJ Market Anal.	249.95	Sargon III	39.95
DJ Investors Wks. IIc	99.95	Beyond Castle Wolf.	29.95
DJ Spreadsheet Lnk.	169.95	Zaxxon	29.95
Home * Educational * Entertainment		Objective Kurst	29.95
Master Type	29.95	Exodus Ultima III	45.95
Microsoft T Tutor 2	19.95	Transylvania Mac	24.95
Sim. Sch. T Tutor 3	39.95	Pensate Mac	24.95
Micro Cookbook	29.95	Xyphus	24.95
		Exp. Amazon	24.95

BOOKS

Quality		Microsoft Press	
Beneath Apple DOS	16.95	Apple Macintosh	16.95
Bag of Tricks	29.95	Managing with Multiplan	15.95
Understanding the Apple	19.95	Osborne/McGraw Hill	
Datamost		Wordstar/McGraw Easy	10.95
Macintosh Primer	7.95	6502 ALDS	15.95
Kids and the Apple	16.95	CP/M Users Guide	13.95
Kids to Kids	7.95	Prentice Hall	
Applesoft Encyclopedia	29.95	Apple Machine Language	12.95
Ashton Tate		Applesoft Basic	15.95
dBase II for Business	16.95	Apple Logo Primer	12.95
The Book Co.		Apple Machine Lang.	12.95
Apple Graphics & Arcade	16.95	Apple II graphics	12.95
The Book 1984	16.95	Sierra On-Line	
H. W. Sams		Apple II Graphics	17.95
Intro to the Mac	10.95	Sybox	
Applesoft Language	10.95	Intro to Pascal	15.95
John Wiley		Intro to Wordstar	12.95
Apple Basic Data File	12.95	Mastering CP/M	15.95
Using CP/M	12.95	Understanding dBase	19.95
McGraw/Byte		1st Apple II Prog.	10.95
Apple Basic Hands On	19.95	Visicorp Pres	
Basic Hands On	19.95	Visicalc Adv. w/sheets	16.95
Learning w/Apple Logo	12.95	Visiseries How to	16.95
Logo for Apple II	13.95		
Learning w/Logo	19.95		

BC BUSINESS COMPUTERS
OF PETERBOROUGH

FREE SHIPPING
CONTINENTAL US



12 School Street • Peterborough, NH 03458

ORDERS ONLY
800-845-3003

QUESTIONS
603-924-9406

made an error or wanted to change something, a cackling witch jumped out and screeched, "Start over!" Editing is also available during record entry, so you can change information without erasing the entire line, which was the case in Version 3.

Records can now contain alphanumeric fields with up to 100 characters instead of a maximum of 30. This change does mean that files you create with Version 4 Plus may not work with the Version 3 program, although files

Making a new file form in Version 3 often gave me the edgy feeling of being in an amusement-park spook house.

you create with Version 3 will work with Version 4 Plus.

Changes in the printing portion of the program are especially welcome. Before you print a report or labels, you can review the formats that determine the appearance of the information in the printout—no more wasted time creating duplicate formats. In selecting which records to print, you can now match up to 20 criteria, which was supposed to be possible in Version 3 as well, but Version 4 Plus won't crash when you get to the 10th or 11th criterion.

To extract the records you choose, DB Master may need to make a separate Sort file on "scratch" disks. This process can take a long time. In Version 3 you could use the sort file only once. In Version 4 Plus you can reuse that sorted file, although you must remember that any changes you've made to the main file since the sort will not appear on the previously sorted file.

The most important characteristic of Version 4 Plus is its reliability in carefully storing and retrieving data. I have never suffered a data loss because of the program itself; even the errors I've made in interpreting instructions have not proven catastrophic.

DB Master constantly displays options on the screen, which might annoy advanced computer users, but I appreciate them because I know I can check the choices at the bottom of the screen and move through the program without hesitation. In Version 4 Plus, the new

headings at the top of the screen that tell me where I am within the program have proven helpful.

Entry/Edit Techniques

To avoid typing repetitive information, you can set defaults that pretype specified information into the screen form. A last-record default option causes the record you have just entered and saved to reappear on the screen, and you type over it to enter a new record. You can use this function to review your previous entry for errors and to avoid retyping if some of the information within a batch of new records is similar. If you need to add five new records of people at the same company, for example, enter the first name, title, company, and address. With last-record default, type only the name and title for the next four records.

Another option is to set up permanent defaults during file creation or temporary defaults just before adding records. Fields with the same information for all or most new records can already be filled-in when each fresh form appears on the screen. If most records will include the title Sales Director, for instance, or will have the same city and state, defaults in these fields can save typing time and help prevent errors.

Before adding records you can choose to set defaults and to print each of the new records. DB Master has always made it easy to produce a daily report of the records you enter by letting you print each record as you save it. The new version improves this feature by letting you use a space-saving format, printing all fields on one line across the page, instead of having only one field per line.

Another way to print a daily report is to set up the original form with an automatic-date field. Whatever date you enter when you boot DB Master is logged automatically into this field on any records you enter or edit that day. At the end of the day you can print a report of all records for that date. I also use this field as a last-activity date, separate from another field for the record's original entry date, to show when customers have made their most recent purchases. By printing a report of all records with last-activity dates prior to six months or one year ago, I can spot customers who are not buying.

An increment option makes entry of numbers easy. Many DB Master options use the Control key and a single-key mnemonic. Control-I, for instance, causes a number to increase by 1. Whenever the form appears, to have

you add the next record, the increment option adds 1 to a number from the previous record. For invoice numbers or unique, primary-key numbers, the increment ups the previous record's number and saves both typing the entire number and remembering which number comes next.

DB Master allows a certain amount of data-entry checking by providing for specific field types. If you set up your form with fields for date, telephone, or Social Security number, for example, you can use a field type that makes the typist conform to the spacing appropriate for that information. You can select a Yes/No field that accepts only Y or N, or a field that formats dollar amounts to two decimal places.

You can also choose a field that includes only numbers and can set the maximum length to fit a specific type of entry, such as catalog number. The program won't allow you to type a longer number, and a shorter number that may be incorrect will stand out.

You can make two fields part of a formula and create computed fields. For example, one field includes the quantity of an item in inventory, another field tells how much it costs, and the computed field shows the calculated total inventory value for that item.

To give you room to enter text, alphanumeric fields can include up to 100 characters. You can combine several 100-character fields into a paragraph of text that includes any keyboard characters.

The most important characteristic of Version 4 Plus is its reliability in carefully storing and retrieving data.

Editing records is the most time-consuming part of maintaining a database system. DB Master makes this process simpler in several ways in Version 4 Plus than it was in Version 3. One is the alphanumeric-field editor, which lets you edit a field without having to retype it entirely, as you had to in Version 3. Imagine not being able to edit a 100-character field! DB Master's field editor is a simple word-processing editor. You can move to the beginning or end of a line, delete characters, and insert characters. You can use it while

REACH NEW HORIZONS with CH Products

MACH II and MACH III JOYSTICKS

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

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

These highly accurate and reliable 360 degree microcomputer cursor controls used for games, business and graphics applications provide more features, greater durability, and longer life cycles. Plug in compatible with Apple II, IIE, IIC, IBM PC, PCjr and TRS-80 Color Computers.
MACH II \$44.95/MACH III \$54.95

PADDESTICKS

PADDESTICKS are a new and unique paddle control design that promises to return the fun and excitement back to paddletype games. They are faster, easier to operate and less fatiguing than conventional type paddles. The PADDESTICKS operate as a single-axis joystick and are currently plug-in compatible with the Apple II, IIE and IIC personal computers. \$44.95 (pair)



MICRO-TRAK TRACKBALL

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

Manufactured in U.S.A.

CIRCLE 271 ON READER SERVICE CARD



FORMERLY HAYES PRODUCTS

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

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

adding or editing records and when you set temporary defaults. If you don't like your editing, you can press Control-V to void it and retrieve the original record. If, on the other hand, you like it, press Control-S to save it.

Another helpful way of using the editor saves time much like the default option does. If you have a new record to enter that contains information similar to that in another record, call that record to the screen, edit it, and press Control-A to add the record as a new one without altering the original record.

Data, Front and Center

Now that you have the information in the computer, how do you get it out? As usual with DB Master, the options are many and can be complicated if you don't have a good understanding of the instructions. What you want the program to do is search through the records to find each one that matches a set of criteria you choose. You can display them on the screen or print them with the printer.

The program lets you find records that match; are greater than or less than; include a specific character, number, or set of letters; or records that fit within a range. You can combine these criteria and find only records within a ZIP code range that include a certain

letter code. You can choose records that fit one set of criteria *and* another set, or records that fit one set *or* another set. Thus, you can combine records in many different ways to suit your needs. In effect, you have duplicate copies of information in many file folders at one time with the option of updating or reprint-



You won't always know how to get off a trail you know you don't want to be on until you follow the program further into the woods.

ing reports with little effort.

Another Version 4 Plus improvement is the feature that enables you to get a count of the number of records that fit the criteria you specify, before you print the report. Some weeks before printing mailing labels, I need to know how many flyers or letters to print. When I choose the Total option, Control-T, the program searches the file.

Total also gives a sum, average, and standard deviation for numeric fields and prints the results on the screen or printer. Statistical analyses are also available through printed reports.

Creating a report, like creating a form, is easiest when you plan it on paper first. Within the DB Master manual are several blank Report Design Worksheets and Form Design Worksheets. Each design takes time and can be tailored to special needs. A form can fill up to nine screen pages and include 21 lines of fields per page, with a maximum of 100 fields per record. Reports can print one or more lines per record, in a layout to fit a form, or in labels. Reports can include a little or all of a record's data, as well as comment lines, footnotes, column titles, date, page numbers, statistics, and breaks at the end of groups or pages.

Lost in the Woods

DB Master can be frustrating. With its many options for creating forms and reports, mistakes and improvements take time. If people in business had more time, DB Master might be considered an adventure, but once you've selected an option, or started a hike, you won't always know how to get off a trail you know you don't want to be on until you follow the program further

DISKETTES

ORDER TOLL FREE **1-800-327-2251**

IN FLA. 305-261-8737

10 DISKS PER BOX	1-9 Bx	10 + Bx
Verbatim MD525-01, SS/DD, 5-1/4," Plstc. Box	\$21	19⁹⁵
maxell MD1, SS/DD, 5-1/4,"	\$22	20⁹⁵
Dysan 104/1D, SS/DD, 5-1/4,"	\$27	25⁹⁵
TDK M1D-S, SS/DD, 5-1/4,"	\$23	21⁹⁵

ALMALY TRADING CORPORATION
Computer Products Division
7801 Coral Way Suite 116
Miami, Florida 33155 Telex 51-9602

FREE CATALOG

TERMS: MO Cashier's & Personal (10 days to clear) check. School PO. Fortune Co. P. Govt. PO. C.O.D. (add \$1.65 max. \$250 cash only). Prices reflect a 3% cash discount so ADD 3% to above prices for VISA, MC or AX.

Shipping & Handling USA: 1-4 Bxs \$2.75, 5 + add \$0.47/bx. Foreign call or fax for info. **References:** D & B. Flagship Bank 305-442-7235.

BURIED

IN STACKS OF ARTICLES ?
CONSIDER HIRING A LIBRARIAN FOR ONLY
\$ 75

Quick Search Librarian (QSL) makes it easy to enter and edit your journal references, search for articles, and print or sort a list of articles using the APPLE* II + /Ile computer. Important QSL features include:

- Two keystrokes select any one of 255 keywords or any one of 255 journal titles.
- Four lines available for listing authors, title and/or comments.
- Powerful data base screen editing, copying and merging features.
- Average search speed is 50 articles/second with multiple criteria; average sorting speed is 40 articles/second when sorting on 3 fields.
- Typically, 1000 articles can be stored on a single disk.
- Includes sample data base and tutorial for *Scientific American* magazine.

VISA or Mastercard orders accepted. QSL manual available separately for \$5. (Price of manual deductible later with purchase of QSL software.) Add \$2.50 for shipments made in U.S.A. Telex: 705250 *Trademark of Apple Computer, Inc.

INTERACTIVE MICROWARE, INC.
P.O. Box 139, Dept. 209
State College, PA 16804, (814) 238-8294

Best Connection

ProModem 1200A Apple Card Pack



It's the best 300/1200 baud 212A telephone modem for your Apple® II, II+, and IIe. "Best" because it's the easiest to install and use, provides more useful modem features for your money, and lets you add software capabilities as your needs grow.

We really do mean easy. Just plug the ProModem Card Pack into any expansion slot and connect the telephone cord. On-board intelligent software in ROM includes a simple but powerful terminal program. With a few keystrokes, you'll be "on line" and communicating.

ProModem 1200A offers you the best price-to-performance modem available with Auto-Answer and Auto-Dial, Programmable Intelligent Dialing, Built-in Speaker with Volume Control, Help Commands, Extensive Diagnostics, and more.

And when you need more sophisticated capabilities like Terminal Emulation, you're all set.

The 1200A is fully Hayes compatible. You'll be able to use most of the Apple II communications programs available.

PRICE COMPARISON

PROMETHEUS

- (1) ProModem 1200A Apple Card Pack, complete with on-board software and all necessary hardware

List Price: \$449

HAYES

- (1) Smartmodem 1200 "standalone modem"
- (2) Serial Card
- (3) RS-232C Cable
- (4) Communications Software

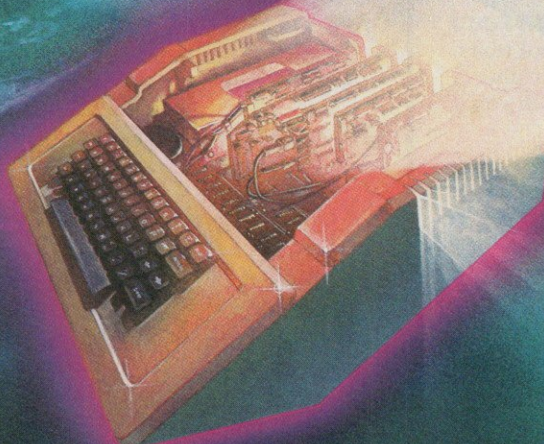
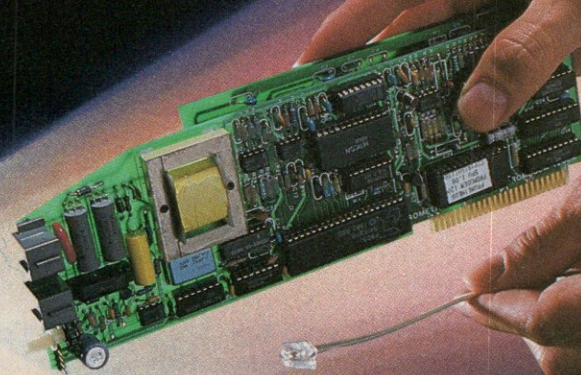
Total List Price: \$957

The "Help" Screen and "Auto redial if busy" functions make the 1200A convenient to use. The second phone jack for the telephone handset allows switching from voice to data. You get all of this, ready to use, complete with easy to understand documentation, and a telephone cord for only \$449.

See your local dealer for a demonstration. He'll show why ProModem 1200A is your best connection.

Prometheus Products, Inc.
45277 Fremont Blvd.
Fremont, CA 94538
(415) 490-2370

Apple is a registered trademark of Apple Computer, Inc.



PROMETHEUS®

CIRCLE 122 ON READER SERVICE CARD

into the woods. At a clearing you will have a choice to cancel the trip or start again from a point along the way. It is always better to stay on the trail by continuing with the program's options, one of which will let you abort the current process, rather than to cut through the woods by pressing Control-Reset. The latter procedure may or may not work—if it doesn't, it may damage your file. When you follow them literally, the screen prompts, like trail markers, help avoid confusion.

Because of the potential size of a

file, DB Master can require an annoying amount of disk swapping in order to read or write records in a sort. The best way to surmount this problem is to use a mass-storage device such as a hard disk or design a file so that the most common sort field is the start of the primary key.

If you need to sort records in many different ways, a hard disk may be the better answer. Check with Stoneware when you want to choose a hard disk, because DB Master is not yet compatible with all hard-disk brands—you'll

find that the company offers excellent technical support.

Utilities to the Rescue

If you use DB Master as a professional tool, the many file-maintenance routines the program offers will help you. DB Master Version 4 Plus includes two additional Utility Pak programs from Stoneware. File maintenance in DB Master includes a simple and helpful task: reblocking to reorganize and condense the records. The utility programs also have routines to determine the total number of records within a file, add and delete secondary keys for fast screen searches, translate abbreviated fields into long definitions, change passwords, and configure (i.e., connect) a printer to work with the program.

The Utility Paks include several useful tasks and some esoteric abilities. Utility Pak 2 includes a program for printing labels up to five across a page, which is especially useful for direct mail. Its global edit is helpful for automatically editing or deleting a selected group of records and for computing days elapsed between dates. For companies that work with DB Master in different offices and need to merge records, each Utility Pak has an appropriate routine.

Utility Pak 1 includes basic help for creating a new, blank file with an original's formats and for recovering damaged files. It also contains a DIF translator to allow a DB Master file and a file from another program to merge information.

DB Master cleans up myriad details in any paperwork routine and builds a system that can grow into a hefty workhorse on your Apple. Whether you print and file invoices, calculate estimates, keep personnel records, or maintain a library catalog, DB Master can help. The program gives you fast access to your information and an opportunity to analyze it, print it, and improve its usefulness. +

▶ PRODUCT INFORMATION

DB Master, Version 4 Plus
Stoneware, Inc.
50 Belvedere Street
San Rafael, CA 94901
(415) 454-6500

List Price: \$350 (includes Utility Pak 1 and 2)

Requires: Apple II Plus, IIe, or IIc; 64K RAM, two to four disk drives (does not work on Apple III in Apple II Emulation mode)

CIRCLE 515 ON READER SERVICE CARD



READ AT COMPUTER SPEED!

Super Speed Reading, by the authority who taught speed reading to the Kennedy White House staff, quickly teaches you to read 2 to 10 times faster!

It's a skill you (and your children) can learn

just as you learned to ride a bike or drive a car. You're taken from one skill plateau to another, until you reach the high speeds you want. Perhaps 500, 1000, or 3000 words per minute.

Super Speed Reading™

You'll find learning is especially easy thanks to on-screen graphics, a choice of 3 type styles, and upper/lower case letters. In addition, you'll enjoy the 120 on-screen practice pages; 10,000 wpm Flash Practice plus special business and student sections.

Read up to 10 times faster!

Learn how to read your novels, school texts, newspapers, magazines, business materials . . . 2 to 10 times faster! It's a wonderful skill you'll enjoy for a lifetime.

Super Speed Reading. \$149.00

2 disks + 130 pg. manual
48K Apple II, II+, IIe* with Applesoft in ROM or language card.
Requires DOS 3.3. ® 1 disk drive.

At computer stores, or from:

Magnum
SOFTWARE

21115 Devonshire St., Suite 337
Chatsworth, Ca. 91311 (818) 700-0510
VISA/MASTERCARD/COD.
Add \$3.00 shipping/handling.

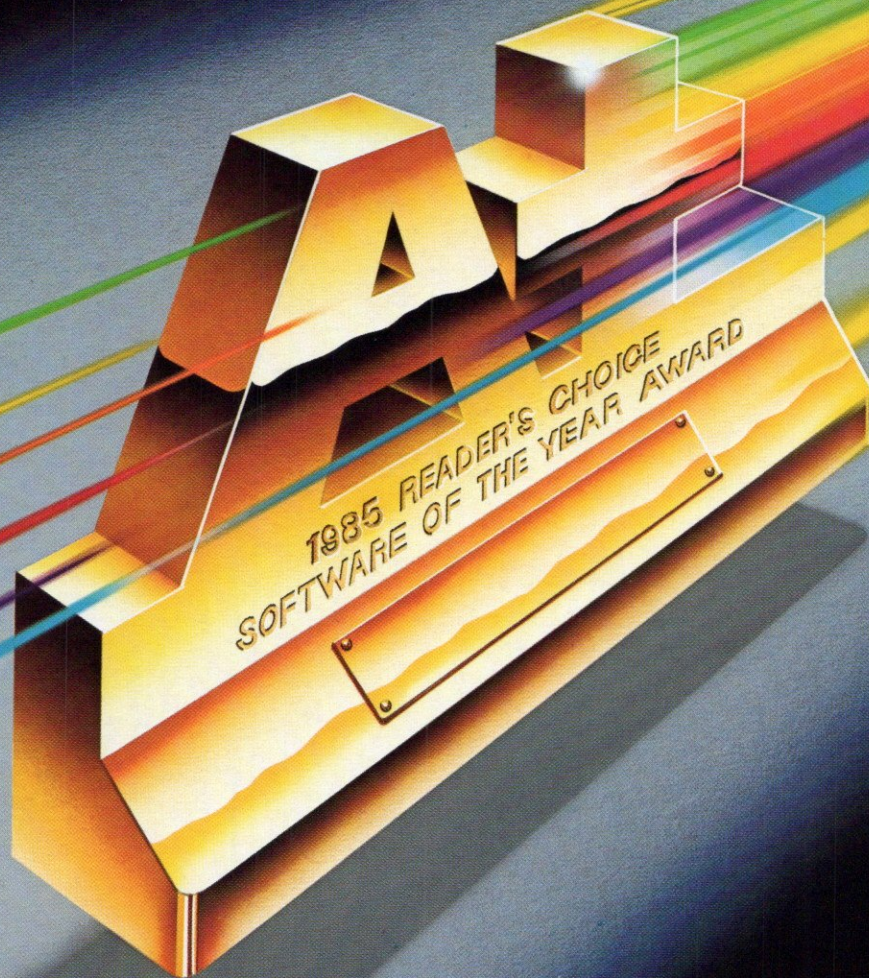
*Apple II, II+, IIe are Apple Computer, Inc. TM's.

"Back to
School Special"
ONLY \$99.00



CIRCLE 214 ON READER SERVICE CARD

ANNOUNCING THE **A+**
**READER'S
CHOICE
AWARDS**



**HERE'S YOUR CHANCE TO VOTE FOR
THE BEST SOFTWARE OF THE YEAR
AND YOUR CHANCE TO WIN A MACINTOSH**

ALL THOSE COMPANIES WHO MAKE THE FINEST SOFTWARE FOR APPLE—

YOU HAVE TO HAND IT TO THEM


You, the Apple users and A+ readers, are the experts. You're the ones who can let software manufacturers know the type of programs you think are the best.

You can vote for your favorite programs in 12 different categories, and the winners will receive the A+ 1985 Reader's Choice Software of the Year Award.

Take a few minutes. Cast your ballot. It's important for you and your future software needs.

Vote before November 15TH, 1984 and you automatically become eligible to win a new Apple Macintosh computer. Nothing to purchase. All you do is vote and mail your ballot, and you're eligible to win.





BALLOT

READER'S CHOICE AWARDS 1985

FILL OUT THIS BALLOT AND MAIL IT, AND
YOU AUTOMATICALLY BECOME ELIGIBLE TO WIN
A NEW APPLE MACINTOSH COMPUTER.

For each Apple microcomputer you personally use, please write in the specific manufacturer and program you nominate in each software category below.

— TEAR OUT ON DOTTED LINE —

CATEGORY	APPLE II SERIES (II, II+, IIe, IIc)	MACINTOSH
Word Processing	_____ (6-7)	_____ (8-9)
Information management (i.e. mailing-list, file/database management)	_____ (10-11)	_____ (12-13)
Graphics	_____ (14-15)	_____ (16-17)
Games	_____ (18-19)	_____ (20-21)
Education	_____ (22-23)	_____ (24-25)
Business Accounting (i.e. general ledger, inventory)	_____ (26-27)	_____ (28-29)
Personal Finance (i.e. home budget, tax, stock market)	_____ (30-31)	_____ (32-33)
Spreadsheets	_____ (34-35)	_____ (36-37)
Integrated	_____ (38-39)	_____ (40-41)
Music	_____ (42-43)	_____ (44-45)
Project management	_____ (46-47)	_____ (48-49)
Utility programs	_____ (50-51)	_____ (52-53)

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Your Apple products dealer _____

**HERE'S YOUR CHANCE
TO VOTE FOR
THE BEST SOFTWARE
OF THE YEAR
AND YOUR CHANCE
TO WIN A MACINTOSH**

TEAR OUT ON DOTTED LINE



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

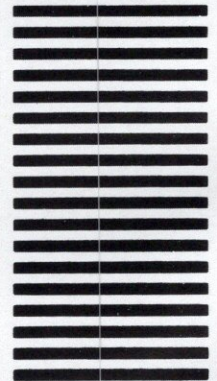
BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 3838 NEW YORK, NY

POSTAGE WILL BE PAID BY ADDRESSEE.



One Park Avenue
New York, NY 10016
Att: Richard Eberhardt



programming contest

Send in for Your Listing

Here are the ways you can obtain the listings of the winning software of the *A+* Program of the Month contest:

1. Write to us, and we'll send you a copy. Be sure to state the name of the program, the month that it won, and include a self-addressed, stamped envelope.
2. Download the program directly into your Apple from CompuServe. Log onto CompuServe (you must already be a member) and type GO PCS51, which will bring you to the Micronet Apple User's Group area. The computer will then guide you through the system with a series of menus and help screens. If you have any questions, you can send a message directly to us via CompuServe's electronic-mail system. *A+*'s ID number is 72356,2673. If you want to contact CompuServe, its phone number is (800) 848-8199 (in Ohio, dial (614) 457-0802).
3. Watch *A+ Disk Magazine* for listings of our contest winners. Future issues of *A+ Disk Magazine* will have the winning program, ready to run, on the diskette.

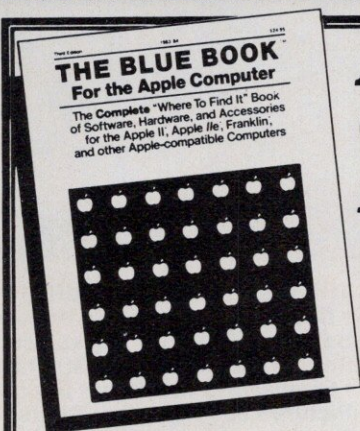
CONTEST WINNER

Take a bow, Mark Bisho, winner of October's Program of the Month contest. He will receive \$500, and we'll enter him in our special \$1000 grand-prize contest. Mr. Bisho's comments describe the program:

IntelliCalc

IntelliCalc knows how to do everything that a normal calculator does, plus almost everything else you wish one did. It is simple and easy to use, yet potentially a powerful program—hence the name IntelliCalc. If you have ever spent hours running and checking a calculation, with or without a tape, only to find a mistake or a deleted entry, you will really appreciate the capabilities of this program.

IntelliCalc provides a running total that is updated with every entry. As many as nine memories, available at any time, are fully interactive with the running total and you can access them directly from the keyboard without affecting the normal entries or the total. You can insert—or revise—an entry at any time into an easily rechecked “electronic tape” of entries. It is also possible to save and load information to and from the disk. The program can print a hard-copy calculator tape that is correct every time. Well-documented subroutines are included to expand the program to meet your own calculation needs.



APPLE OWNERS!

Look it up in the **Blue Book**

New Third Edition

- An up-to-date, where-to-find-it Directory for over 4,600 Apple software & hardware products.
- Names & addresses of more than 700 suppliers of Apple software—with detailed descriptions of available programs and how to order them.
- Over 900 pages! An essential reference for every Apple Owner!

PLEASE SEND ME:

____ (copy/copies) of **The Blue Book** @ \$24.95 each
 ____ free catalog of Apple instructional books.

**ADD \$1.50 POSTAGE FOR FIRST BOOK,
 75¢ FOR EACH ADDITIONAL**

Make checks payable to:

SINEQUANON P.O. Box 235, Cederhurst, N.Y. 11516

NAME _____
 ADDRESS _____
 CITY _____ STATE _____ ZIP _____

CIRCLE 362 ON READER SERVICE CARD

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®, Appletwriter. 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 Graftrax 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 DOUBLESTRIKE
N DOUBLEWIDE EMPHASIZED
O DOUBLEWIDE EMPHASIZED DOUBLESTRIKE
P CONDENSED DOUBLEWIDE
Q CONDENSED DOUBLEWIDE DOUBLESTRIKE
R CONDENSED DOUBLESTRIKE
S CONDENSED HALF SIZE
T RETURN TO STANDARD SETTINGS

> TYPE LETTER, PRESS RETURN (0 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

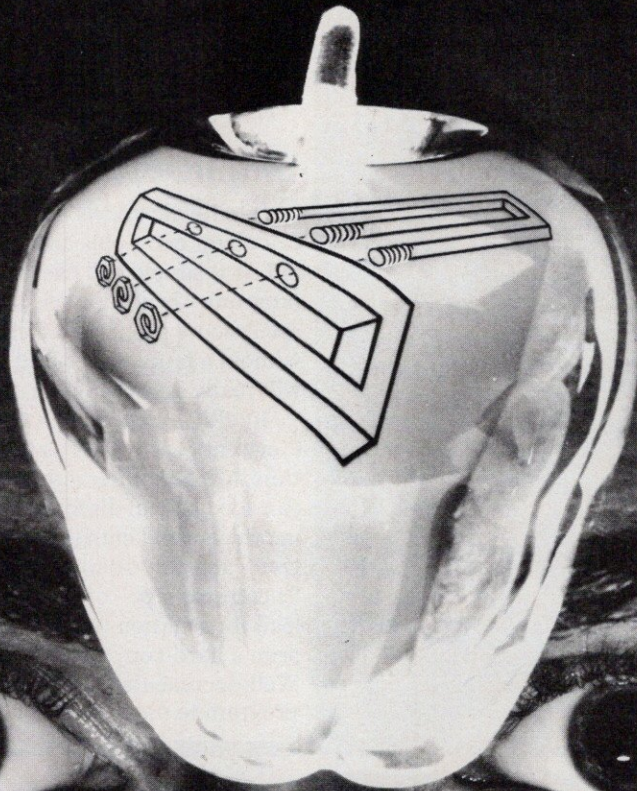
VISA and MasterCard Credit Cards

See Your Dealer or Write or Call Us!

APPLE is a registered trademark of Apple Computer, Inc.

CIRCLE 164 ON READER SERVICE CARD

IMAGINE IT...



CAPTURE IT.

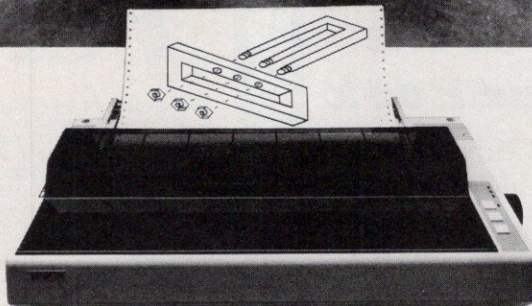
THE MOST INTELLIGENT APPLE® INTERFACE AVAILABLE

The original Grappler was the first graphics interface to give you hi-res screen dumps from your keyboard. The latest Grappler + offers over 27 special commands, including Dual Hi-Res Graphics for side-by-side graphics printouts, and Double Hi-Res Graphics, to take full advantage of your Ile's capabilities.

The Grappler + can now be used with the Epson RX and FX series printers, including a unique command to access any of these printers' special graphic modes. In addition, the IDS/Dataproducts Grappler + is available with color capability, including color graphics screen dumps.

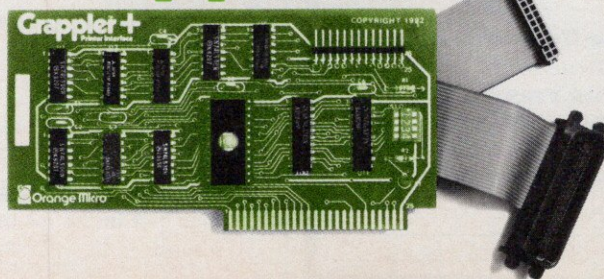
NEW! ORANGE INTERFACE FOR TEXT
If your applications don't use graphics, or if you use a letter quality printer, then the Orange Interface is for you. This inexpensive intelligent interface features all the text functions of the Grappler + .

Epson is a registered trademark of Epson American, Inc.
Apple is a registered trademark of Apple Computers, Inc.
© Orange Micro, Inc. 1982



ACTUAL APPLE II PRINTOUT USING GRAPPLER AND EPSON FX-100

With The Grappler +[®] Printer Interface



THE GRAPPLER + FEATURES:

- Dual Hi-Res Graphics • Printer Selector Dip Switch • Graphics Screen Dump • Inverse Graphics • Emphasized Graphics • Double Picture • 90° Rotation • Center Graphics • Chart Recorder Mode • Block Graphics • Bell Control • Skip-over-perf • Left and Right Margins • Variable Line Length • Text Screen Dumps • also works with Pascal and CPM.

THE GRAPPLER + INTERFACES WITH THE FOLLOWING PRINTERS:

- Anadex • Apple DMP • C. Itoh ProWriter • Epson MX/FX/RX series • Okidata series • Panasonic • Sanyo • Corona • Star Gemini/Delta/STX series • IDS/Dataproducts Prism Microprism, 8010, 8020 • Many More Popular Dot Matrix Printers

 **Orange Micro inc.**

1400 N. Lakeview Ave.,
Anaheim, CA 92807 U.S.A.
(714) 779-2772 Telex: 183511 CSMA

All rights reserved.

CIRCLE 252 ON READER SERVICE CARD

H O W T O

dBASE II

P A R T X I I

**In a tutorial series on dBASE II, a popular
program for database management**

Welcome to our ongoing series of tutorials on the increasingly popular microcomputer data-management tool dBASE II. If you have been participating in the 11 dBASE II installments up to now, you should now be fairly adept in many of the rudimentary, as well as some of the more complex, techniques for creating databases, storing information in them, and keeping that information up to date. You should also be familiar with most of the approaches for data retrieval, including the use of sorted and indexed databases, as well as operators, memory variables, functions, and more global commands such as Total, Update, Copy To, and Append From, which accomplish large-scale modifications of and interactions between existing data files.

For the most part, past installments have directed your attention to the tedious and irrelevant details of unknown or entirely fictitious businesses, because of the necessity for examples. You've suffered through the prices and quantities of wing nuts, the part numbers of \$15 phonographs, and the cost/benefit ratio of lead space suits. Therefore, as a reward, I now offer something a bit more fun. This time we'll be playing with ways to create custom data input/output screens and printouts using the ZIP.COM program.

Before we get started, though, here are a few important

points for newcomers to the dBASE tutorial series.

Tutorial Conventions

These tutorials contain numerous examples. Sometimes you are asked to type a command, and then dBASE II responds. Just to differentiate between what you do and what dBASE II responds with, the ones you type appear in lowercase letters. Uppercase works too, so it doesn't really make a difference; it's just clearer this way. Some examples may specifically ask you to type in uppercase, but they always involve a series of words between quotation marks. The dBASE II responses are usually in uppercase letters. All screen interactions are listed in larger type to distinguish them from the rest of the text. To make these sections more readable, carriage returns are implied rather than included here.

In the command-syntax examples, words between square brackets (e.g., [scope]) indicate an optional phrase or "argument." All examples assume dBASE version 2.4 or higher and an 80-column display.

Screen Gems

Have you ever wished there were an easy way (without writing dBASE programs) that you could display and enter data into your dBASE files, using your own custom-designed screens? Wouldn't it be nice if you could list the cursor-control codes or special instructions and prompts on the screen during the Append and Editing processes?

Well, it's not as difficult as you may think.

A program included on your dBASE II disks is named ZIP.COM. Ever wonder what it's for? Well, it's a screen and printout editor that is designed expressly for use with dBASE II. Zip makes a simple task of creating custom screens and printout forms, saving them on disk as .FMT files. dBASE II 2.4 or later sports a command (Set Format to <filename>) that instructs dBASE to use an .FMT disk file to determine the appearance of your screen. Additionally, for the dBASE II programmers among you, Zip can also help you write all the code necessary for displaying fancy screens from within your programs. Let's find out more by actually using Zip.

First, make sure to run the installation program, ZIPIN.COM, and answer the questions according to your system's configuration:

```
A>ZIPIN <ret>
```

Assuming you have a bona fide Apple version of dBASE and not a generic CP/M one, your choices are relatively simple. Specify 40 or 80 columns and Apple II or Apple III. Don't bother changing anything else, except perhaps the cursor-control keys so that they match your word-processing program. Then exit from the program, using F for finished.

Next, dredge up the database we used in the last issue, or create a new one with the name, field layout, and data in figure 1.

OK. Now let's run Zip and see what we can do with it. First, make sure you have at least 3K of space on your floppy disk. Then type

```
A>ZIP <ret>
  press any key to continue
  N (for new)
  TUTOR (that'll be our filename)
```

Now you should have an almost blank screen waiting for you to start typing. Notice that you can type anywhere

on the screen by moving the cursor around with the cursor-control keys you chose during installation. Also, moving down a line doesn't send you back to the left margin or to the end of the next line, as is often the case with word-processing programs such as WordStar. This difference arises because the entire screen is initially filled with "blanks" waiting for whatever you want to replace them with.

In this first example, we are going to create a data I/O (input/output) screen that we can use when we Append or Edit our Inv-1 data file. So create a screen that looks something like the one below, including some little message

The field names can go anywhere on the screen, as long as you have enough room for the data display.

about careful typing at the bottom of the screen. You can tailor everything to your liking, except for the field names (which must, of course, match the database in use). The field names can go anywhere on the screen, as long as you have enough room for the data display. Note that a # sign must immediately precede the field names.

```
**** APPEND OR EDIT ****
INPUT SCREEN FOR INV-1 DATABASE
```

```
Category      ----->>      #category
Part Number   ----->>      #part: numb
Brand         ----->>      #brand
Model         ----->>      #model

List price    ----->>      #price
Actual cost   ----->>      #cost

Number on hand ----->>      #quantity
```

Please type carefully. Use dBASE cursor control keys to move between fields, edit, and insert.

Figure 1: The Inv-1 file

```
STRUCTURE FOR FILE: A:INV-1.DBF
NUMBER OF RECORDS: 000 10
DATE OF LAST UPDATE: 00/00/00
PRIMARY USE DATABASE
```

FLD	NAME	TYPE	WIDTH	DEC
001	PART:NUMB	N	005	
002	CATEGORY	C	010	
003	BRAND	C	010	
004	MODEL	C	006	
005	QUANTITY	N	002	
006	COST	N	006	002
007	PRICE	N	006	002
TOTAL			00046	

```
.list
00001      1 RECEIVER      NIZO      T-33      5      225.49      350.49
00002      2 RECEIVER      NIZO      T-35      4      312.00      425.25
00003      3 RECEIVER      ACME      R25-MT    13      19.99      49.99
00004      4 RECEIVER      NADIR     2-CHP     50      12.95      29.99
00005      5 SPEAKERS      RAZCO     L-55      30      199.00      0.00
00006      6 SPEAKERS      TALBEST   BG-20     6      250.00      350.88
00007      7 TAPE DECK     ROLLEM    CAS-3     10      125.65      212.99
00008      8 TAPE DECK     FLOWUTTER WBL-5     5      149.33      250.77
00009      9 TURNTABLE     XIRTAM    25-L      5      99.99      149.99
00010     10 TURNTABLE     RALURIC   RND-1     3      595.00      850.00
```



MAIL ORDER PRICES!



A NEW KIND OF COMPUTER STORE — WE DISCOUNT EVERYTHING!

ACCELERATOR //e	419.95
APPLE WORKS	225.95
ALS CP/M CARD w/64K MEM	299.95

★ APPLIED ENGINEERING ★

Z 80 PLUS	129.95
//e 64-128K 80 COL	149.95

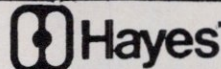
AMDEK 300 AMBER	149.95
AST 6 PAK+	269.95
MEGA+	269.95
BANK STREET SPELLER	49.95
BANK STREET WRITER	49.95
BEAGLE APPLE MECH	19.95
BEAGLE BAG	19.95
BEAGLE BASIC	26.95
BEAGLE DOS BOSS	19.95
BEAGLE DOUBLE TAKE	26.95
BEAGLE FLEX TEXT	19.95
BEAGLE PRONTO DOS	19.95
BEAGLE TIP DISK #1	16.95
BEAGLE TYPEFACES	16.95
BEAGLE UTILITY CITY	19.95
BROTHER HR15	399.95
DISK NOTCHER	14.94
D BASE II	299.95
D BASE III	419.95

★ DANA SUPER FAN 44.95
SURGE SUPPRESSOR,
2 GR. OUTLETS, FRONT SWITCH

DB MASTER IV NEW	229.95
DOLLARS & SENSE	69.95
EPSON FX 80	439.95
EPSON FX 100	659.95
FLIGHT SIMULATOR II	39.95
MOCKINGBOARD	79.95
SPEECH CHIP	89.95
MOCKINGBRD w/SPEECH	154.95
FONTPAK 1, 2, 3, 4, 5 EA.	16.95
FONTRIX	59.95
FORMAT II ENHANCED	99.95
FRAMEWORK	419.95
GEMINI 10X 120 CPS	255.95
GIBSON LIGHT PEN	199.95
GRAPPLER+ INTERFACE	115.95
GRAPPLER+ w/16K ON-BOARD BUFFER (TO 64K)	179.95
1/2 HGT DRIVE (AP) (IIc COMPATIBLE)	189.95
HOW TO PROGRAM BASIC	39.95
THE NEW HOME ACCT	59.95
HOME WORD	49.95
JANE w/MOUSE	199.95
KOALA PAD	79.95
MAGIC CALC	99.95
MAGIC WINDOW II	99.95

Lotus 123
★ 299.95 ★

MAXELL SSDD	23.95
MICRO SCI XL DRIVE	169.95
MICROSOFT SOFTCARD	239.95
MICROSOFT //e SOFTCARD 80 COL & 64K (1 CARD)	279.95
MILLIONAIRE	49.95
MULTIPLAN MACINTOSH	129.95
MULTIPLAN DOS or CP/M	129.95
MUSIC CONST SET	34.95



MICROMODEM //e 239.95
SUPPORTS II, II+, //e
FREE SOURCE SUBSCRIPTION
& SMARTCOM I SOFTWARE

1200 BD RS 232	469.95
1200 B (IBM)	399.95

RANA SYSTEMS

Elite One	219.95
Elite Two	379.95
Elite Three	479.95
Rana Controller	79.95
Rana 5 Meg HD (Apple)	799.95
Rana 10 Meg HD (Apple IBM)	1199.95

GARDEN OF EDEN COMPUTERS

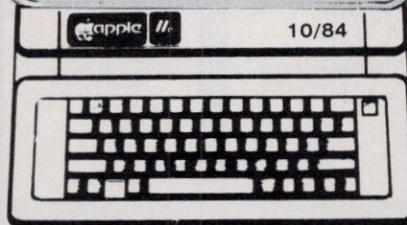
16485 Magnolia
Westminster, CA 92683
1/2 blk. N. of the 405 Frwy.
Mon-Fri 10-6:30 Sat 10-5
CLOSED SUNDAYS & TUESDAYS
ORDERS ONLY

800-762-3227

OUTSIDE CALIFORNIA ONLY

714-841-4994

INSIDE CALIFORNIA



★ NEW ★
★ **NEC 8850** ★
55 CPS IBM COMPATIBLE
DAISY WHEEL & RIBBON INCL.
LIST PRICE \$2495.00
INTRODUCTORY PRICE
\$1895

★ NEC 2050 (IBM)	799.95
★ NEC 3510 SERIAL	1299.95
★ NEC 3530 PARALLEL	1299.95
★ NEC 3550 (IBM)	1599.95
★ NEC 7730 PARALLEL	1699.95
★ INCLUDES RIBBON & THIMBLE ★	

NOVATION APPLE CAT II	219.95
NOVATION EXP MODULE	39.95
PADDLE ADAPPLE	26.95
PINBALL CONST SET	34.95
PRINTSHOP	39.95

OKIDATA 92P APPLE OR IBM 419.95
OKIDATA 93P COMPATIBLE 659.95
FREE PLUG 'N PLAY
w/IBM CABLE PURCHASE

PFS FILE //e, II+ or //c	77.95
PFS GRAPH //e, II+ or //c	77.95
PFS REPORT //e, II+ or //c	77.95
PFS WRITE //e or //c	77.95

PROMOTHEUS PRO MODEM
1200 BD 389.95
PROMETHEUS VERSA CRD 149.95
PROWRITER 8510 339.95
SARGON III 39.95
SENSIBLE SPELLER IV 79.95
SIDEWAYS (AP/IBM) 49.95
★ SILVER REED PRINTERS ★
★ EXP 400P 12 CPS 80 COL.. 299.95
★ EXP 500 16 CPS 80 COL.. 469.95
★ EXP 550P 19 CPS 132 COL.. 499.95
★ EXP 770P 36 CPS 132 COL.. 895.95
SYMPHONY 419.95
SYSTEM SAVER FAN 64.95
TAXAN 12" COLOR RGB 299.95
T.G. JOYSTICK 42.95
T.G. SELECT-A-PORT 42.95
"THE WORD" BIBLE 159.95
THINK TANK 119.95
THUNDERCLOCK PLUS 109.95
TYPING TUTOR III 39.95
ULTIMA III 39.95

Videx ULTRATERM[™]

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

SPECIAL LOW PRICE **189.95**

VISICALC //e 128K	199.95
WIZARD GRAPHICS CARD	62.50
WIZARD 16K GRAPH BUFF	109.95
WIZARDRY	36.50
WORDSTAR (IBM)	235.95
WORDSTAR w/FREE CP/M CARD	299.95

LIST HANDLER, WORD HANDLER
AND SPELL HANDLER
ALL 3 PIECES ★ 79.95 ★

ZAXXON 29.95
ZENITH 12" GREEN 99.95
ZORK I, II, III EACH 29.95
BECAUSE HARDWARE AND SOFTWARE
PRICES ARE CHANGING SO RAPIDLY,
WE URGE YOU TO CALL US 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, Checks, Certified Checks are
better. Money Orders and 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 they will go down!
Unless otherwise noted, all prices are Apple
Apple is a registered trademark of Apple Computer.
Subject to stock on hand.



NOW AVAILABLE FOR THE IBM PC JR.

FOUR GOOD REASONS FOR OWNING A PERSONAL COMPUTER



THE BLUE CHIP PORTFOLIO™

"Games investors play. Certainly not child's play!"

Forbes

"A fun, complex game and a real education..."

PC Magazine

"...exciting entertainment that may save you
hundreds or even thousands of dollars."

Business Computing

"Absolutely addicting!"

Howard Ruff Financial Report

"State of the art."

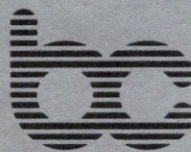
GQ

The action is simulated. The excitement is real!

Available for most popular computers.

Blue Chip Software

6744 Eton Avenue, Canoga Park
CA 91303 • (818) 346-0730



BLUE CHIP SOFTWARE™

CIRCLE 112 ON READER SERVICE CARD

Once you have the screen looking the way you want, type /S to save the file. Then type F to tell Zip to create a format (.FMT) file rather than a command (.CMD) file. We don't want to change the name, so type N in answer to the name-change question and N for the question about printing the form. Now Zip starts processing the screen, creating three files on your disk. When the cursor jumps back into the editing area, type /Q to quit Zip, answering Y to the Quit to system (Y/N)? query.

Just for fun, let's see what Zip created. Either use the CP/M Type command on your word-processing program to view the file TUTOR.FMT in figure 2.

This is a file that dBASE can use to place field data and notes on the screen while you're appending, editing, or inserting records. If you'd needed to, you could have created this form with your word-processing program. You can also edit it with the WP program, assuming you use a "nondocument" mode designed for writing programs. Otherwise, the WP program sometimes inserts strange control codes into the file, which confuses dBASE. Writing this format file by hand would have required some time-consuming calculations. For example, the line

```
a 2,26 SAY "**** APPEND OR EDIT **** "
                        means
"at row two, column 26 print this message--->
      **** APPEND OR EDIT **** "
```

The other files that Zip creates have the extensions .ZPR and .ZIP. The .ZPR file looks just like the screen we created. Editing the .ZIP file with your word-processing program will probably damage it, so it's better just to type it out:

```
A>type tutor.zip
```

This file is the one Zip uses to store your screen for future editing.

Now, get into dBASE II, making sure that your Inv-1 database and our new TUTOR.FMT file are both resident

```
* TUTOR.FMT
a 2,26 SAY "**** APPEND OR EDIT **** "
a 4,22 SAY "INPUT SCREEN FOR INV- 1 DATABASE "
a 5,21 SAY "-----"
a 7,21 SAY "Category ----->>"
a 7,47 GET category
a 8,21 SAY "Part Number ----->>"
a 8,47 GET part:numb
a 9,21 SAY "Brand ----->>"
a 9,47 GET brand
a 10,21 SAY "Model ----->>"
a 10,47 GET model
a 12,21 SAY "List price ----->>"
a 12,47 GET price
a 13,21 SAY "Actual cost ----->>"
a 13,47 GET cost
a 15,21 SAY "Number on hand ----->>"
a 15,47 GET quantity
a 19,13 SAY "Please type carefully. Use dBASE
cursor control "
a 20,13 SAY "keys to move between fields, edit,
and insert. "
```

Figure 2: The TUTOR.FMT file

INCREDIBLY SPREADABLE.

Do spreadsheets faster and easier with complete cursor control on the programmable Ile Tender keypad.

The Apple Ile* is a nice computer. Until you try to do a ledger, a VisiCalc** spreadsheet...or for that matter, any program that uses numbers. It could take days.

Cursors!

What you need is the Ile Tender. It's the Apple* keypad that gives you cursor control in all directions, as well as four programmable keys which can be permanently defined to any frequently-used key. And redefined at will.

At your fingertips.

You also get the four mathematical functions, a decimal point, comma, space bar and delete key. Plus, the Ile Tender is human engineered to provide you with a sure touch and less user fatigue, and comes standard with Coupler-Calc software to turn it into a fixed or floating-point calculator. It's even color-coordinated to match your Apple.

You can install the Ile Tender—without taking up an expansion slot—in about five minutes. And our interface allows disconnection in seconds without getting inside.

Try one.

Try the incredibly spreadable Ile Tender at your local Apple Dealer today. Or write or call us for more information.

TRACK HOUSE 

161 S. Viking Ave.
Brea, California 92621
Telephone:
(714) 671-3937

Dealer inquiries
invited.



Standard, non-programmable models are also available for both the Apple Ile and Apple II+. Ask your dealer for details.

*Apple Ile, Apple and Apple II+ are registered trademarks of Apple Computers, Inc.
**VisiCalc is a registered trademark of VisiCorp.

CIRCLE 255 ON READER SERVICE CARD

**Cooling Fan for
APPLE II, II+ & IIe***



• Line surge protection • Snaps on the side of APPLE II, II+ and IIe* enclosures • Eliminates overheating problems, thereby boosting reliability & operation life of computer • Switch on front serves as power switch for fan, computer, and extra outlet Size: 7" L x 2 3/4" W x 4 1/4" H • Weight: 2 lbs.

APF-1. . . . \$49.95

**QUALITY COMPUTER PRODUCTS
FOR APPLE AND COMMODORE**

Jameco's 10th Anniversary 1984 Catalog is Now Available

JE520 Series

**VOICE SYNTHESIZER
FOR APPLE AND COMMODORE**

Add speech capability to your Apple II, II+, IIe*, Commodore 64 or VIC-20 computer with JAMECO's JE520 Series Voice Synthesizer. Speech — the most effective means of communication available to man — is now immediately available for your computer.

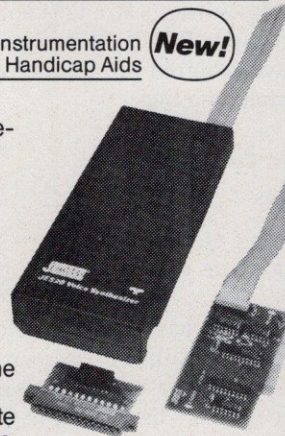
Applications

- Education • Entertainment • Instrumentation
- Games • Telecommunications • Handicap Aids

New!

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.



JE520CM

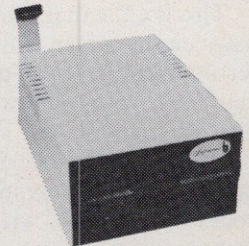
JE520AP

Case Size:
7 1/4" L x 3 1/4" W x 1 3/8" H

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.

JE520CM For Commodore \$114.95
JE520AP For Apple \$149.95

**APPLE™ Compatible
5 1/4" Disk Drive and
Controller Card**



• Uses Shugart SA390 Mechanics • 143K formatted storage • Color matches Apple Computer • Works w/Apple Controller or other Apple-compatible controllers (ACC-1) • Complete with connector — just plug into your disk controller card • 35 tracks • Size: 6" L x 3 1/2" W x 8-9/16" D • Weight: 4 1/4 lbs.

ADD-514. (Disk Drive). \$179.95
ACC-1. . . (Controller Card) . \$59.95

**APPLE™ Compatible
5 1/4" Half-Height
Disk Drive**

• Uses Chinon Pinch-type mechanics • 163K unformatted • 40 tracks • Super quiet • Works with Apple Controllers or other compatibles (ACC-1) • Complete with connector — just plug into your controller • Size: 5 3/4" W x 1 5/8" H x 8" D • Weight: 4 lbs.

FO51APC. . . . \$189.95

CABLES



RS232 Type

Part No.	Style	Length	Price
CDB25P-10-P	J	10'	\$16.49
CDB25P-10-S	L	10'	\$14.49

"Centronics" Type

Part No.	Style	Length	Price
CEN36M-5-M	J	5'	\$19.95
CEN36M-5-F	L	5'	\$22.95

**IBM PC Parallel Printer
Adapter Type**

(CDB25 Male to Centronics Male)

Part No.	Length	Price
CDB25P-5-CEN36M	5'	\$17.95
CDB25P-15-CEN36M	15'	\$22.95

Style J Male to Male
Style L Male to Female

We stock over 200 different cables. If you don't see what you need, please call.

**Keyboard with Numeric Keypad
for your Apple II and II+***

New!

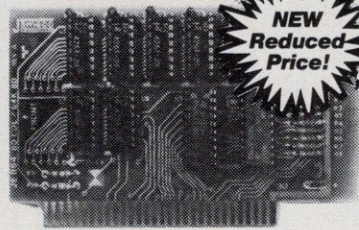


• Plugs directly into Apple II or II+ motherboard with 16-pin ribbon cable connector • 26 special functions • Size: 14" L x 5 1/2" W x 1 1/2" H • Color (keycaps): white/grey • Weight: 2 lbs.

KB-A68. \$89.95

**80-Column plus 64K RAM
for your APPLE IIe***

**NEW
Reduced
Price!**



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. . . \$124.95 \$149.95

**Numeric/Auxiliary
Keypad for your
APPLE IIe***



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 7/8" L x 4-3/16" W x 1 1/4" to 2 1/2" Slope.

JE614 \$89.95

\$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!

Send \$1.00 Postage for your
FREE 1984 JAMECO CATALOG
Prices Subject to Change
Will Call Service 8AM to 5PM



**1355 SHOREWAY ROAD
BELMONT, CALIFORNIA 94002**

**Phone Orders Welcome (415) 592-8097
Telex No. 176043**

10/84
Dealer inquiries invited. For Technical Information, call (415) 595-3994

*APPLE and APPLE IIe are registered trademarks of APPLE Computers.

**VisiCalc is a registered trademark of Visi Corp. Inc.

on either the A: or the B: drive (the examples assume the default drive). Then type

- . use inv-1
- . set format to tutor (or b: tutor if it's in drive b)
- . append (go ahead and add one record)
- . edit 5 (edit record 5, or walk through the database using Control-R and Control-C)

If you did everything correctly, your new data-display format should have appeared, along with some data, allowing you to walk through the fields, make changes, and the like. Easy, wasn't it?

Rules and Notes

Now that you've got the general idea, you need a few additional pieces of information:

1. You can create as many format files as you want, although only one can be active at a given time. If Bill likes a particular format and Mary another, just make two format files with Zip, naming them Bill and Mary. Then Bill can simply type Set format to Bill before beginning work. Ditto for Mary.
2. Pressing // while in Zip gives you a menu of Zip editing commands and defaults. You can easily center text, insert lines and columns, draw vertical and horizontal lines, and so on. Try playing with some of these options to spruce up your display.
3. If you just want to display data, either on the screen or on paper, you must replace all of the # signs with @'s. This substitution does prevent editing and appending, of course.
4. To print a form rather than looking at it on the screen, change all the #'s to @'s and choose C when saving your

file in Zip. Then answer Y to the question about printing. Once you're in dBASE, turn on your printer, locate the record you want printed, and type Do <filename>. For example, suppose the file was saved as tutor2:

- . use inv-1
- . do tutor2

One record will be printed in your customized form.

So there you have it: a simple way, without programming, to give your dBASE II files a customized appear-

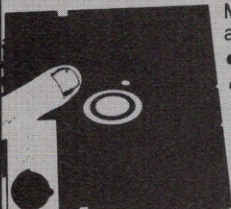
Programmers will find Zip almost indispensable, since it eliminates the hassle of estimating where prompts will appear on the screen.

ance. Programmers will find Zip almost indispensable, since it eliminates the hassle of estimating where prompts will appear on the screen. They can also forget about having to type @14,20 SAY . . . ever again—Zip does it all. Just create a screen and let Zip create a .CMD file. You can later pull the .CMD file into your program with your word-processing program and eliminate the drudgery. Have fun experimenting!

Any thoughts? Write to me, Robert Cowart, and let me know, c/o A+ Magazine, 11 Davis Drive, Belmont, CA 94002. **+**

dBASE II is a trademark of Ashton-Tate.

***REDUCES DISKETTE COST 50%!**



Make use of the back of your 5 1/4" Diskettes and SAVE

- **NIBBLE NOTCH** tools make it easy.
- Adds the precise notch where you need it.
- Doubles diskette space or MONEY BACK!

NIBBLE NOTCH I

Cuts square notch for Apple, II, II+, IIe, III, Franklin and Commodore.

only **\$14.95** each
add \$1.50 each P&H (\$4.50 each foreign P&H)

DISK OPTIMIZER[®] SYSTEM
SOFTWARE FOR APPLE, II, II+, IIe, III & Franklin

- **469% FASTER** Than Similar Programs!
- Certifies your "new" disk 100% Error Free
- Removes Bad Sectors • Adds 36th Track
- Performs Disk Drive Speed Check
- Adds DOS and More

only **\$24.95** each
add \$1.50 each P&H (\$4.50 each foreign P&H)

— OR BUY BOTH —
only **\$29.95**

add \$2.50 each set P&H (\$6.50 foreign P&H)
Florida Residents Add 5% Sales Tax

SATISFACTION GUARANTEED OR YOUR MONEY BACK!

ORDER TODAY!

CALL TOLL FREE: 1-800-642-2536

OR SEND CHECK OR MONEY ORDER TO:

NIBBLE NOTCH COMPUTER PRODUCTS

DIVISION OF CORTRAN INTERNATIONAL

4211 NW 75th TERRACE • DEPT. 2 3 • LAUDERHILL, FL 33319

PAT. PEND.

ALL TRADEMARKS ARE ACKNOWLEDGED

FREE!
SHIPPING

YOUR APPLE NEEDS WORK FORCE II.[™]

A collection of 6 new ultra-friendly programs.

1. **THE LOAN ANALYZER**
loan and mortgage amortization, balloon payments.
2. **THE CALCULATOR**
4 function printing calculator with memory & %.
3. **THE LINE WRITER**
a line-at-a-time correctable typewriter.
4. **THE SAVING ANALYZER**
analyzes future value of savings, investments, IRA's.
5. **THE WAGE ANALYZER**
examines your income and pay raises.
6. **THE BALANCING ACT**
once a month checkbook balancing.

ALL SIX ONLY \$34.95

Manual Included

Copyable, Listable, Affordable. *Insist on it!*

Requirements: Apple IIc, IIe, II+, II, or Apple III (in Apple II emulation mode). 48k. Apple, Apple II, II+, IIc, and IIe are trademarks of Apple Computer, Inc.

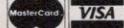
- Please send me WORK FORCE II at \$34.95.
 - check or money order. VISA MC AE COD (add \$3.00 for COD)
- Arizona residents add 6% Sales Tax. Overseas add \$4.00.

Card # _____
Signature _____ Valid From _____ to _____
Name _____ Phone _____
Address _____
City/State/Zip _____

Core Concepts

P.O. Box 24157 Tempe, AZ 85282
(602) 968-3756

DEALER INQUIRIES INVITED



All orders shipped immediately!

THE BYTE GENERAL

3 Sierks Lane • Roslyn Harbor, NY 11576

24 Hour Order Line: 516-625-0920
 Technical Questions and Order Status: 516-484-6391

**We Now Carry a large line of Apple, Commodore, Atari And IBM Software, Please call for information.
 Call For Best Price.....We will try to beat anyones prices!!!**

Same Day Shipping.....

Apple IIe Entry System
 \$895.00
 Includes:
 Apple IIe 64k
 Apple Drives w/Controller
 Tutorial Diskette

Extended 64k 80Col. Add Only \$100.00
 Apple Green Monitor II Add Only \$200.00

Apple Accessories:

Gibson Light pen \$175.00
 Koala Pad Apple Vers \$ 69.00
 Koala Pad Other Vers \$ Call
 Kraft Apple Joystick \$ 34.95
 Kraft Joystick (Other) \$ 34.95
 Thunderclock \$115.00

IBM Hardware

AST 6 Pack Plus \$255.00
 AST 6 Pack Plus 384k \$595.00
 Hercules Graphic Card \$339.00
 Paradise Multi Display Card \$425.00
 Tecmar Graphics Card \$525.00

IBM Computers:

IBM 256k 2 320kb Disk Drives \$2095.00
 IBM XT w/10MB Hard Drive \$3795.00

100% Pure IBM Equipment

Monitors:

Amdek Color I Plus \$279.00
 Amdek Color II Plus, 13" High Res RGB \$425.00
 Amdek Color III 13" RGB Med Res \$350.00
 Amdek 300 Green \$129.00
 Amdek 300 Amber \$149.00
 Sakata Color SC-100 Med Res \$239.00
 Princeton HX-12 RGB Hi-Res Color \$475.00

Printers:

C. Itoh Prowriter 8510AP \$329.00
 C. Itoh Prowriter 1550 (15" Carriage) \$520.00
 C. Itoh Hot Dot (180cps) \$450.00
 C. Itoh Hot Dot (180cps) Color \$520.00
 C. Itoh A10 20cps Letter Quality \$500.00
 C. Itoh F10-40cps Letter Quality \$989.00
 Epson RX-80 \$279.00
 Epson FX-80 \$469.00
 Epson FX-100 \$699.00
 Gemini 10x \$269.00
 Gemini 10x IBM Version \$279.00
 Gemini 15x \$ Call
 Okidata 92ml \$420.00
 Okidata 93ml \$650.00
 Cables for Above Printers \$ 26.00
 (Specify From What Computer)
 Ribbons for Above Printers \$ Call

DISK DRIVES

Tandon TM100-1

\$99.00

Specials!!!

Micromodem IIe

\$229.00

Operates on All Apples

Includes:

Smartcom I Software

Free Subscription To The Source

Signalman 300/1200 Modem

Hays 1200 Software Compatible

\$239.00

Modems:

Hayes 300 Baud Smartmodem \$199.00
 Hayes 1200 Baud Smartmodem \$469.95
 Hayes Micromodem Iie \$229.00
 Hayes 1200B Smartmodem IBM Internal \$390.00
 Hayes 1200B Smartmodem IBM w/Smartcom \$410.00
 Novation J-Cat \$100.00
 Novation Applecat II \$229.00
 Novation Applecat II 212 System \$399.00
 Novation Smartcat 300/1200 \$399.00
 Prometheus 1200 \$349.00
 Prometheus Options \$175.00
 Signalman 300/1200 \$239.00
 Signalman Mark I \$ 69.00
 Signalman Volksmodem \$ 59.00
 Volksmodem Cable to Atari w/o 850 \$ 35.00
 Volksmodem Cable (Specify Computer) \$ 10.00

Fans/Surge Protectors:

Kensington System Saver Fan \$ 65.00
 Super Cooling Fan w/2 outlets/Surge \$ 35.00
 Lemon Surge Protector \$45.00

CPM Cards:

ALS CPM 3.0 Card Version 3.0 \$269.00
 ALS Zcard II \$120.00
 CPM Card (Taiwan) Same as ZCard II \$ 79.00
 Microsoft Softcard \$225.00

Ram Cards:

Microsoft 16k Ram Card \$ 65.00
 Microsoft 256k Ram Card \$365.00
 MPC 16k Ram Card \$ 55.00
 Titan 128k Ram Card \$350.00
 Titan 128k + 80 Col (Ile) \$285.00
 Titan 192k + 80 Col (Ile) \$365.00
 4164 200ns Rams \$ 5.25

80 Column Cards

ALS Smarterm II \$129.00
 Videx 80 Column Card \$179.00
 Videx 80 Column Card w/Inver/SoftSW \$209.00
 Videx Ultraterm (160col. Card) \$239.00

Printer/Serial Cards:

ALS Dispatcher Serial Card \$ 89.00
 MA Systems Omnigraph (Same as Grappler) \$ 79.00
 MPC Parallel Printer Card/Cable \$ 55.00
 Orange Micro Grappler Plus \$110.00
 Orange Micro Buffered Grappler Plus \$175.00
 Tymac Connection Commodore to Printer \$ 99.00
 Orange Micro Grappler CD \$110.00

Disk Drives:

Apple Brand Disk Controller Card \$ 55.00
 Rana Elite I Disk Drive \$245.00
 Shugart 40trk Disk Drive \$189.00
 Concorde (Apple, Commodore, Atari) \$ Call
 MSD Super Disk Drive (Commodore) \$ Call
 Tandon 40trk SS/DD TM-100-1 Disk Drive \$ 99.00
 Tandon 40trk DS/DD TM-100-2 Disk Drives \$210.00

Elephant Products: Disk Type	1-9 Boxes	10-19 Boxes	20+ Boxes
EMS SS/SD	15.95	\$15.25	Call
EMS SS/DD	18.95	\$17.95	Call
EMS DS/DD	22.95	\$21.95	Call
EMS DS/DD 96tpi	32.95	\$31.95	Call

You May mix and Match for best Quantity Prices!

Elephant Trunks \$20.00 Elephant Secrets of Perfect Memory \$ 2.00



Terms Of Sale:

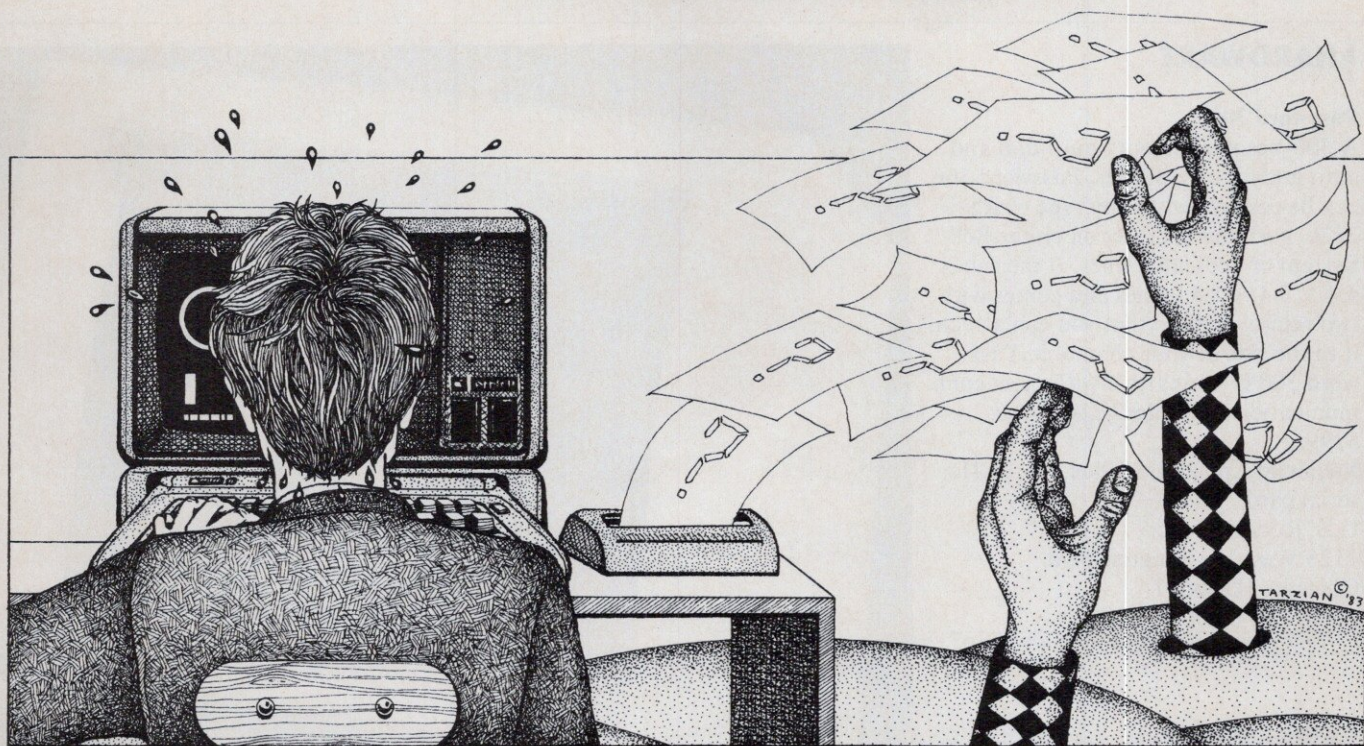
All Sales are governed by the following terms. All above prices reflect a 3% cash discount, thus MC Visa sales are 3% higher. Free shipping on all orders prepaid by check only. All free shipping orders are shipped by ground United Parcel Service only. We will only ship UPS to street address. NO Free Shipping to APO/FPO or PO boxes or foreign countries. All purchase orders must include prepayment. Upon receipt of a certified check/money order we ship the same day on instock items, all other types of checks allow 14 days for bank clearance time. NYS Residents please add 8.25% sales tax. All orders returned, refused or ordered in error are subject to a 10% restocking charge. There is a 30 day limit on all returns, after 30 days all sales are final, and defective material should be sent to the manufacturer directly. Prices and terms of sale are subject to change without notice.

No COD orders accepted! All credit card orders are screened carefully for fraudulent orders.

DEALER INQUIRIES INVITED

RESCUE SQUAD
BY FREDERIC E. DAVIS

Questions from our readers



MAC/HARD DISK WOES

Q. I recently bought a five-megabyte hard-disk drive for my Macintosh. I use MacWrite for writing some letters and reports, I use MacPaint for creating graphics of all types (sometimes just doodling) and I've just bought the Omnis database program for file management. The hard disk seemed great, since it helped speed up a lot of my work. Programs and documents seemed to load and run quite a bit faster.

The most enjoyable part of using the Macintosh is using MacPaint. Using MacPaint with a single-drive Mac is relatively laborious (much diskette swapping involved), so I thought the hard disk would really be the answer to my prayers. At first it was, but now I'm beginning to have serious problems. I have several diskettes' worth of my own graphics and doodling, and I just bought six diskettes of clip art from various vendors. Well, I loaded my own diskettes onto the hard disk and everything seemed fine, but after I loaded four of the six clip-art diskettes, the Mac started acting weird. It would quit in the middle of the copying process and give me several strange error mes-

sages. MacPaint gave the error message MacPaint can't find work space on the default drive. MacWrite would stop after the saving-document-to-disk stage and tell me This document can't be printed. Finally, I was left with an empty dialog box with a bomb in it, but nothing else! I thought I might have overloaded the hard disk, but when I rebooted the system, the Mac reported that there were about 1.5 megabytes of unused disk space on the hard disk. What's wrong with my hard disk? Why can't I fill it up to capacity?

A. Nothing is wrong with your hard disk; the problem is with the finder, which is the Macintosh's operating system. The current version of the finder (version 1.1g at the time of this writing) has a few drawbacks. One is that you can have only about 200 directory entries (folders, documents and so on) before the finder gets lost. Sometimes, if your filenames are especially long, the finder can get lost after only 100 or so directory entries. The finder keeps track of all the directory entries at once and puts that information in RAM.

The 128K RAM in the Macintosh limits the amount of space that the finder has available for keeping track of directory entries. Apple claims to be working on the finder, and the 512K Macintoshes will probably not have this problem.

For the time being, you can try giving your documents shorter names so the finder can fit more names into the Mac's precious 128K RAM. You may be able to squeeze more directory entries in this way. As to using all the space on your hard disk, you can fill the disk up with longer files, such as lengthy data files you create with Omnis.

Until Apple upgrades the finder, you can fill your hard disk with a few long database files, but you can't fill it with a whole lot of short (e.g., MacPaint, MacWrite) files. You should remove some of the files from the hard disk and transfer them to a diskette, which should help alleviate the problem for the time being. +

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

DONNA TARZIAN

▶ **HARDWARE**

Password 300

A 300-bps modem with auto-dial and auto-answer capabilities, Password 300 can be configured to any type of RS-232C port and operates on either Bell System or dedicated lines. It measures 4.4 × 7.4 × 1.4 inches and comes with two velcro strips so that you can attach it to the side of your computer. Password 300 is compatible with most communications software. (*List Price: \$199*)

Requires: Apple II, II Plus, IIe, or IIc; serial card

U.S. Robotics, Inc.
1123 West Washington Blvd.
Chicago, IL 60607
(312) 733-0497

CIRCLE 930 ON READER SERVICE CARD

Amdek Color 600

Some features of this high-resolution RGB color monitor are a CRT that provides vivid, high-contrast color displays for graphics applications, a switch that changes text color from white to green for easier reading, a built-in audio amplifier and speaker, and front-mounted operator controls. (*List Price: \$650*)

Requires: Apple II, II Plus, IIe, or IIc; RBG interface card

Amdek Corporation
2201 Lively Blvd.
Elk Grove Village, IL 60007
(312) 595-6890

CIRCLE 931 ON READER SERVICE CARD

SuperCable

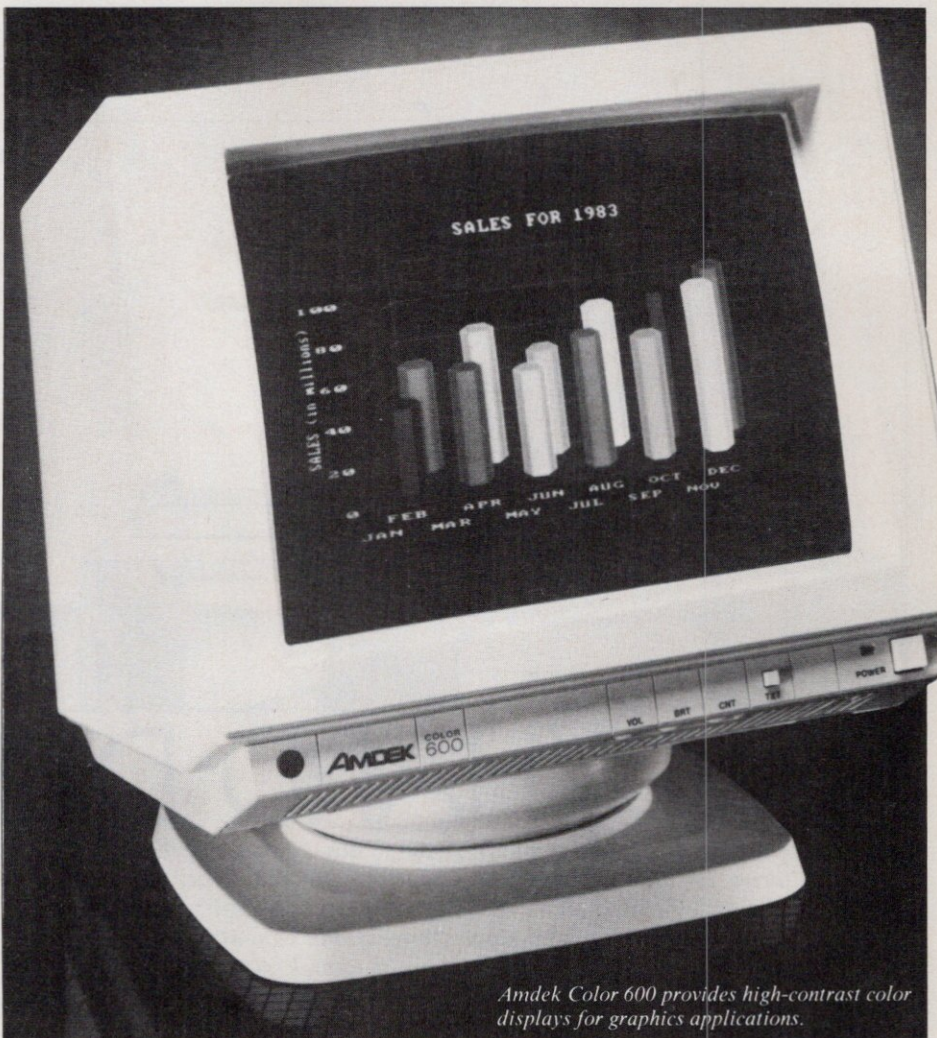
A serial-outlet cable with standard couplings, SuperCable allows you to attach your Apple IIc to a number of printers, including Epson, Olympia RO, Brother, and Okidata.

SuperCables, manufactured with shielded cable and using 24-gauge wire and gold-plated pin connectors, meet all current FCC shielding specifications. (*List Price: \$39.95*)

Requires: Apple IIc, printer
Cord Ltd.

2815 Junipero Avenue, Suite 102
Signal Hill, CA 90806
(213) 595-4446

CIRCLE 932 ON READER SERVICE CARD



Amdek Color 600 provides high-contrast color displays for graphics applications.

▶ **HARDWARE/SOFTWARE**

Communications Package for IIc

This hardware/software communications package includes a Hayes Smartmodem 300, a power pack, all necessary cables, and Hayes Smartcom I communications software.

The Smartcom I software takes advantage of the Smartmodem 300's ability to automatically place, answer, and end calls.

The program accommodates touch-tone, pulse, or combination dialing; remembers the last number dialed; automatically retries until a connection is made; and lets users create, erase, display, print, send, and receive files.

The Smartmodem 300 is Bell 103-compatible in the Originate or Answer mode and connects directly to modular

phone jacks. (*List Price: IIc Communications Bundle, \$339*)

Requires: Apple IIc
Hayes Microcomputer Products, Inc.
5923 Peachtree Industrial Blvd.
Norcross, GA 30092
(404) 449-8791

CIRCLE 933 ON READER SERVICE CARD

Computer Sheet Music

Designed to provide beginning keyboard students with an easy-to-use and entertaining way to play and enjoy music, Computer Sheet Music consists of software, recorded music, and custom music books that can be used with any MIDI keyboard; Passport MIDI interface card; and an Apple II, II Plus, or IIe. All of the songs from the music book are stored on disk and can be dis-

played in big-note, easy-to-play notation along with chords.

In the Play mode, the computer displays the music, and you can select the tempo and play along with the display. The computer changes the note color as you play the notes correctly. In the Learn mode, the computer takes you through the music either one note at a time or continuously.

The first package of Computer Sheet Music is the "Michael Jackson—Thriller" program, which includes all of the songs from that album. (*List Price: Computer Sheet Music, \$29.95; Passport MIDI Interface Card, \$195*)

Requires: Apple II, II Plus, or IIe; 48K RAM; one disk drive; MIDI keyboard; Passport MIDI Interface Card
Passport Designs
625 Miramontes Street, Suite 103
Half Moon Bay, CA 94019
(415) 726-0280

CIRCLE 934 ON READER SERVICE CARD

RGB Interface for the IIC

The RGB Interface improves the video output of the Apple IIc by removing the extraneous colors in low- and medium-resolution applications and by displaying tinge-free 40- or 80-column text in the lower four lines in the Mix mode. Users can employ their RGB monitor as a monochrome monitor for 80-column text or for RGB color graphs and charts.

A demonstration diskette accompanies the interface. A set of double-density drivers allows easy access from Applesoft to the Apple IIc's double-



Varicalc solves science, engineering, and business equations.

density video modes. (*List Price: \$199.95*)

Requires: Apple IIc, 128K RAM, Apple-compatible monitor with Apple III cable
Video-7 Incorporated
12340 Saratoga Sunnyvale Road
Suite 1
Saratoga, CA 95070
(408) 725-1433

CIRCLE 935 ON READER SERVICE CARD

Era 2

A communications product for the Apple IIe, Era 2 includes communications software, a 1200-bps on-board modem, a users' manual, and a telephone cord. Era 2 features include auto-answer, originate-answer, pulse or tone dialing, and on-line printer control.

Users can send, receive, display, and print files; set communications parameters such as transmission rate, flow control, character format, parity, and answer-back; and display, print, delete, and rename files. (*List Price: \$429*)

Requires: Apple IIe, 64K RAM, one disk drive
Microcom, Inc.
1400A Providence Highway
Norwood, MA 02062
(617) 762-9310

CIRCLE 936 ON READER SERVICE CARD

SOFTWARE

Varicalc

Interactive Microware announces its new program that interactively solves science, engineering, and business equations. Varicalc can simulate complex physical, chemical, or mathematical processes as well as accept real-time input directly into a predefined model.

Varicalc solves for any one of 19 variables on the right or left side of a formula without rearranging the formula. Users can plot results on a high-resolution graphics screen or any text screen. Up to 255 equations store on disk for quick recall. (*List Price: \$100*)

Requires: Apple II Plus or IIe, 48K RAM; one disk drive; DOS 3.3
Interactive Microware
P.O. Box 139

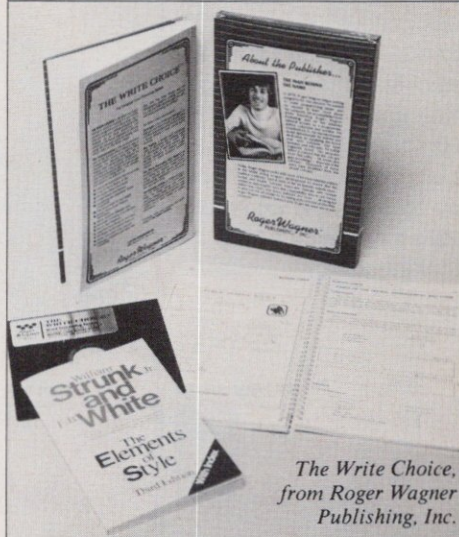
State College, PA 16804-0139
(814) 238-8294

CIRCLE 937 ON READER SERVICE CARD

The Write Choice

A combination word-processing and typing-instruction program, The Write Choice provides users with the proper formats for written documents, correct grammar, punctuation rules, composition style tips, and interactive typing tutorials.

The typing tutor, Tut's Typer, features an arcade game to test your typing skill, tutorials for Dvorak and QWERTY keyboards, and an interac-



The Write Choice, from Roger Wagner Publishing, Inc.

tive keyboard drill that shows the proper finger placement for each key.

The word processor, which can be used to prepare letters, forms, term papers, and résumés, supports both 40-column and 80-column screen displays as well as on-screen formatting. (*List Price: \$44.95*)

Requires: Apple II, II Plus, IIe, or IIc; 48K RAM; one disk drive
Roger Wagner Publishing, Inc.
10761 Woodside Avenue, Suite E
P.O. Box 582
Santee, CA 92071
(619) 562-3670

CIRCLE 938 ON READER SERVICE CARD

MarketManager

An easy-to-use, menu-driven program for Apple II-series computers, Market-Manager gives you complete control

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

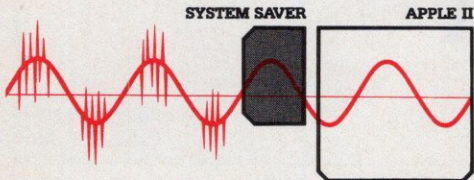
It's the most versatile, most convenient, most useful peripheral ever made for the Apple.*

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

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

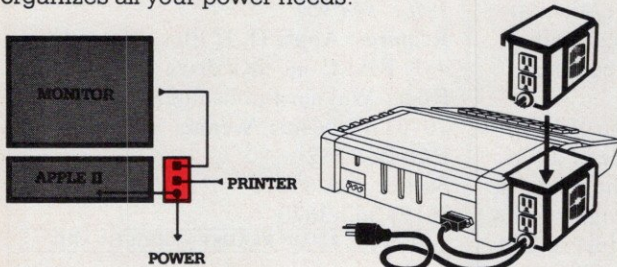
Power line noise can often be interpreted as data. This confuses your computer and produces system errors. Power surges and spikes can cause severe damage to your Apple's delicate circuitry and lead to costly servicing.

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



System Saver makes your Apple more convenient to use.

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

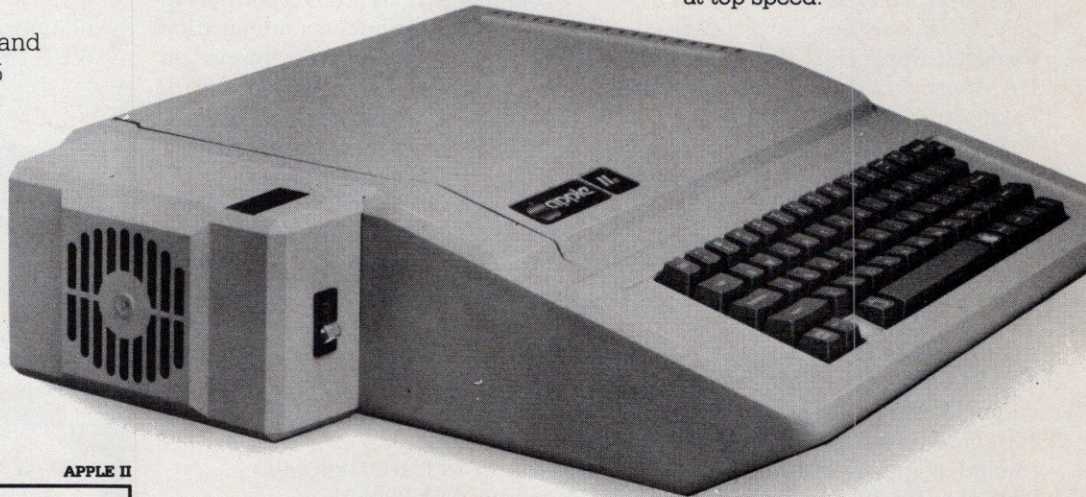
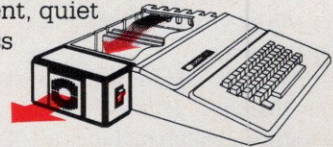


It functions as a multi-outlet power strip with two switched outlets. Plus System Saver offers the ultimate convenience; a front mounted power switch for fingertip control of your entire system.

System Saver lets your Apple keep its cool.

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

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



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

Compatible with Apple stand



\$89.95 at Apple dealers everywhere.



CIRCLE 134 ON READER SERVICE CARD

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

*PC Magazine: March 1983.

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

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



LOOKING FOR THE BEST PRICES?

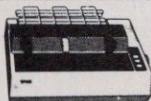
FINANCING AVAILABLE

COMPLETE — READY-TO-RUN PRINTER PACKAGES



- FACTORY SEALED
- 1 YR. FULL WARRANTY
- EVERYTHING YOU NEED TO GET GOING!

VALUE

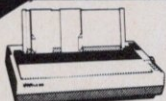


RX-80 FT PRINTER PACKAGE

- SPECS**
- 100 C.P.S.
 - Adjustable Tractor Feed
 - Friction Feed
 - Graftrax Plus Graphics
- INCLUDES:**
- Epson RX-80 FT Printer
 - Steel Printer Stand
 - Extra Printer Ribbon
 - Dust Cover
 - Case of Paper (1800 Sheets)
 - Graphic Printer Card/Cable (Ile/II+)

LIST PRICE-\$629 OUR PRICE-\$399

DELUXE

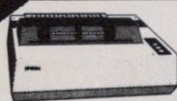


FX-80 PRINTER PACKAGE

- SPECS**
- 160 C.P.S.
 - Pin Feed
 - Friction Feed
 - 2 K Ram Buffer
 - Reverse Line Feeding
 - Graftrax Plus Graphics
- INCLUDES:**
- Epson FX-80 Printer
 - Steel Printer Stand
 - Extra Printer Ribbon
 - Dust Cover
 - Case of Paper (1800 Sheets)
 - Grappler Interface Card/Cable

LIST PRICE-\$899 OUR PRICE-\$619

INCREDIBLE

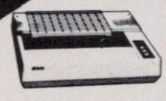


LQ-1500 PRINTER PACKAGE

- SPECS**
- 200 C.P.S.
 - Adjustable Tractor Feed
 - Friction Feed
 - 2 K Ram Buffer
 - Graftrax Plus Graphics
 - Near Letter Quality Printer Mode
- INCLUDES:**
- Epson LQ-1500 Printer
 - Adjustable Tractor Feed Option
 - Parallel Interface Board
 - Steel Printer Stand
 - Extra Printer Ribbon
 - Dust Cover
 - Case of Paper (1800 Sheets)
 - Grappler Interface Card/Cable

LIST PRICE-\$1,789 OUR PRICE-\$1,399

COLORFULL



JX-80 PRINTER PACKAGE

- SPECS**
- 160 C.P.S.
 - (7) Seven Colors
 - Pin Feed
 - Friction Feed
 - 2 K Ram Buffer
 - Built-In Graphics
 - Reverse Line Feeding
- INCLUDES:**
- Epson JX-80 Printer
 - Steel Printer Stand
 - Extra Printer Ribbon
 - Case of Paper (1800 Sheets)
 - Dust Cover
 - Picasso Color Interface Card/Cable

LIST PRICE-\$999 OUR PRICE-\$799

Buy Direct By Mail or Order:
TOLL FREE: 800-526-5313
 Inquiries/Customer Service
 and in N.J. 201-728-8080

SEND FOR FREE 40 PG. CATALOG



OUR AD NO. 1008-0

15 Marshall Hill Rd, West Milford, NJ 07480

CIRCLE 292 ON READER SERVICE CARD

PRODUCT NEWS

over your stock portfolio. With Market Manager, you can keep records, print reports, sort information, and answer tax questions. In addition, a password-protection system ensures your privacy. (List Price: \$79.95)

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

Jonathan Sobel Associates
 P.O. Box 27
 Wetwood, NJ 07675

(201) 664-4802

CIRCLE 939 ON READER SERVICE CARD

Dental-Medical Office Data

Dental-Medical Office Data, a medical-database system, consists of 13 programs that allow users to enter, change, delete, sort, search, and print office and personal data in multiple formats.

These programs include Appointments File, Patient File, Dead Beat File, Phone Lists, Insurance Lists, Inventory, Checkbook, Employee Records, Subscription Index, Text Editor, Mail List, File Transfer, and Data Base. (List Price: \$150)

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

Andent, Inc.
 1000 North Avenue
 Waukegan, IL 60085
 (312) 223-5077

CIRCLE 940 ON READER SERVICE CARD

MasterType

This typing tutorial includes 18 lessons for the standard QWERTY keyboard and 5 lessons for the Dvorak keyboard. MasterType teaches typing and keyboard skills through an arcade-game format. (List Price: \$39.95)

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

Scarborough Systems, Inc.
 25 North Broadway
 Tarrytown, NY 10591
 (914) 332-4545

CIRCLE 941 ON READER SERVICE CARD

Apple Writer II, Version 2.0

Apple IIe and IIc users can now obtain this enhanced ProDOS-based version of Apple Writer, the word-processing program that creates, edits, stores, and

ELEPHANT DISKS
 5.25/5.0 \$15.79
 5.25/5.0 \$18.79
 5.25/5.0 22.79

VERBATIM
 5.25/5.0 \$21.95
 5.25/5.0 \$31.95
 Head Cleaning Kit \$5.79

SILICON EXPRESS

CALL We have hundreds of other programs in stock at fantastic savings!

Ring Quest	24.95	Story Machine	21.95
Bouncing Kamangas	18.95	Trains	25.95
Coveted Mirror	21.95	Castle Wolfenstein	19.95
Paper Graphics	34.95	Beyond Cast. Wolf.	24.95
Minit Man	18.95	Flight Simulator II	34.95
Quest	24.95	Load Runner	23.95
Transylvania	24.95	Carrier Force	41.95
Graphics Magician	37.95	Cosmic Balance II	25.95
Expedition Amazon	24.95	Computer Baseball	24.95
Xyphus	24.95	Epidemic	21.95
Transitions	34.95	Fortress	24.95
Alpha Plot	24.95	Germany 1985	38.95
Apple Mechanic	18.95	Geopolitique 1990	25.95
Beagle Bag	19.95	North Atlantic 86	38.95
Beagle Basic	22.95	Rails West	25.95
Beagle Graphics	32.95	Questron	34.95
Disk Quick	19.95	War in Russia	55.95
DOS Boss	14.95	Millionaire	38.95
Double-Take	22.95	Zaxxon	24.95
Fat Cat	22.95	Sargon II	21.95
Flex Type	18.95	Sargon III	31.95
Frame-Up	18.95	Home Accountant	47.95
GPLE	32.95	Tax Advantage	44.95
Pronto DOS	18.95	Dollars & Sense	67.95
Silicon Salad	15.95	Multipian	134.95
Tip Disk #1	13.95	Incredible Jack	114.95
Triple-Dump	25.95	Master Type	25.95
Typetaces	13.95	Format II	104.95
Utility City	18.95	Bank Street Writer	43.95
PFS: Write	74.95	Bank Street Speller	45.95
PFS: File	74.95	Print Shop	34.95
PFS: Report	74.95	Homework	39.95
PFS: Graph	74.95	Screen Writer II	79.95
PFS: Solutions ea.	14.95	General Mgr II	144.95
Zork I, II, III ea.	23.95	Magic Window II	93.95
Starcross	23.95	Magic Calc	93.95
Deadline	29.95	Sensible Speller	78.95
Suspended	29.95	Bookends	79.95
Witness	29.95	Report Card	43.95
Planetfall	29.95	MegaFinder	104.95
Enchanter	29.95	MegaSpell	44.95
Infidel	29.95	MegaWriter	66.95
Sorcerer	29.95	Mico Cookbook	25.95
Seastalker	29.95	Fontrix	49.95
Sticky Bear ABC	24.95	Fontpak 1, 2, or 3 ea.	14.95
Shapes	24.95	Essential Data Dup	48.95
Opposites	24.95	Copy II +	23.95
Basket Bounce	24.95	Think Tank	98.95
BOP	24.95	Jane	208.95
Numbers	24.95	Bag of Tricks	27.95
Archon	29.95	Zoom Grafix	32.95
Axis Assassin	25.95	ASC II Pro	81.95
Cut & Paste	35.95	Merlin Pro	45.95
Financial Cookbook	35.95	Lisa V 2.6	57.95
Hard Hat Mack	24.95	Mockingboard	78.95
Last Gladiator	24.95	Mock. w/speech	144.95
Murd. on the Zind.	28.95	Wildcard II	104.95
Music Construction	28.95	Echo II	123.95
One-On-One	28.95	Micro Modem IIE	244.95
Pinball Construction	28.95	Koala Pad	84.95
Skyfox	28.95	System Saver Fan	64.95
Standing Stones	28.95	Terrapin Logo	62.95
Ultima III	35.95	Hayes Mach IIIe	38.95
Wizardry	31.95	Hayes Mach III +	34.95
Knight of Diamonds	21.95	Graphics Solution	104.95
Legacy of Lylgam.	25.95	Library Case	2.95
Wizprint	18.95	Disk Stor. Holds 70	15.95
Crypt of Medea	21.95	Datalife Analyzer	24.95
Rescue Raiders	20.95	Speed Reader II	44.95
Centipede	26.95	Work Attack	32.49
Dig Dug	26.95	Math Blaster	32.49
Donkey Kong	26.95	Sat (Harcort Brace)	51.95
Jungle Hunt	26.95	Step By Step	73.95
PAC Man	26.95	Step By Step II	73.95
Pole Position	26.95	Step By Step III	73.95
Aerobics	26.95	Star Trek	29.95
Alphabet Zoo	18.95	Buck Rogers	29.95
Delta Drawing	31.95	Congo Bongo	29.95
Face Maker	22.95	Early Games	19.95
Fraction Fever	21.95	Match Maker	19.95
Hey Diddle Diddle	18.95	Piece of Cake	19.95
Kids on Keys	18.95	Fraction Factory	19.95
Kinder Comp	18.95	Jumpman	25.95
Most Amazing Thing	25.95	Mr Cool	25.95
Rhymes & Riddles	20.95	List Handler	46.95
Snooper Trps 1 or 2	27.95	Work Handler	46.95

SILICON EXPRESS

2202 S. Hamilton Road
 Columbus, Ohio 43227
 614/868-5007

Your Toll Free Access Outside Ohio
1-800-228-0755
 We accept Mastercard & Visa with no additional surcharge.
 Personal checks allow 2 weeks. Shipping charges are \$2.50. Ohio residents add 5 1/2% state sales tax.
 Prices are subject to change without notice.

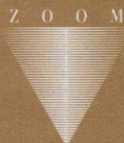
CIRCLE 168 ON READER SERVICE CARD

The
\$129!
Modem Starter Set

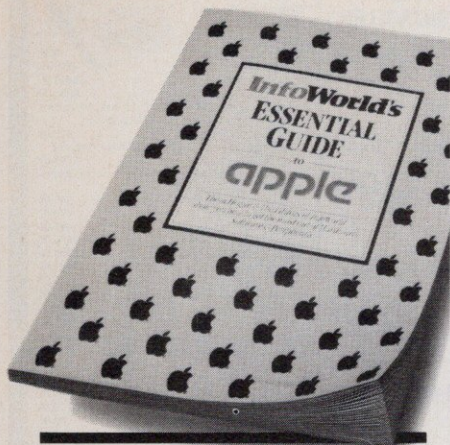
(for your Apple II, II+, or IIe)

Get the complete modem/software package for your Apple II, II+, or IIe that includes 300 Baud Modem card, easy menu-driven communications software and a subscription to the SOURCE.* Ask your computer dealer about the NETWORKER™ or call us at 1-800-631-3116 and we'll tell you where to pick one up. The NETWORKER™ modem is made in the U.S.A. by ZOOM Telephonics, Inc.

*SOURCE offer good through December 31, 1984.



ZOOM Telephonics/207 South St./Boston, MA/02111
CIRCLE 195 ON READER SERVICE CARD



GET TO THE CORE OF YOUR APPLE.[®] \$16.95.

Here's the indispensable source on the choice, care and feeding of your Apple II, II Plus, and IIe. Everything you'll ever need to know about your Apple: inside, up-to-date advice on the hardware; critical reviews of the software; and even an exhaustive look at the peripherals.

InfoWorld's Essential Guide to the Apple has been written by Thom Hogan, an authority on Apple computers, and the editors of InfoWorld, the respected voice of the industry.

Now, you can get to the core of your Apple without a single byte.

Please send InfoWorld's Essential Guide to the Apple. I enclose \$16.95 plus \$1.50 postage & handling (and any sales tax).

NAME _____
ADDRESS _____
CITY _____
STATE _____ ZIP _____
 MasterCard Visa AmEx
Card #: _____ Exp. _____

Send to: Harper & Row
10 East 53rd Street, 20th floor
New York, NY 10022

Or call toll free 800-638-3030.
(In MD, call collect 301-824-7300.) Or see your local bookseller or computer store.

Harper&Row

CIRCLE 114 ON READER SERVICE CARD

PRODUCT NEWS

prints all types of documents. It works with ProFile and with Quark, Inc.'s Catalyst IIe, a program selector that allows users to store their application programs on a hard disk.

New features include horizontal scrolling; a terminal mode so users can access information services from within Apple Writer; the ability to format a ProDOS disk—for users who do not own the ProDOS user's diskette; and a Catalyst IIe utility file for easy installation of Apple Writer onto the ProFile. (List Price: \$149. From now to February 1, 1985, current Apple Writer IIe users can upgrade to the new 2.0 version for \$50.)

Requires: Apple IIe or IIc; 64K RAM; one disk drive
Apple Computer, Inc.
20525 Mariani Avenue
Cupertino, CA 95014-2094
(408) 996-1010

CIRCLE 942 ON READER SERVICE CARD

Stamp Collector

This database program for philatelists consists of six programs with which users can enter, delete, change, search, sort, and print in multiple formats their collection information. It can also catalog foreign and domestic lists by denomination, country, description, year, value, and source. The Meeting List allows you to sort and select meetings by date and location. The Source List gives sources for stamps and supplies and information on trades and liquidations. With File Transfer, you can transmit data to other computers over the telephone. (List Price: \$49)

Requires: Apple II or IIe, 48K RAM, one disk drive, printer optional
Andent, Inc.
1000 North Avenue
Waukegan, IL 60085
(312) 223-5077

CIRCLE 943 ON READER SERVICE CARD

Design Estimator

Architects, engineers, and contractors can use this software package to prepare building-cost estimates on new construction projects in less time than it takes to prepare complex preliminary cost estimates by hand. The two-disk

STAMP COLLECTORS NEVER WRITE YOUR STAMP INVENTORY LIST AGAIN!

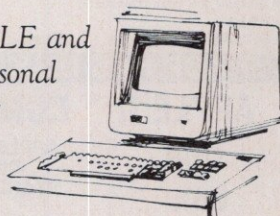
It's easy with the **BEN FRANKLIN[™] Stamp Collector Series** program doing the work for you!

Ben keeps your collection in order for you, with quantity, stamp condition, purchase price, market value and date or purchase data.

Press one key to list your collection with purchase and market value totals.

ONLY
\$59.95

For **APPLE** and **IBM** personal computer systems.



Available at your nearest computer retail store or



CALL
704/554-7255
Charlotte Plaza, Suite 1300
Charlotte, N.C. 28244

BEN FRANKLIN is a trademark of 1 Step Software, Inc. IBM is the registered trademark of International Business Machines Corp., **APPLE** is the registered trademark of Apple Computer, Inc.

Computer/Stamp Dealer Inquiries Welcome.

CIRCLE 352 ON READER SERVICE CARD

ADVANCED COMPUTER PRODUCTS

SEND \$2.00 for 1984 CATALOG

64K RAMS Set of 9 \$50.00

Apple Compatible Software

BUSINESS

APPLIED SOFTWARE Versafarm	ACP PRICE
Versafarm Hard Disk	\$299.00
ARTSCI Magic Window II	95.00
Magic Combo	149.00
ASHTON-TATE dBASE II (CP/M)	385.00
Friday (CP/M)	198.00
BPI (GL, AR, AP, Pay, Inv)	ea. 299.00
BRODERBUND Bank Street Writer	49.00
BUSINESS SOLUTIONS The Incred Jack	149.00
CONTINENTAL (GL, AR, AP, Pay)	ea. 189.00
Home Accountant	49.00
DATAMOST Real Estate Inv.	99.00
DOW JONES Market Manager	229.00
Market Analyzer	269.00
Market Microscope	499.00
EAGLE Money Decisions Vol. III	149.00
FOX & GELLER Quickcode	199.00
d Utility	69.00
d Graph	199.00
HAYDEN Pie Writer	99.00
Complier Plus	79.00
Basic Complier	45.95
HOWARD'SOFT Tax Preparer	199.00
Real Estate Analyzer	139.00
KENSTON Format II	229.00
LIGHTNING MasterType	35.00
LIVING VIDEOTEXT Think Tank(II,III)	119.00
MICROPRO Wordstar	219.00
Mailmerge or Spellstar	139.00
Wordstar Prof. 4 Pak	449.00
Info Pak or InfoStar	99.00
MICROSOFT Multiplan	179.00
Multitool Financial	79.00
Multitool Budget	119.00
MEGAHAUS Megawriter	69.00
PEACHTREE Series 40 (GL, AR, AP)	379.00
Series 9 (Tax, Sp, Mail)	229.00
PERFECT SOFTWARE	Call
QUARK Word Juggler (Ile)	199.00
Lexicheck (Ile)	99.00
Call for Apple II	
SIERRA ON-LINE	
Screenwriter II	99.00
Screenwriter Professional	149.00
General Manager II	169.00
Dictionary	79.00
SOFTWARE PUBLISHING PFS File	89.00
PFS Graph or PFS Report	89.00
STATE OF THE ART	29.00
STONEWARE DB Master 4.0	249.00
BB Utility 1 or 2	89.00
SYSTEMS PLUS Acct Plus (GL, AP, AR)	599.00
VISICORP Visicalc 3.3	179.00
Visicalc Enhanced	199.00
Visilite or Visilite II	179.00

HOME & EDUCATION	
BRODERBUND Chopfliter	\$28.00
Drol or Loderunner	28.00
Arcade Machine	44.00
Apple Panic	24.00
BUDGECO Raster Blaster	24.00
Pinball Construction Set	29.00
COUNTERPOINT SOFTWARE	
Easy Games for Young Children	26.00
DATAMOST Aztec	29.00
Pin Gen or Shark Attack	23.00
DATASOFT Zaxxon	31.00
EDU-WARE CompuMath	37.00
Algebra I, II or III	30.00
Compuend or CompuSpell	23.00
EINSTEIN Memory Trainer	73.00
ELECT. ARTS Music Construction	Call
HARCOURT Computer SAT	29.00
HAYDEN Sargon II	29.00
INFOCOM Zork I, II or III	29.00
Deadline	36.00
KOALA Modules (8 available)	Call
LEARNING COMPANY	
Juggles Rainbow	30.00
Bumble Games	40.00
Gertude's Secrets	45.00
L & S Crossword Magic	41.00
MICROFUN Miner 2049er	Call
MICROLAB	Call
MICROSOFT Decathlon	25.00
Typing Tutor II	19.00
MONOGRAM Dollars & Sense	74.95
ORIGIN Exodus: Ultima III	41.95
PENQUIN The Quest	16.00
SENSIBLE Sensible Speller	99.00
SIERRA ON-LINE Frogger	28.00
SIRTECH Legacy of Ulygarnya	29.00
Knight of Diamonds	29.00
SOUTHEASTERN Data Capture 4.0	54.95
SPINNAKER Alphabet Zoo	20.00
Delta Drawing	35.00
Fraction Fever	23.00
Kindercomp	21.00
Facemaker	28.00
SUBLOGIC Flight Simulator or Pinball	40.00
SUNDEX-No. 1 Rated Home Finance	
CPA Personal Accountant	74.95
CPA Personal Investor	74.95
Personal Payables	42.95
TERRAPIN Logo	\$119.00
TRANSEND Transend I	75.00
VIRTUAL Micro Cookbook	29.00

UTILITIES/SYSTEM	
BEAGLE Apple Mechanic	\$30.00
Apple Plot or Pronto DOS	30.00
Beagle Basic	30.00
DOS Boss	20.00
Double Take or Utility City	30.00
CENTRAL POINT Filter	16.00
Copy II Plus	20.00
LOCKSMITH	79.00
MICROSOFT A.L.D.S.	85.00
Cobol 80	575.00
Fortran 80	155.00
PENQUIN CGS System	65.00
PHOENIX Zoom Graphix	31.00
SOUTHWEST Merlin	49.95

Send for Complete Catalog of Software	
CPA Personal Accountant	74.95
CPA Personal Investor	74.95
Personal Payables	42.95
TERRAPIN Logo	\$119.00
TRANSEND Transend I	75.00
VIRTUAL Micro Cookbook	29.00
BEAGLE Apple Mechanic	\$30.00
Apple Plot or Pronto DOS	30.00
Beagle Basic	30.00
DOS Boss	20.00
Double Take or Utility City	30.00
CENTRAL POINT Filter	16.00
Copy II Plus	20.00
LOCKSMITH	79.00
MICROSOFT A.L.D.S.	85.00
Cobol 80	575.00
Fortran 80	155.00
PENQUIN CGS System	65.00
PHOENIX Zoom Graphix	31.00
SOUTHWEST Merlin	49.95

Send for Complete Catalog of Software	
CPA Personal Accountant	74.95
CPA Personal Investor	74.95
Personal Payables	42.95
TERRAPIN Logo	\$119.00
TRANSEND Transend I	75.00
VIRTUAL Micro Cookbook	29.00
BEAGLE Apple Mechanic	\$30.00
Apple Plot or Pronto DOS	30.00
Beagle Basic	30.00
DOS Boss	20.00
Double Take or Utility City	30.00
CENTRAL POINT Filter	16.00
Copy II Plus	20.00
LOCKSMITH	79.00
MICROSOFT A.L.D.S.	85.00
Cobol 80	575.00
Fortran 80	155.00
PENQUIN CGS System	65.00
PHOENIX Zoom Graphix	31.00
SOUTHWEST Merlin	49.95

Send for Complete Catalog of Software	
CPA Personal Accountant	74.95
CPA Personal Investor	74.95
Personal Payables	42.95
TERRAPIN Logo	\$119.00
TRANSEND Transend I	75.00
VIRTUAL Micro Cookbook	29.00
BEAGLE Apple Mechanic	\$30.00
Apple Plot or Pronto DOS	30.00
Beagle Basic	30.00
DOS Boss	20.00
Double Take or Utility City	30.00
CENTRAL POINT Filter	16.00
Copy II Plus	20.00
LOCKSMITH	79.00
MICROSOFT A.L.D.S.	85.00
Cobol 80	575.00
Fortran 80	155.00
PENQUIN CGS System	65.00
PHOENIX Zoom Graphix	31.00
SOUTHWEST Merlin	49.95

Send for Complete Catalog of Software

TOLL FREE
800-854-8230
TWX
910-595-1565

APPLE™ COMPATIBLE
DISK CONTROLLER
Only \$49.95

Apple Compatible
Printer Interface \$49.95
w/Apple to Epson Cable

Apple IIe Compatible
80 Column Card w/64K \$99.95

APPLE COOLING FAN
with Surge Suppression
\$49.95

QUENTIN/
FORTH DIMENSION
Apple II/Ile Compatible Disk Drive

Totally compatible to Apple Drives.
Only \$199.95
Controller \$49.95
Just plug in and run.

Apple II 16K RAM CARD
Compatible with Z80 Softcard™ . PASCAL CP/M™
Full 1 year Warranty. Top Quality by COEX
NEW LOW ACP PRICE \$49.95
Also from COEX, NEW EPSON Parallel Interface for Apple.
With cable \$49.95

QUENTIN DUAL DISKS PRO DOS COMPATIBLE
Dual Half Height Drives w/Controller
Only \$299.95

CLEARANCE SALE
ACP has on hand several hundred demo 5 1/4" and 8" Disk Drives from virtually all manufacturers. Most are priced at \$99.00 ea.
CALL FOR CURRENT AVAILABILITY.

Apple Computer Authorized Dealer

Complete Apple Support Facility
Complete Apple Service Center
We service most Floppy Disk Drives

Apple IIe w/54K	PRICE
Apple IIe Business System	\$895.00
Includes: Apple IIe w/128K, Dual Disk, 80 Column Card, Monitor II, Profile Extension Option	2995.00
Apple IIe Entry System	995.00
Includes: Apple IIe w/64K, Disk II w/Controller	
Apple IIe Professional System	1795.00
Includes: Apple IIe w/128K, Dual Disk, 80 Column Card Monitor II	
Imagewriter Dot Matrix Printer	545.00
Apple Color Plotter	779.00
Apple Modem 1200	495.00
Apple II 250K System	2995.00
Apple III Plus 256K System	2995.00
Apple III Plus Business System	4495.00
Lisa 2	3495.00
Macintosh System	2495.00
Apple IIc System	1295.00

Apple Products Available In-store Only

Apple Compatible Hardware

ALS CPM 3.0 Plus Card	\$399.00	L299.00	ACP
COMPUTER ACCESSORIES			
Power Control Center P12			149.00
COEX 16K Ram Card			99.00 49.95
Parallel Printercard w/Cable			99.00 49.95
Apple II Prototype Card			20.00
Apple I Extender Card			29.00 20.00
64K Extender 80 Column			199.00 99.95
CORVUS Hard Disk Omninet			Call
EASTSIDE Wildcard (11 + w/64)			89.00
Wildcard 2 (Ile)			119.00
Wildcard Plus (64K in 10 sec)			149.00
FINGERPRINT Epson Enhancer			59.00
GIBSON Light Pen			199.00
IS PKASO Interface (II/Ile)			199.00 139.00
PKASO Interface (III)			199.00 159.00
KENSWINGTON System Saver			89.95 69.95
PC Saver			49.95 39.95
KEYTRONICS KB200 II + Keyboard			298.00 225.00
KOALA Graphics Pad			125.00 95.00
KRAFT Joystick			49.00 36.00
Game Paddles			49.00 36.00
MCT Speed Demon			295.00 249.00
MPC 128K Bubble Memory			875.00 699.00
M&R Sup'r Mod II RF Modulator			69.00 49.00
Sup'r Fan			50.00 38.00
MICROPRO 6MHz Applicator + Word			Call
MICROSOFT 2-80 Softcard			395.00 249.00
2-80 Softcard Plus			645.00 479.00
Softcard Premium Pak (II +)			695.00 499.00
Softcard Premium Pak (Ile)			495.00 395.00

MOUNTAIN COMPUTER	
Music System	395.00 335.00
A/D Plus D/A	350.00 299.00
MICROTEC Dumping Buf. w/64K	349.00 265.00
ORANGE MICRO	
Grappier Plus	175.00 129.00
16K Bufferboard	175.00 129.00
Grappier Buffered w/16K	245.00 199.00
PCPI Applicard w/128K 6MHz	595.00 499.00
8098 Coprocessor	595.00 499.00
Applicard w/128K 4MHz	495.00 429.00
PERISOFT (All w/1 Year Warranty)	
Printerlink Intell. Printer I/O	99.00 79.00
Messenger Univ. Serial I/O	135.00 99.00
TimeLink Realtime Clock	110.00 89.00
Gratlink Graphics I/O	175.00 139.00
Bufferlink w/16K Buffer	189.00 159.00

PRACTICAL PERIPHERALS	
Microbuffer 16K (Epson Parallel)	199.00 149.00
Microbuffer 32K (Epson Parallel)	199.00 179.00
Microbuffer 16K (Epson Serial)	179.00 159.00
Microbuffer 32K (Epson Serial)	219.00 199.00
Microbuffer In-line 64K (Parallel)	349.00 279.00
Microbuffer In-line 64K (Serial)	349.00 279.00
PROMETHEUS Versacard 4 in 1	199.00 166.00
QUADRAM Quadlink	680.00 499.00
Microfazer 16K (Parallel)	189.00 169.00
Microfazer 16K (Serial)	220.00 195.00
Microfazer 32K (Parallel)	225.00 199.00

SATURN TITAN	
32K Ramcard	219.00 189.00
64K Ramcard	349.00 289.00
128K Ramcard	499.00 399.00
Accelerator II Card	599.00 449.00
Neptune 54K + 80	199.00
Neptune 128K + 80	299.00
Neptune 192K + 80	389.00
STREET Echo II (Apple)	149.00 99.00
Echo II Serial (In-line)	249.00 199.00
SYNETIK Sprite I	149.00 129.00
Sprite II	249.00 199.00
Supersprite	395.00 359.00
Flashcard 144K	449.00 389.00
Flashcard 288K	629.00 549.00

RAM
64K RAMS
Set of 9 Pcs
\$50.00

Apple™ Apple Trademark of Apple Computer
IBM™ IBM Trademark of International Business Machines

TERMS: We accept VISA, MC, MD, Cashiers and Personal checks. School and Corporate P.O.'s. We do not charge your card until we ship. Personal checks require drivers license and credit card #. No Surcharge Added on VISA or MC. COD's over \$500 require 20% deposit with order. Add 3% shipping and handling for UPS. We offer same-day shipment. Prices subject to change without notice. We reserve the right to substitute manufacturer. We are not responsible for typographical errors.
Retail Sale Prices May Vary

IBM PC MULTICARD™
"MULTICARD" multifunction card for the IBM PC & XT expandable to 256K. Thousands of this popular card have already been shipped by ACP.

- 64-256K
- Parallel Port
- Serial Port
- 1 Year Warranty
- Disk Emulator Software
- Printer Spooler Software
- Clock/Calendar
- Clock Software

\$229.00 w/64K \$229.00

S-100 64K "CMOS" RAMCARD
Unbelievable Price!
\$249.00
Assembled and Tested

- ACP has sold over 1000 of these IEEE compatible, low-priced, high-reliability 64K Static RAM Cards.
- Single 5-Volt operation.

SIEMEN'S SALE
You can now purchase Shugart compatible 8" Disk Drives below your existing factory direct pricing! These Prices are the lowest ever published.
*Siemen's DDDD FDD200-8... \$199.00
Also, with purchase of Disk Drives you can buy the Vista V-1000 Dual Case with Power Supply and Cable for only \$375.00... Regular Price \$495.00
Offer Limited! Factory Warranty 90 Days!
Shipped Immediately from Stock! *OEM Quantities

8" Disk Drives \$139.00

DOT MATRIX PRINTER
COEX 80-FT
9x7 Dot Matrix, 80 CPS, Bi-Directional Printing
2K Buffered Memory
80, 96, 132 Columns, Graphics and Block Printing
Selectable Char Pitch, Line Spacing and Feed
COEX Interface Card to Apple... \$49.95

\$169.00

ACP HAS DISK DRIVES
APPLE II™ COMPATIBLE
Thin Line Drive \$179.00
APPLE COMPATIBLE DISK DRIVES STANDARD HEIGHTS
VISTA Solo 5 1/4" Std. . . . \$199.00
FOURTH DIMENSION 199.00
QUENTIN 209.00
Compatible Disk Controller 49.95

TANDON 100-2
PC Compatible • Double Sided
\$199.00
TM100-1 \$169.00

TOSHIBA Half-High
PC Compatible • Double Sided
\$169.00

OTHER DRIVES WE STOCK

TANDON 848-2 Thinline	\$479.00	SHUGART 801R	\$299.00
TEAC FD55B	179.00	QUMC Datatrack 8	449.00
SEAGATE 10mb Hard Disk	499.00	QDC 1800 DS (320K)	224.00
MPI B52	239.00	SEAGATE ST506 (6MB Win.)	349.00

▶ PRODUCT NEWS

package by Dodge MicroSystems includes the costs of more than 4000 key building components, as well as the wage rates for different construction trades, automatically adjusted by ZIP code. Based on the location of the construction project, the materials to be used, and the size and complexity of the structure, the software program automatically calculates an accurate cost estimate. (List Price: \$795; semiannual updates, \$300)

Requires: Apple II, II Plus, IIe, or IIc; 48K RAM; two disk drives
McGraw-Hill Cost Information Systems
P.O. Box 28
Princeton, NJ 08540
(800) 257-5295, in NJ (609) 921-6500
CIRCLE 944 ON READER SERVICE CARD

Facts Files 2

Facts Files 2, a mini-database program for the Apple II series of computers, is designed for home or business use. Using Facts Files 2, you can create mailing lists, disk-directory files, income-tax records, inventory files, and customized record forms. Some features of Facts Files 2 are on-line documentation, up to 13 fields in each records, and quick search. (List Price: \$24.95)

DiNess Software Company
P.O. Box 5671
Fort Smith, AK 72913
(501) 441-9846

CIRCLE 945 ON READER SERVICE CARD

Multigraph

Multigraph automatically produces graphs from data entered manually or from a file. Bar graphs use up to four groups of data. Other graphs can use up to six groups. (List Price: \$150)

Requires: Apple II, II Plus, IIe, or IIc; 64K RAM; two disk drives
Microlab Computer Products
2699 Skokie Valley Road
Highland Park, IL 60035
(312) 433-7550

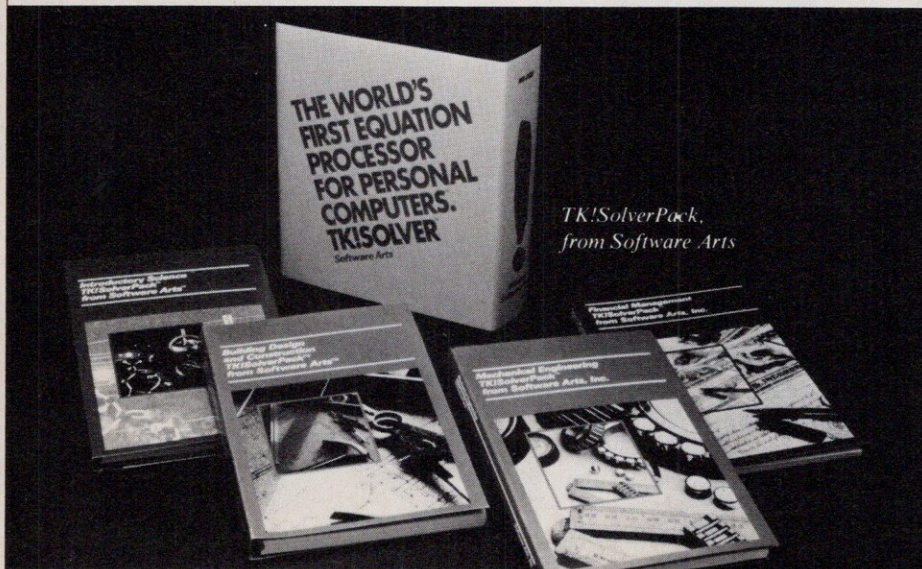
CIRCLE 946 ON READER SERVICE CARD

TK!SolverPack

Users of TK!Solver can now choose from four new application packages designed for use with the equation-processing program. Each package contains models that use equations, values, and tables to solve specific problems. The packages include: the Financial Management TK!SolverPack for financial analysts and managers; the Mechanical Engineering TK!SolverPack for teachers and students; and TK!SolverPack for Building Design and Construction for architects, building designers, and construction engineers. (List Price: \$100 each)

Requires: Apple IIe, 128K RAM, one disk drive, TK!Solver
Software Arts
27 Mica Lane
Wellesley, MA 02181
(617) 237-4000

CIRCLE 947 ON READER SERVICE CARD



APPLE SOFTWARE SPECIALS!

\$1.00 credit for phone orders over \$100.00

EDUCATIONAL (OUR SPECIALTY)



	LIST	SPECIAL
Alphabet Zoo	29.95	21.16
Delta Drawing	49.95	35.46
Face Maker	34.95	24.36
Fraction Fever	34.95	24.36
Grandma's House	34.95	24.36
Hey Diddle Diddle	29.95	21.16
In Search of...	39.95	28.06
Kids on Keys	39.95	28.06
Kidwriter	34.95	24.36
Kindercomp	29.95	21.16
Rhymes & Riddles	29.95	21.16
Snooper Troops #1	44.95	31.76
Snooper Troops #2	44.95	31.76
Story Machine	34.95	24.36
Trains	39.95	28.06

Ask for FREE price list

Educators: ask for special educational catalog

APPLE

Crossword Magic 2.0	49.95	35.96
Dinosaur Dig	49.95	35.96
Ess. Data Dup (EDD)	79.95	58.16
Flight Simulator II	49.95	38.96
Gibson Light Pen	249.95	196.96
Hayes Mach III Joystick (II+ or IIe)	54.95	39.66
Homework	69.95	50.76
Koala Pad	125.95	90.46
Math Blaster	49.95	35.96
Mockingboard-C	199.95	163.75
Phi Beta Filer	49.95	35.96
Pole Position	34.95	28.76
Print Shop	49.95	35.96
New Step by Step	99.95	71.96
SAT (Barron's)	89.95	65.56
SAT (CBS)	150.00	108.96
SAT (Krell)	299.95	249.96
Speed Reader II	69.95	50.76
Spell it!	49.95	35.96
Story Maker	34.95	24.86
Time is Money	99.95	71.96
Wildcard 2	139.95	110.19

MACINTOSH

Helix	395.00	285.00
Microsoft Word	195.00	139.00
Multiplan	195.00	139.00
PFS File Report Combo	195.00	139.00
Typing Tutor III	49.95	35.00



Apple & Macintosh are trademarks of Apple Computer, Inc.

C.O.D. • M.O. • Cert. Checks • School P.O.
• VISA • MasterCard • Checks Allow 2 Weeks
• N.Y.S. Res. Add Sales Tax • US Orders
Under \$150. Add \$2.00 P & H • All Canadian,
US Funds \$3.00 P & H • Foreign, Charges Only,
Min. P & H \$7.00
Source TCP 637, Compuserve 72135,1710

Box 525, Dept. B
East Setauket, N.Y. 11733
(516) 751-2535

CIRCLE 116 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 IIe* 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 Dots.

*Appleworks and Apple IIe 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 110
STUART, FL 33494

(305) 287-3336

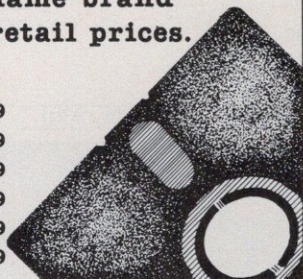
CIRCLE 145 ON READER SERVICE CARD

DISCOUNT DISKETTES

Now you can get "name brand" Diskettes at below retail prices.

maxell

MD-1M.....	\$19.99
MD-2DM.....	\$29.99
FD-1-1100.....	\$29.99
FD-1-1200.....	\$29.99
FD-2-1100.....	\$34.99
FD-2-1200.....	\$34.99



COMPUTER MAIL ORDER

west

800-648-3311

In NV call (702) 588-5654
Dept. 102, P.O. BOX 6689
Statenline, NV 89449

east

800-233-8950

In PA call (717) 327-9575
Dept. 102, 477 E. Third Street
Williamsport, PA 17701

Add 3% (Minimum \$5.00) shipping, handling and insurance. MasterCard, Visa and C.O.D. accepted. No waiting period for money orders or certified checks. All items are subject to availability.



CIRCLE 135 ON READER SERVICE CARD



PRODUCT NEWS

Medclaims

With Medclaims, users can control the medical/dental claims they file with insurance companies. Medclaims asks for the data it needs, one step at a time, and there are no languages to learn or commands to look up. Medclaims keeps track of which claims you've sent to each insurance company, their amount, when you sent them, which claims were paid, which are still open, how much the insurance paid on each claim, how much was applied to the deductible, and whether or not you asked for payment directly to the doctor. (List Price: \$49)

Requires: Apple II, II Plus, IIe, or IIc; 48K RAM; one disk drive
Computerscope, Inc.
P.O. Box 529
Matawan, NJ 07747
(201) 566-0522

CIRCLE 948 ON READER SERVICE CARD

Auto-Pool

This new program keeps track of the distance each participant in the car pool drives, provides schedule calendars for each member of the car pool, and prints several reports. The Pool Summary report lists the nonpool distance driven, the pool distance driven, the distance saved for each participant, and pool totals for each of these items. The Fuel Savings Analysis lists the nonpool fuel cost, the pool fuel cost, the fuel-cost savings for each participant, and pool totals for each of these items. With Auto-Pool, files for numerous car pools can be maintained. (List Price: \$39.95)

Requires: Apple II, II Plus, or IIe; 48K RAM; one disk drive; DOS 3.3
Star Point Technology
4730 Grannan Way
Placerville, CA 95667
(916) 621-1393

CIRCLE 949 ON READER SERVICE CARD

Your Personal Net Worth

Designed for home use, this financial-management program organizes and tracks all aspects of a family's financial affairs. It comes with a real silver dollar on the package front and an excerpted edition of Sylvia Porter's *New Money Book for the 80's*. Users can set up a

TURN DOT MATRIX INTO A DAISY . . .

Brand new!
Works with
Apple DMP,
Prowriter,
and NEC!!



with the **NicePrint** Card
(formerly SUPER-MX Card)
for the **Apple II, II+, or IIe**.

The standard of printing excellence is the daisy-wheel printer. The **NicePrint** interface card improves EPSON or GEMINI printers so they have just about the same quality print as the daisy-wheels! And this high quality is easily available to all Apple software, even copy-protected diskettes.

Here is a sample of dot matrix printing. Change it into a daisy with **NicePrint!**

Four optional font styles are available in addition to the standard Roman font shown above that simply plug into the card:

Letter Gothic, ORATOR
LARGE, Script Style,
and Old English.
Apple DMP can now do
SUPER/sub-scripts and
italic. All fonts have
underline, boldface,
pica, elite, and condensed.

BETTER THAN GRAPPLER!

The **NicePrint** card has all the Apple Hi-Res graphic dump commands that the Grappler has including: double dumps (both pages side by side), dump from page 1 or 2, double size, emphasized, rotated, strip chart recorder mode, and text screen dump.

Spies Laboratories

(pronounced "speez")
P.O. Box 336
Lawnedale, CA 90260
(213) 538-8166

Apple II is a TM of Apple Computer, Inc.
Grappler is a TM of Orange Micro, Inc.

CIRCLE 238 ON READER SERVICE CARD



PRODUCT NEWS

budget with as many as 350 categories; keep records of all banking and credit-card transactions—the program handles up to ten bank accounts—record tax-deductible items; record investment transactions; document all household valuables and important papers for insurance purposes; and produce a variety of personal financial reports. (List Price: \$79.95)

Requires: Apple II, II Plus, IIe, or IIc;
64K RAM; one disk drive
Scarborough Systems, Inc.
25 North Broadway
Tarrytown, NY 10591
(914) 332-4545

CIRCLE 950 ON READER SERVICE CARD

Finance Manager

Finance Manager allows you to track income, expenses, and personal assets; balance multiple checking accounts; pay bills; print checks; and maintain tax records. The program uses help screens to answer questions about its functions.

In addition to standard financial-management options, such as bank-book reconciliation and graphing capabilities, Finance Manager has a wild-card search option, and it can make financial calculations. (List Price: \$99.95)

Requires: Apple II, II Plus, IIe, or IIc;
64K RAM; one disk drive
Human Engineered Software
150 North Hill Drive
Brisbane, CA 94005
(415) 468-4111

CIRCLE 951 ON READER SERVICE CARD

MISCELLANEOUS

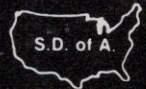
Microsearch

Created exclusively for members of The Source, this new searchable database provides information on approximately 15,000 current reviews and descriptions covering more than 6000 microcomputer products. It answers questions about compatibility, the availability of products, and current prices.

The capsule summaries, which are excerpted from 147 leading computer-industry publications, can be searched by keyword, publication, title, author, date, micro system, and operating system. (Hourly Rates: \$20.75, weekdays;

Software Discounters of America

For Orders Only
1-800-225-SOFT



Inquiries and PA.
412-361-5291

Open Saturday

Your Apple

Software Specialist

ARTWORX	Spider Eater	.....\$19
Bridge 4.0	MONOGRAM	
.....\$16	Dollars & Sense	.....\$67
Monkeymath	Dollars & Sense	
.....\$18	(MAC)	.....Call
Strip Poker	MUSE	
.....\$21	Beyond Castle	
Female Data Disk	Wolfenstein	.....\$23
.....\$16	Castle Wolfenstein	.....\$19
Male Data Disk	ORIGIN	
.....\$16	Ultima III	.....\$39
BOOKS	Ultima IV	.....Call
Apple Graphics/Arcade	PRACTICORP	
Game Design	Practical II	.....\$47
.....\$13	SCARBOROUGH	
Apple User's	Mastertype	.....\$25
Encyclopedia	Phi Beta Filer	.....\$33
.....\$13	Run for the Money	.....\$33
Book of Apple Software	SIERRA ON-LINE	
84	Homeword	.....\$43
.....\$13	Homeword Speller	.....\$33
Book of Adventure	Time Zone	.....\$67
Games	Ultima II	.....\$39
.....\$16	Wizard & Princess	.....\$19
Games Apples Play	SPINNAKER	
.....\$12	Alphabet Zoo	.....\$19
Kids and the Apple	Aerobics	.....\$29
.....\$16	Delta Drawing	.....\$29
Shortcut Through	Facemaker	.....\$21
Adventureland I	Fraction Fever	.....\$21
.....\$9	Grandma's House	.....\$21
Shortcut Through	Kindercomp	.....\$19
Adventureland II	Story Machine	.....\$21
(Infocom)	SSI	
.....\$9	Battle Normandy	.....\$25
BRODERBUND	Broadsides	.....\$25
A.E.	Computer Baseball	.....\$25
.....\$21	Computer QB	.....\$25
Bank St. Writer	Eagles	.....\$25
.....\$43	Epidemic	.....\$21
Bank St. Speller	Germany 1985	.....\$39
.....\$43	Pro Tour Golf	.....\$25
Championship	Questron	.....\$33
Loderunner	Ringside Seat	.....\$25
.....\$23	War In Russia	.....\$53
Mask of the Sun	SUBLOGIC	
.....\$25	Flight Simulator II	.....\$35
Print Shop	TRILLIUM	
.....\$33	Amazon	.....\$29
CBS	Dragonworld	.....\$29
Addition/Subt.	Fahrenheit 451	.....\$29
.....\$16	Rendezvous with	
America Coast-to-	Rama	.....\$29
Coast	WINDHAM CLASSICS	
.....\$33	Below the Root	.....\$23
Dinosaur Dig	Gulliver's Travels	.....\$23
.....\$33	Swiss Family	
Forecast!	Robinson	.....\$23
.....\$33	Wizard of Oz	.....\$23
Mastering the SAT	ACCESSORIES	
.....\$89	Anchor Mark VII	.....\$89
Micro Speed Read	Anchor Mark XII	.....\$267
.....\$85	BASF SS, DD	.....\$17 Bx
Murder by the Dozen	Compuserve Starter	
.....\$23	Kit	.....\$25
Quadratic Equations	Compuserve Vidtex	.....\$25
.....\$16	Disk Cleaner	.....\$9
Webster Word Game	Indus Disk Drive	.....Call
.....\$21	Rana Elite One	.....Call
CONTINENTAL	Rana 5meg. Hard	
Book Apple Software	Disk	.....Call
.....\$13	Sakata 13" Color	
Home Accountant	Monitor	.....\$239
.....\$47	Verbatim Disks	.....Call
Home Accountant	Wico Analog	.....Call
(MAC)		
.....Call		
DESIGNWARE		
Creature Creator		
.....\$19		
Math Maze		
.....\$25		
Spella Kazam		
.....\$19		
EPYX		
Dragonriders of Pern		
.....\$25		
Fax		
.....\$19		
Jumpman		
.....\$25		
Oil Barons		
.....\$35		
Summer Games		
.....\$25		
Temple of Apshei		
.....\$25		
HBJ		
Computer SAT		
.....\$59		
INFOCOM		
Deadline		
.....Call		
Enchanter		
.....For		
Infidel		
.....Low		
Planetfall		
.....For		
Seastalker		
.....Low		
Sorcerer		
.....Prices		
Starcross		
.....Prices		
Suspended		
Witness		
Zork I, II or III		
*All titles available for		
Macintosh		
.....\$75		
KOALA		
Touch Tablet		
.....\$25		
Logo Design		
.....\$25		

P.O. Box 278—Dept. AP Wildwood, PA 19091

Ordering and Terms: Orders with cashier check or money order shipped immediately. Personal/company checks, allow 3 weeks clearance. No C.O.D.'s. VISA/MASTERCARD accepted with no additional charge for orders shipped to continental U.S.A.
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: 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

How to use computers to teach math!

COMPUTERS IN MATHEMATICS:

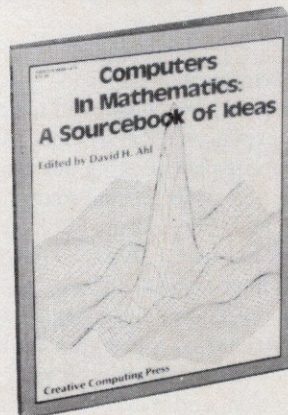
A SOURCE BOOK OF IDEAS

Now that more and more math departments have access to a micro-computer, the problem becomes: How to use the computer effectively as a teaching aid?

Here's where COMPUTERS IN MATHEMATICS can help you. This book of reprints from *Creative Computing* magazine is a goldmine of learning ideas, problem-solving strategies, programming hints, puzzles, brain teasers, and much more!

COMPUTERS IN MATHEMATICS covers nine subject areas:

- Computer literacy and computers in society.
- Thinking strategies and how to solve problems.
- Computer simulations and how to write them.
- Probability.
- Mathematical miscellany, from circular functions to differential equations.
- Art and graphics and their relation to mathematics.
- Computer Assisted Instruction (CAI).
- Programming style.
- Puzzles, problems and programming ideas.



8 1/4" x 11", softcover, hundreds of black-and-white diagrams and illustrations.

In all, COMPUTERS IN MATHEMATICS contains 77 fascinating articles, over 200 problems for assignment, and nearly 100 programs. Edited and with a preface by David H. Ahl, Editor-in-Chief of *Creative Computing*, this immensely practical volume is an invaluable classroom tool for teachers and students of all grades.

USE THE COUPON TO ORDER YOUR COPY TODAY!

CREATIVE COMPUTING PRESS Dept. NF9B, 39 East Hanover Avenue
Morris Plains, New Jersey 07950

Please send me _____ copies of COMPUTERS IN MATHEMATICS:
A Sourcebook of Ideas, at \$15.95, plus \$2.00 postage & handling,* each. #12D

CHECK ONE: Payment enclosed \$_____ (CA, NJ and NY STATE
residents add applicable sales tax.)

Charge my: American Express MasterCard Visa

Card No. _____ Expire Date _____

Signature _____

Mr./Mrs./Ms. _____
(please print full name)

Address _____ Apt. _____

City _____ State _____ Zip _____

*Outside USA add \$3.00 per order.

For faster service, call **TOLL FREE 800-631-8112**. (In NJ call 201-540-0445.)

PRODUCT NEWS

\$7.75, evenings and weekends)
Requires: Terminal program, modem, subscription to The Source Information, Inc.
1725 K Street, N.W., Suite 1006
Washington, DC 20006
(202) 833-1174

CIRCLE 952 ON READER SERVICE CARD

EDUCATIONAL PRODUCTS

- Foreign Language Multi-Lingual Software**, from The Professor
- The Word Game**, from Heuristic Software
- Math Blaster!** and **Speed Reader II**, from Davidson
- Kermit's Electronic Story Maker**, from Simon & Schuster
- The Great Gonzo in Word Rider**, from Simon & Schuster
- Webster's New World Spelling Checker**, from Simon & Schuster
- Geometry I, Algebra I, Physics I, American History, and More Powers to You: Exponents and Scientific Notation**, high-school and junior-high-school tutorials from MicroLab
- Full range of educational software, from Microcomputer Programs

BOOKS

Computer Literacy: A Hands-On Approach

By Arthur Luehrmann and Herbert Peckham

Computer Literacy gives teachers a complete course in one text—33 hands-on lessons and 34 classroom-discussion lessons. Using structured BASIC, this text teaches students to load, run, and change programs; understand how computers work; and solve problems with computers. A Teacher's Guide and copyable diskette are also available.
(List Price: \$17.97, text; \$23.97, Teacher Guide and Diskette)

Requires: Apple II, II Plus, or IIe; 32K RAM; one disk drive
Webster/McGraw-Hill
1221 Avenue of the Americas
New York, NY 10021
(800) 223-4180
in NY State (212) 512-2646

CIRCLE 953 ON READER SERVICE CARD

ONE SPREADSHEET TO START ON. ONE TO GROW ON.

Introducing The VisiCalc® Package.

Here are two powerful spreadsheet programs for the Apple®// family in one package—VisiCalc®, the standard by which all other spreadsheets are judged, and VisiCalc Advanced Version, a second generation spreadsheet for advanced users. These two programs allow you to begin with a basic spreadsheet program and later move on to a more advanced spreadsheet as your business and home needs grow.

VisiCalc is the perfect tool for the single disk-drive Apple //c personal computer. Six home budgeting and planning applications have been programmed into the spreadsheet. They are: Checkbook Balancing, Home Budgeting, Analysis of an IRA, Future Value of an Investment, Income Averaging, and Loan Analysis.

This original spreadsheet program has been upgraded with Full Word Prompts, Variable Column Widths and ProDOS support to



make the best known software program ever, even better.

VisiCalc Advanced Version is an advanced spreadsheet program for dual disk-drive systems. It contains sophisticated commands and functions to handle more demanding applications. Plus, an on line Introductory Guide to help you easily understand the program's capabilities.

Some of these advanced functions include Keystroke Memory,™ On line Context-Sensitive Help, and Print Commands for Presentation-Quality reports, among others.

And if two great spreadsheet programs aren't enough, The VisiCalc Package comes with comprehensive documentation and **The VisiCalc Book** by

Donald H. Biel. The entire package is just \$179. Stop by your nearest

computer store today and get two great spreadsheet programs in one package. One to start on. One to grow on. At one great value.

Software Arts™

27 Mica Lane, Wellesley, Massachusetts 02181
Telex: 6502048741 MCI

CIRCLE 149 ON READER SERVICE CARD



FOR YOUR APPLE II

Industry standard products at super saver discount prices

SOFTWARE FOR YOUR APPLE and PC

ARTSCI	LIST	SGC
Magicalc.....	149.95	89.00
Magicwindow II.....	149.95	105.95
Magicwords.....	69.95	59.95
Magic Office.....	295.00	212.95
ASHTON TATE		
dBase II.....	495.00	349.95
dBase upgrade kit.....	249.95	149.95
dBASE III.....	695.95	495.95
BLUECHIP SOFTWARE		
Baron.....	49.95	39.95
Millionaire.....	49.95	39.95
Tycoon.....	49.95	39.95
BRODERBUND SOFTWARE		
Bank Street Writer.....	69.95	56.95
Bank Street Speller.....	69.95	56.95
Choplifter.....	34.95	24.95
Arcade Machine.....	59.95	39.95
The Print Shop.....	49.95	39.95
CHALKBOARD		
Powerpad/Starter Kit Special.....		79.95
DOW JONES SOFTWARE		
Invest/Evaluator.....	149.95	119.95
Market Analyzer.....	349.00	299.95
Market Manager.....	299.00	219.95
Market Microscope.....	699.00	499.95
FOX & GELLER		
Quick Code.....	295.00	159.95
d Graph.....	295.00	159.95
d Util.....	99.00	79.95
INFOCOM		
Zork I, II, III.....	39.95	29.95
MAC/SOFTWARE		
Zork I, II, III.....	49.95	39.95
Starcross.....	59.95	49.95
Planetfall.....	39.95	29.95
Mac Basic.....	150.00	94.95
Multiplan.....	195.00	149.95
KOALA TECH.		
Koala Pad w/sft.....	125.00	99.99
IIc Koala Pad.....	125.00	99.99
MICRO PRO		
Wordstar w/Starcard.....		359.95
Wordstar w/softcard.....		499.95
MICROSOFT		
IIc Multiplan.....	149.95	
Mac. Chart.....		99.00
Mac File.....	141.95	
Mac Word.....	141.95	
PEACHTREE		
Apple Peachpak (gl,ar,ap.).....		269.95
PC Peachpak (gl,ar,ap.).....		269.95
SENSIBLE SOFTWARE		
Sensible Speller.....	89.95	
Report Card.....	49.95	

SPECIAL AND NEW

PROMODEM 1200 BELL 212A STAND ALONE 300/1200 BAUD MODEM

- * Expands to a stand alone package
 - * Real time clock and calendar
 - * Help Commands
 - * Built in diagnostics
 - * Auto dialer
 - * Programmable intelligent
 - * RS232 interface
 - * Internal ply
 - * Options
- SPECIAL PRICE324.95**

PROMOEM 1200A IIe II II +

PLUG IN MODEM SPECIAL.....349.95

MAC PAK Includes Promodem 1200 Cable Software SPECIAL.....349.95

IIc Includes Promodem 1200 Cable Software SPECIAL.....349.95

- #### Options
- Procom Software.....79.95
 - Options Processor.....79.95
 - Options Processor Memory
 - 16K.....29.95
 - 32K.....59.95
 - 64K.....119.95
 - Alphanumeric Display.....79.95

Options Processor, 64K Buffer, Alphanumeric Display.....259.95

PROMETHEUS PRODUCTS

- 16K Card.....59.95
- 128K Expand A Ram.....274.99
- Graphitti Card.....89.00
- P.S. Buffer Card.....105.95

Versacard Four In One Serial • Parallel • Real Time Clock • Calendar SPECIAL.....159.95

PRINTERS Dot Matrix

- OkI.82A.....339.95
- OkI.83A.....689.95
- OkI.92P.....475.95
- OkI.93P.....724.95

PRINTERS Letter Quality

- Juki Daisywheel.....459.95
- Abati.....439.95
- Brother HR-15.....430.95

SPECIAL OF THE MONTH

- SUPERCALC III.....139.95
- ss/dd diskettes w/hubs.....13.99
- ds/dd diskettes w/hubs.....15.99
- 64K upgrade.....39.95
- AST 6Pak + W/128k.....339.95

ACCESSORIES

- T.G. Joystick.....41.95
- Select A Port.....39.95
- Saver Fan (surge protected).....39.95
- Floppy Diskettes ds/dd.....17.95
- Diskettes ds/dd w/order.....15.95
- Diskette Holder (25).....17.95

STRATEGIC SIMULATIONS

- Question.....39.95
- Germany 1985.....39.95
- North Atlantic 86.....39.95
- Computer Quarterback.....29.95
- Computer Baseball.....29.95

SUBLOGIC

- Flight Simulator.....42.95

MODEMS

- Hayes Smartmodem 300.....215.95
- Hayes Smartmodem 1200.....489.95
- Hayes Micromodem IIe.....249.95
- Anchor 1200 Auto.....269.95
- Volkmodem 300.....59.95

MONITORS

- Amdek II RGB Color.....484.95
- Taxan Hi/Res RGB Color.....495.95
- Sakata Composite Color.....274.95
- Amber Monitors.....99.00
- Green Monitors.....99.00

80 COLUM CARDS

- Smarterm II.....139.95
- Videx Video Term.....215.95
- Ultra Term 136 col.....289.95
- Apple IIe w/64K.....99.00
- View Max 80 col.....129.00

EDUCATIONAL SOFTWARE

- The Most Amazing Thing.....29.95
- Story Machine.....29.95
- Kids on Keys.....23.95
- Spelling/Reading Primer.....29.95
- The Game Show.....29.95
- Master Math.....29.95
- People Places and Things.....15.95
- Tic Tac Show.....29.95
- Win with Words.....15.95
- Wizard of Words.....29.95

* All equipment shipped factory fresh. Manufacturers' warranties included. All returns must have a RMA number. All software sales are final, no refunds. SGC also repairs all types of computers and accessories.

All items are normally in stock.

For orders only 800-523-2382

For orders in Calif..... 800-423-4415

Tech. Support & R-M-A Numbers
..... (415) 791-7091

... And we'll be here to help after you receive your order. Feel free to call the SGC Technical Staff for assistance.



The mail order specialists
700 Mowry Ave., Fremont, CA 94536

THE DO-IT-YOURSELFERS' PROJECT ASSISTANT

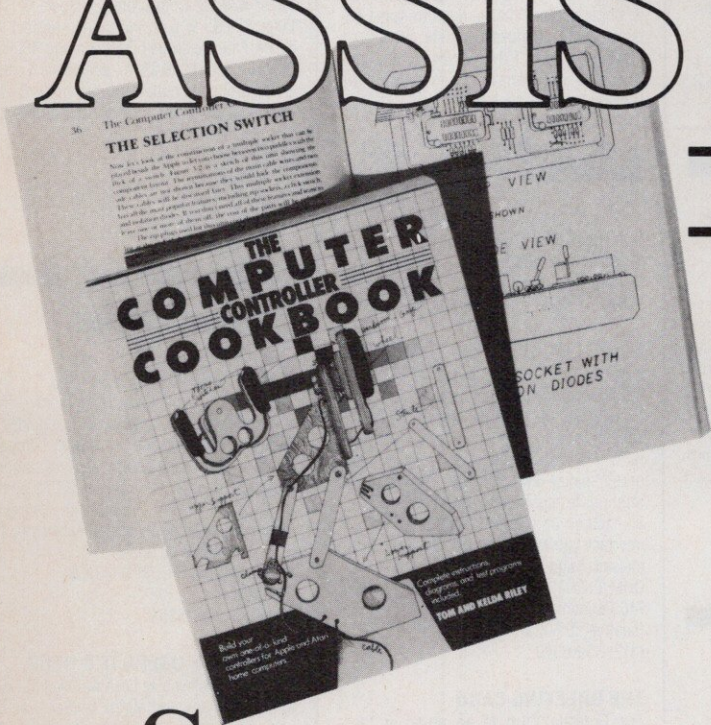
BY TOM & KELDA RILEY

Make your own game controls...repair that old joystick that's been sitting in your closet...have your own project assistant in your home, ready when you are! The **COMPUTER CONTROLLER COOKBOOK** gives you complete schematics and mechanical drawings for building and repairing joysticks, paddles and game devices for your Apple® or Atari® computer, with a special section showing you how to adapt these to most major machines. Imagine building your own Super Joystick, Annunciator, Airplane Wheel, Foot Pedals, Sketch Pad or Multiple Connector from purchased *and* scavenged parts and then using them on your own computer! Imagine saving up to half the cost of usual commercial prices and having your controls last up to twice as long! Imagine the hours of enjoyment and learning you'll get from the **COMPUTER CONTROLLER COOKBOOK!**

Order your copy today!

Apple is a registered trademark of Apple Computer Inc. Atari is a registered trademark of Atari Inc.

Save up to half the usual retail price building your own game controls that will last up to twice as long as most commercially purchased models with **THE COMPUTER CONTROLLER COOKBOOK**...the indispensable guide for computer game enthusiasts!



CREATIVE COMPUTING PRESS Dept. FF2F 39 East Hanover Avenue, Morris Plains, NJ 07950

Please send me _____ **COMPUTER CONTROLLER COOKBOOK(s)** at \$12.95* plus \$2.00 postage and handling each. Outside U.S.A. add \$3.00 per order. #8C.

Payment enclosed \$_____. *Residents of CA, NJ, and NY State add applicable sales tax.

Charge my:
 American Express Visa MasterCard

Card No. _____ Exp. Date _____

Signature _____

Mr./Mrs./Ms. _____
please print name in full

Address _____

City _____

State _____ Zip _____

**For faster service, PHONE TOLL FREE
1-800-631-8112**

(In NJ call 201-540-0445)

Send me a FREE Creative Computing Press Catalog.

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, 12th FLOOR, 1 PARK AVENUE, NEW YORK, NY 10016. Call (212) 503-5115 to place an order. Call (212) 503-4506 for additional information or assistance.

▶ACCESSORIES/ SUPPLIES

KEYBOARD OVERALL

Protect your computer keyboard with our ultra-thin, ultra-strong, ultra-transparent plastic overall. Provides water-tight seal with absolutely no interference with fingering. Custom molded for your computer keyboard. Protects keyboard from spills. Just wipe off dirt. \$24.95 + \$3p&h. CA res add 6½%. Dealers invited.

OVERBYTE

8621 Laurel Canyon Blvd.
Sun Valley, CA 91352
(213) 504-0309

SICK OF DUST?

Seeing Greek instead of English?? Computer out of sorts?? Printing out of focus?? Protect your hardware from DUST—their most common ENEMY. Protect them with a GIMC cover. Send for FREE brochure. Apple, IBM custom equipment. Dealer inquiries welcome.

GIMC CREATIONS
PO Box 3543, Dept. AM
La Mesa, CA 92041-0830

▶BUSINESS OPPORTUNITIES

PROFIT with your APPLE

PROFIT brings to management, the rigors of the scientific method. Designed to help business gain a competitive edge, PROFIT simulates repetitive manufacturing processes in hi res animation. Through real-time keyboard control, experiment with natural behavior of men and machines to discover modern minimum-cost ways of improving PROFIT.

For APPLE II, II+, or IIe. \$35.
SOFTWARE VISIONS
P.O. Box 65
Wilmington, Ohio 45177
(513) 382-4457

▶HARDWARE/ADD- ON-BOARDS

IC TESTER INTERFACE CARD

MDL ICT-2. Tests 14, 16, 18, 20 tin devices. Displays results on video monitor. Card plugs into any slot. Comes with test socket, software diskette, instructions. For Apple II, II+, IIe, Franklin 100, 1000, 1200. \$229. Vector-graphic processor card: 512x512 resolution, 64k on board memory, text & graphics mixed, monochrome. \$599.

TELEMAX

780 Lorraine Drive
Warrington, PA 18976
(215) 343-3000

▶HARDWARE/ DISKETTES

LOW PRICED DISKETTES

Memorex, Wabash, Omni. Call for our new lowest prices. Can't be beat. Head cleaning kits and printer paper too. Also at low, low prices: MC/VISA/COD.

MAGNETICS, INC.
PO Box 98
South Grafton, MA 01560
(800) 334-DISK (3475)
MA res. (617) 839-4404

MAXELL DISKETTES 3½" for MAC

Certified and available NOW!!! Only \$35 a box (10) w/labels. Flip Top Box-Smoked, holds 36—\$27.50.

MacStore
PO Box 11127
San Francisco, CA 94101
(800) 843-5722 or in CA (800) 572-2746

▶HARDWARE/ PERIPHERALS

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 is 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 INC.
82 Second Avenue S.E.
New Brighton, Minnesota 55112
(612) 631-3550. TWX 910 563 3610

SCOOTER™ SPIO MULTI-BUFFER

Now one printer can work like three. Multi-Buffer accepts data from up to three micros simultaneously, then inputs it, automatically in turn, to single parallel printer. Features 64k storage, memory indicator bar graph, pause switch, copy switch for re-printing, reset switch to clear memory. Save \$6 each on up to four SCOOTER CC AP6 P interface cables with each Multi-Buffer purchased. Suggested retail: \$389.00.

OHM/ELECTRONICS
746 Vermont
Palatine, IL 60067
(312) 359-6040

THE GREETING CARD

The Greeting Card is an auto-run "cartridge" for the Apple II series of computers. The card can store up to eight 256 byte assembly language programs, any of which can be set to run each time the computer is turned on. Included is a disk containing example security and message programs. \$69.95 + tax.

BIRCHEM COMPUTER PRODUCTS
5728 Thames Way
Carmichael, CA 95608
(916) 489-7542

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

▶HARDWARE/ POWER PROTECTION

COMPUTER PROTECTION

Spike protection: Com-protect I Spike Protector \$39.95. Com-protect II Spike & RFI Filter \$59.95 w/6 ft. cord. Com-protect III Spike, Failsafe surge protection and RFI Filter w/6 ft. cord \$89.95. All units have 6 each 3 wire grounded outlets, 6000 amp @ 8x10 usec suppressor. RFI filtering from 96Khz to 41mhz. From:

COM-PROTECT, INC.
Rt. 4 Box 427X
Slidell, LA 70458
(504) 641-1316

▶PUBLICATIONS

MACINTOSH OWNERS

The Original Macintosh Sourcebook—The only comprehensive and up-to-date guide to all Macintosh software, hardware includes description, release date/availability, price, complete supplier information. \$9.75 post-paid. ICONS—The Macintosh Owner's Monthly Newsletter. Dedicated exclusively to the Mac. \$18.00 postpaid.

ICON CONCEPTS CORPORATION
916 Bradley
Athens, Texas 75751

APPLE DMP USERS IT'S HERE

Here's the book you've been waiting for. How to program your Dot Matrix Printer New 70 page manual gives all printer commands in Applesoft BASIC. Great for beginners. Detailed instructions, examples, and glossary, plus 16 ready-to-run programs. \$7.95 ppd. Money-back guarantee. FREE details. For Image writer, too.

TIMBERLINE PRESS
P.O. Box 211326
Denver, CO 80221

USER GROUP DIRECTORY

The largest most comprehensive guides on computer user groups ever. These are NOT lists. They are actual profiles of groups contacted & compiled by us. They tell you WHO they are, WHERE they are & WHAT they offer. Directories are offered for Apple, Atari, CPM Commodore, IBM-PC, TR580. All directories are \$20 & our catalog is available for \$2.

BUSINESS APPLICATION SYSTEMS
1734 Barry Ave., Dept. AP
West Los Angeles, CA 90025

BOOKS, BOOKS, BOOKS

More than 300 computer titles available. Comprehensive selection of computer books from every major publisher at low discount prices! Send \$2 for complete price list, or receive price list free with book order. THE BRIGHT SIDE
3308 W. Burbank Blvd.
Burbank, CA 91505
(800) 847-4272/(818) 841-8411

RETAILERS

FLORIDA

COMPUTER VILLAGE

One stop shopping for your complete computer needs. We handle Apple, Epson, Panasonic and sharp computers, and have the largest showroom of software, accessories and supplies in South Florida.
14951 South Dixie Highway
Miami, Florida 33176
(305) 255-2000

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+/Ile/Illc, DemoKit \$10. Complete product with attractive manual \$150. VISA/MC. Dealer inquiries invited.
APPLITECH SOFTWARE, INC.
381 Harvard St.
Cambridge, MA 02138
(617) 497-8268

SOFTWARE COMMUNICATIONS

BULLETIN BOARD SOFTWARE

"A.B.B.S. 4 DOT 2" is a high powered BBS for the Apple II, II+, Ile. It handles both 1200 and 300 baud callers. Its modular design lets you tailor your BBS to your needs. Master Card/Visa accepted. For complete details send SASE TO:
SOFTWARE SORCERY
7927 Jones Branch Drive, Suite 400
McLean, VA 22102
(703) 471-0572
(703) 471-0610 (A.B.B.S. number)

BLASTS LINKS APPLES WITH MICROS, MINIS, MAINFRAMES

BLAST Communications Software links Apples with mainframes, minis & other micros. Full duplex asynch, any speed to 19.2 kbps, any modem, error-free, via dial up phones Links IBM/VM/CMS & VMS/TSO, Sperry OS, DEC VAX & PDP; Data General; WANG; HP 3000, Apple, MS DOS; CP/M; CP/M 86; UNIX. Any computer with BLAST can talk to any other computer with BLAST.



COMMUNICATIONS RESEARCH GROUP INC.
8939 Jefferson Hwy.
Baton Rouge, LA 70809
(504) 923-0888

SOFTWARE DEVELOPMENT TOOLS

RIGHT JUSTIFY ROUTINE

So you want to print those dollars and cents right justified. This routine for Applesoft users is a subroutine in the users program. It will right justify, place the comma, and round to 2 decimal places for numbers in the range of +999999.99. Ex: -2345.6789 produces bb-2,345.68 (b=space). Instructions & listing \$11.95 or with disk \$15.95 (PRODOS or 3.3).
CYGNUS SOFTWARE CORP.
2340P State Road 580, Suite 250
Clearwater, FL 33575
(813) 733-0788

SOFTWARE EDUCATIONAL

GRADECALC

More teachers are switching rather than fighting. Using the already familiar gradebook format, GRADECALC allows for easy data entry and editing. Cuts averaging time by 90%. Numerous reports are available—record book, missing assignment, summaries, histograms, and more. Only \$29.95
TAMARACK SOFTWARE INC.
PO Box 247
Darby, MT 59829
(406) 821-4596

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

DISSECT A FROG

... or an earthworm on your own computer screen. Let your teenagers enjoy a SPELL-A-VISION soap opera while learning 8,000 spelling words. Learn physics and astronomy with 114 physics programs. See Samson fight a lion. Write for a free catalog of educational programs for home and school.
CROSS EDUCATIONAL SOFTWARE
1802 N. Trenton, Box 1536
Ruston, LA 71270
(318) 255-8921

TEACHERS!

Tired of spending long hours when report cards are due? Try GPA 4.0, a teacher tested grade calculation program that does grading, curving, weighted averaging, reporting and much more. Menu driven for ease of use. Satisfaction is guaranteed. For Apple II, II+, Ile. \$39.95+\$2 P/H. Manual only for \$5. MI+4%.
ALTEK, INC.
Box 591
Brighton, MI 48116

SOFTWARE FILE MANAGEMENT

THE HOME ADDRESS BOOK

Everybody needs one! Keeps names, addresses, phone #'s, birthdays, anniv., etc. 32 items for 402 families. Reports are: ADDRESS BOOK, PHONE LIST, DATE CALENDAR, MAILING LABELS, etc. Easy to use! Unlocked. For II+, e, or c (w/64K). 37 page easy to read manual. \$19.95 (CK, MC/VISA). Satisfaction guaranteed!
OPT-SYSTEMS
2109 W. Edgewood Drive
Jefferson City, MO 65101
(314) 635-9459

SOFTWARE GAMES

WORLDWIDE WIZFANS AGREE!

Wizadry's BEST players use the WIZISYS-TEM!!! NEW 85+ page manual full of charts, powerful tips, step-by-step help for all 3 games (\$15). Superior maps \$5 (Sc. 1, 2 or 3). All \$25.00. OUR fix disk modifies, prints all 3 games AND is but \$15! WIZINEWS—latest tips/articles/news/gossip: \$8/4 issues, sample \$2. VISA/MC.
NICHOLAS SERVICES
6901 BUCKEYE WAY
COLUMBUS, GA 31904
(404) 323-9227

MACINTOSH GAMERS

Beat Transylvania and Quest!! MacPainted Maps by Artist—Sam Levin. Excellent quality with Command Listings. Send \$8.75 for complete sets of art/maps.
P B I SOFTWARE
1155 B Chess Dr. Unit H
Foster City, CA 94404
(415) 349-8765

SOFTWARE GAMES EDUCATIONAL

RENT SOFTWARE FOR APPLE

WE RENT and SELL large selection of game, educational and utility programs. Club Membership costs only \$50 (Renewal \$15/yr). Rental Period of 90 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
19801 Vanowen St.
Canoga Park, Ca 91306
(818) 887-5260

BIBLE MOUNTAIN

A fun to play Bible educational game for 2 to 20 players. Supports standard & multiple choice questions. Has excellent Hi-Res graphics & sound & much more. You can easily change the questions/answers included, or create your own. Also included is the free game, Bible-tration. Send \$25+\$150 shipping to:
J&M SOFTWARE, DEPT. H
PO Box 2200
Athens, TX 75751
(214) 675-8479/214-469-3661

►SOFTWARE: GENERAL

GENEALOGY/FAMILY ROOTS

Family roots for your genealogy. Store standard and custom info.—does group and individual sheets, four types of charts, various indices, general searches, and much more. No limits. Very comprehensive. Satisfaction guaranteed. Price \$188.50 including postage. QUINSEPT, INC.
P.O. Box 216
Lexington, MA 02173
(617) 862-0404

►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) 424-6733

►SOFTWARE/ HOBBIES

ATTENTION: COIN COLLECTORS

Unique program records entire collection and produces various reports that serve for personal investment information. Built-in market value provides latest prices for 1600 U.S. coins. Requires 48K/1 drive/printer.
Coins software & manual \$95 (Manual only-\$10). VISA/MC OK. QUARTERLY
Coins value updates \$25.
COMPU-QUOTE
6914 Berquist Ave. Dept. AZ.
Canoga Park, CA 91307
(818) 348-3662

►SOFTWARE/ INVENTORY

INVENTORY/SALES MANAGEMENT.

Finally, a Software package for the apple IIe and IIc which handles the important aspects of inventory control, preparing of invoices, monitoring sales information and customer accounts receivable. One completely integrated solution.
PERSONAL BUSINESS SOFTWARE INC.
14951 South Dixie Highway
Miami, Florida 33176
(305) 255-6906

►SOFTWARE/ PERSONAL

TOTAL FITNESS PROGRAMS

Did you know your computer can help you live a healthier life. Call or send for our FREE catalog of 130+ health programs: diet/exercise, heart, psychology (including stress & memory), health ed, and more. Complete listing of self-help/self-improvement software. Must specify hardware to receive free catalog.
CTRL HEALTH SOFTWARE
18653 Ventura Blvd. #348E
Tarzana, CA 91356
(818) 788-0888

KITCHEN PLANNER

Create a 1-14 day Menu and Shopping List in less than 5 min. The only program available which both encompasses 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 6½%.
SAV-SOFT PRODUCTS
PO Box 24898
San Jose, Calif. 95154
(408) 978-1048

COOKING-RECIPES

Over 110 popular recipes. International cuisine. All recipes individually tested. Enjoy as simple key touches lead you to new delights. \$17.95. Also available program to store your own favorite recipes. Includes editing feature. \$8.95. For Apple II+, IIe.
MARCUS SYSTEMS
Box 440113
Houston, TX 77244
(713) 556-5365

►SOFTWARE/ REAL ESTATE

Property Management Plus

Professional Software for Property Management, Property Listings/Comparables, Loan Amortization, Depreciation/ACRS, Tax Deferred Exchanges, Property Sales Analysis, Home Purchase, Loan Sales/Purchase, Construction Cost/Profit, Income Property Analysis & APR Loan Analysis. Credit cards accepted.
REALTY SOFTWARE
1926 S. Pacific Coast Hwy, Ste 229
Redondo Beach, CA 90277
(213) 372-9419

►SOFTWARE/ UTILITIES

THE DISK LABELLER

A powerful program for automatic printing of diskette labels showing FILES, DOS sec free & used. Built-in default & escape functions, auto config. for printer swaps & drives. Completely MENU driven. Req. no doc. includes 300 5 inch labels. Req. 64K Apple II, II+, IIe disk dr., printer. Only \$59.95 + \$3 ship. NY res. add sales tax. See our display ad in March.
PRACTICAL SOFTWARE LIMITED
Dept Ac, Box 64
Pomona, NY 10970
(914) 425-1158

RAM DRIVE e/c \$29.95

THE BEST fast disk emulator for IIe or IIc. Extended 80 column card required for IIe. Supports DOS 3.3 & Pascal 1.1. Included copy utility, for Pro-DOS too, requires only 4 disk slots, 60% less than COPY-A and 78% less than Pro-DOS Filer! Menu driven documentation, DOS speedup, access indicators, not protected!
PRECISION SOFTWARE
6514 North Fresno St.
Milwaukee, WI 53224
(414) 353-1666

►SOFTWARE/WORD PROCESSING

APPLE WRITER USERS ...

Are printer controls driving you crazy? "Glossary One" uses single key strokes and menus to provide the easiest most complete access of printer features, fonts and special characters. Includes an essential nul character fix of Apple Writer IIe! Only \$24.95. Specify AW II or IIe and printer. Various printers supported.
MIJO CO.
I Jo-Lin Ctr.
El Sobrante, CA 94803
(415) 655-2158

Applewriter Glossary Disk

Contains glossary files for Epson MX/FX/RX, Gemini 10/10X, Apple DMP/Image-writer, NEC, Prowriter, & Okidata. Access any print command in Apple Writer II+ or IIe with a single keystroke. Underlining and superscripts on Epson MX and Gemini. \$14.95+\$1.00. Write or call. Use your VISA/MC/AMEX.
APPLETECH
3258 Westheimer
Houston, TX 77098
(713) 523-0444

A+ MART

GREAT DISKETTES Super Low Prices BIG NAME, NO NAME

You've used these diskettes a hundred times... and never knew their name. They're used by many of the major software manufacturers... and now you can buy them.

\$119 ea. 5 1/4" SSDD Qty. 50 **\$159** ea. 5 1/4" DSDD Qty. 50

5 1/4" SSDD-96TPI \$1.89 ea. 5 1/4" DSDD-96TPI \$2.14 ea

*** LIFETIME WARRANTY! ***

These are bulk packed diskettes with white Tyvek sleeves. No user identification labels or write-protect tabs are included.
Shipping: 5 1/4" DISKETTES—Add \$3.00 per 100 or fewer diskettes.
Payment: VISA or MASTERCARD accepted. COD orders only, add \$3.00 handling charge. Taxes: Ill. residents only, add 8% sales tax.

WE WILL BEAT ANY NATIONALLY ADVERTISED PRICE ON THE SAME PRODUCT AND QUANTITIES!

For orders only: 1-800-621-6827
(In Illinois: 1-312-944-2788)
(All other calls: 1-312-944-2788)
Hours: 9AM-5PM Central, Mon.-Fri.

DISK WORLD!, Inc.

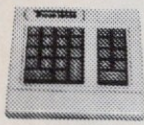
Suite 4806 • 30 East Huron Street • Chicago, Illinois 60611

DISK WORLD!

BIG NAME, Home of NO NAME DISKETTES

CIRCLE 790 ON READER SERVICE CARD

*** 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 Ile & II+ for only 129.00 plus 2.50 shipping.

APPLETECH



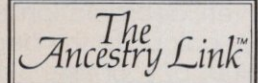
3258 Westheimer
Houston, Texas 77098

***** (713) 523-0444 *****

CIRCLE 792 ON READER SERVICE CARD

THE GENEALOGY PROGRAM

What You've been missing...



Featuring the Innovative LINKAGE ANALYZER™

An Easy to Use Professional and Family System used Worldwide. 1000 Ancestor Storage. Fast In-Memory Scrolling. 100 Entry Fields. Sorting and Indexing. Customize Your own Reports. Automatic Proofreader Report. A Self-teaching Tutorial. Uses 1 or 2 Disk Drives. Works with the Apple II+, Ile, III, the IBM™ PC & XT & PCjr and any Compatibles. Backed by SEVEN years of Genealogical Computing.

TO ORDER SEND \$69.95 SHIPPING INCL. FOR MANUAL AND DISKETTES.
PLEASE SPECIFY APPLE™ OR IBM™
VISA & MASTERCARD ACCEPTED
SEND CARD NUMBER, EXP. DATE, AND SIGNATURE

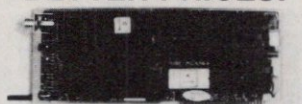
ACCELERATED LOGIC, INC.
108 East 38th Street Suite 902 New York, N.Y. 10016
(212) 683-7127

™ APPLE

™ IBM

CIRCLE 795 ON READER SERVICE CARD

BETTER PRODUCTS, BETTER PRICES!



80-Col Card. w/soft sw. & Inverse. \$89.95 ea
Z80 CP/M Card. Fully Softcard compatible. Software not included. \$69.95 ea

Apple Disk Controller. Size & Elect. compatible with Disk Card II. \$45.00 ea

EPROM WRITER CARD —
2716, 2732 & 2764 \$69.95 ea
5A SWITCHING POWER SUPPLY \$69.95 ea
DETACHABLE KEYBOARD w/195 function keys \$169.95 ea
PARALLEL PRINTER card w/graphic \$79.95 ea
1/2 HT DISK DRIVE — "The most quiet drive" \$179.95 ea
JOYSTICK for Apple \$19.95 ea
HIGH QUALITY JOYSTICK \$22.95 ea
5 1/4" DISC CASE — Holds 75, not 50 \$14.95 ea

Send \$1.00 for detailed catalog. Credit up to \$50.00 on return order. Add 5% for shipping & ins. Payment: VISA/MC, check/money order. No COD's please. WE SERVICE WHAT WE SELL! 1 year warranty on Joysticks.

BETTER PRODUCTS, INC.

765 S. State College Blvd., Suite E
Fullerton, CA 92631
(714) 526-7923

CIRCLE 791 ON READER SERVICE CARD

SAVE MORE THAN EVER ON 3M Scotch® DISKETTES

SALE PRICES ON 5 1/4" Prices good thru 9/30/84.

\$149 ea. 5 1/4" SSDD Qty. 20 **\$195** ea. 5 1/4" DSDD Qty. 20

LIFETIME WARRANTY!

5 1/4" SSDD-96TPI \$2.19 ea. 5 1/4" DSDD-96TPI \$2.75 ea.
8" SSDD \$2.05 ea. 8" SSDD \$2.50 ea.
8" DSDD...\$3.10 ea.

All diskettes are boxed in 10's with Tyvek sleeves, reinforced hubs on 5 1/4", user identification labels and write-protect tabs.
Shipping: 5 1/4" DISKETTES—Add \$3.00 per 100 or fewer diskettes.
Payment: VISA and MASTERCARD accepted. COD orders only, add \$3.00 handling charge. Taxes: Illinois residents only, add 8% sales tax.

WE WILL BEAT ANY NATIONALLY ADVERTISED PRICE ON THE SAME PRODUCT AND QUANTITIES!

For orders only: 1-800-621-6827
(In Illinois: 1-312-944-2788)
(All other calls: 1-312-944-2788)
Hours: 9AM-5PM Central, Mon.-Fri.

DISK WORLD!, Inc.

Suite 4806 • 30 East Huron Street • Chicago, Illinois 60611

DISK WORLD!

Authorized Distributor Information Processing Products



CIRCLE 793 ON READER SERVICE CARD

NEW! Lower Prices!! wabash® six-year warranted DISKETTES! \$14.90/box (10)

5 1/4" single-side, single-density; double-density add \$3/box. Add \$3 per order shipping. In Illinois add 7% sales tax.

Library Case-\$1.65 (with disk purchase)
Immediate shipment on VISA, Master Card 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 796 ON READER SERVICE CARD

SALES POWER

Computers & Electronics not only sells itself at a nice profit, it helps sell the hardware and software in your store too. Because it goes home with customers and continues to influence buying decisions long after you're closed for the day. Let's talk now.

CALL COLLECT:
(212) 725-7679

Or write:
Ziff-Davis Publishing
One Park Avenue
New York, NY 10016



Minimum order, 10 copies. We pay all shipping costs.

CIRCLE 794 ON READER SERVICE CARD

BUY DIRECT AND SAVE FULLY APPLE COMPATIBLE

Disk Controller for 2 Drives.....	\$ 39.00
Epson Printer Card (Parallel) w/Cables...	\$ 39.00
Graphic Pr Card w/Cable (Grappler + comp)	\$ 54.00
RS 232 Serial Card	\$ 54.00
Communication Card	\$ 54.00
16K RAM Card w/Cable	\$ 48.00
TTL IC Tester Card (for Known/unknown TTL IC's)	\$120.00
Z80 CP/M Card	\$ 54.00
80 Column Card (Videx compatible)	\$ 68.00
AutoTerm 80-Col w/Softswitch	\$ 78.00
Epson Writer Card (2716, 2732, 2764)	\$ 68.00
Super Serial Card w/Cable	\$ 90.00
Diskette Box w/Lock & Key-Holds 100	\$ 16.00
Surge Suppressor w/6 outlets	\$ 21.00
Epson Cooling Fan w/Surge & 2 outlets	\$ 34.00
Monitor Stand w/Tilt & Swivel	\$ 18.00
Disk Notcher w/Guide	\$ 10.00
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) 239-1854	

CIRCLE 794 ON READER SERVICE CARD

FANTASTIC LOW PRICES ON BASF QUALIMETRIC DISKETTES

* LIFETIME WARRANTY *
* PLASTIC STORAGE CASES *

\$139 ea. 5 1/4" SSDD Qty. 20 **\$189** ea. 5 1/4" DSDD Qty. 20

All BASF Diskettes include a PLASTIC DISK CADDY, Tyvek sleeves, reinforced hubs, user identification labels and write-protect tabs.

Shipping: 5 1/4" DISKETTES—Add \$3.00 per 100 or fewer diskettes.
Payment: VISA or MASTERCARD accepted. COD orders only, add \$3.00 handling charge. Taxes: Ill. residents only, add 8% sales tax.

WE WILL BEAT ANY NATIONALLY ADVERTISED PRICE ON THE SAME PRODUCT AND QUANTITIES!

For orders only: 1-800-621-6827
(In Illinois: 1-312-944-2788)
(All other calls: 1-312-944-2788)
Hours: 9AM-5PM Central, Mon.-Fri.

DISK WORLD!, Inc.

Suite 4806 • 30 East Huron Street • Chicago, Illinois 60611

DISK WORLD!

Authorized Reseller Information Processing Media

CIRCLE 797 ON READER SERVICE CARD

A+ MART

KITTY BASIC

Over 100 programs on 2 disks simple print statements through chess.

- | | |
|-----------------------|-----------|
| Includes: Probability | Dos |
| Animation | Hex |
| Textfiles | Binary |
| Graphics | Paddles |
| Arrays | Shapes |
| Screen Display | Edit |
| Monitor | Read Data |

\$49.50. Send to:
Kitty Computer
 1939 NW 32nd Place
 Gainesville, FL 32600

CIRCLE 798 ON READER SERVICE CARD

Attention!
 State of the Art[®]
 software users
 with Apple II, IIe
 your program can
 run 3 to 4x faster
 with our
Speedup System



The Lobero Building P.O. Box 2342
 Santa Barbara, Ca. 93120
 (805) 966-1140

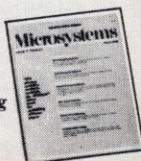
CIRCLE 799 ON READER SERVICE CARD

SALES POWER

Microsystems not only sells itself at a nice profit, it helps sell the hardware and software in your store too. Because it goes home with customers and continues to influence buying decisions long after you're closed for the day. Let's talk now.

CALL COLLECT:
 (212) 725-7679

Or write:
Ziff-Davis Publishing
 One Park Avenue
 New York, NY 10016



Minimum order, 10 copies. We pay all shipping costs.

BIG NAME, NO NAME DISKETTES: THE BEST BUY YOU CAN FIND!

LIFETIME WARRANTY!

\$119 ea. 5 1/4" SS-DD Qty. 50
\$159 ea. 5 1/4" DS-DD Qty. 50
\$189 ea. 5 1/4" SS-DD-96TPI Qty. 50
\$214 ea. 5 1/4" DS-DD-96TPI Qty. 50

SOFT SECTOR ONLY!

(These are bulk packed diskettes with reinforced hubs and white Tyvek sleeves. No user identification labels or write-protect tabs are included.)

You've used these diskettes a hundred times when you bought software...and never knew their name. Now these same diskettes that software manufacturers use are available to you at tremendous savings.

SUPER SPECIAL!



Order 50 BIG NAME, NO NAME Diskettes on this special offer and you can get an Amaray Media Mate 50 for only \$9.99 (shipping included). Normally, a \$14.95 retail value, this is one of the best designed disk storage units we've seen. Special slots and ridges for stacking. A great buy.

With 50 BIG NAME 5 1/4" Diskettes **\$9.99**
 Ordered alone: **\$10.95** + \$2.00 Shpng.

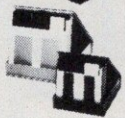
3M HEADCLEANING KITS

Stop swearing and start cleaning. This non-abrasive cleaning kit has everything you need for 30 applications. **\$18.00** + \$1.50 Shpng.



DISKETTE 70 STORAGE: STILL A GREAT BUY

Dust-free storage for 70 5 1/4" diskettes. Six dividers included. An excellent value. **\$11.95** + \$3.00 Shpng.



DISK CADDIES

The original flip-up holder for 10 5 1/4" diskettes. Beige or grey only. **\$1.65 ea.** + 20¢ Shpng.

PRINTER RIBBONS AT BARGAIN PRICES!

Brand new ribbons produced to manufacturer's specs.
 Epson MX-70/80 **\$3.58** ea. + 25 Shpng.
 Epson MX-100 **\$6.99** ea. + 25 Shpng.
 Okidata Micro 83 **\$1.48** ea. + 25 Shpng.
 Okidata Micro 84 **\$3.66** ea. + 25 Shpng.

Shipping: 5 1/4" DISKETTES—Add \$3.00 per 100 or fewer diskettes. Other Items: Add shipping charges as shown in addition to diskette shipping charges. Payment: VISA and MASTERCARD accepted. COD orders only, add \$3.00 handling charge. Taxes: Illinois residents only, add 8% sales tax.

FOR ORDERS ONLY:

1-800-621-6827
 (In Illinois: 1-312-944-2788)

INFORMATION & INQUIRIES:

1-312-944-2788 only!

HOURS: 9AM - 5PM Central Time,
 Monday - Friday

WE WILL BEAT ANY NATIONALLY ADVERTISED PRICE ON THE SAME PRODUCTS AND QUANTITIES!

DISK WORLD!, Inc.

Suite 4806 • 30 East Huron Street • Chicago, Illinois 60611

DISK WORLD!

Home of **BIG NAME, NO NAME DISKETTES**

CIRCLE 110 ON READER SERVICE CARD

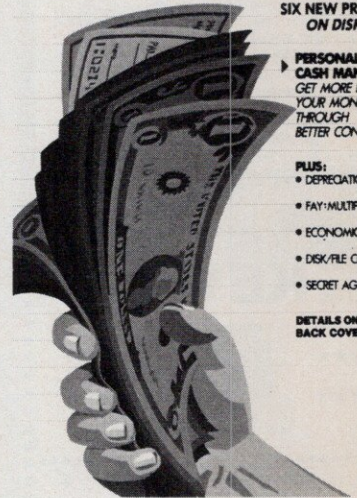
COMING UP

Volume 1, Number 5 on Sale: 9-10-84

A LIBRARY OF SOFTWARE FOR APPLE II SERIES COMPUTERS

A+DISK

USER'S MANUAL VOL. 1 (NO. 5) \$34.95



SIX NEW PROGRAMS ON DISKETTE

PERSONAL CASH MANAGER: GET MORE FROM YOUR MONEY THROUGH BETTER CONTROL

- PLUS:**
- DEPRECIATION PAK
 - FAY MULTIPLAY
 - ECONOMIC PE
 - DISK/FILE COMPARATOR
 - SECRET AGENT 3

DETAILS ON BACK COVER

PERSONAL CASH MANAGER

Organize, analyze, and verify all your cash activity. Establish your cash accounts, create your charge categories (income and expense items), then enter your cash transactions. The program does the rest. Manage your money more effectively.

DEPRECIATION PAK

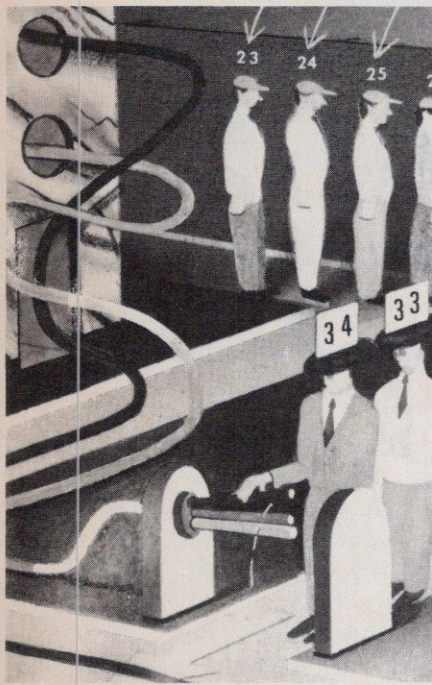
Make the most of your assets. Create a permanent reference file of all your assets, choosing from seven depreciation methods. Then calculate the depreciated values of your assets at any point in time.

SPECIAL REQUIREMENTS: PRINTER

FAY: MULTIPLAY

Enjoy the educational, arcade-style multiplication training presented by Fay. Fay teaches that multiplication is based on the addition of a group of identical numbers as she counts out the solution to every problem. Learn multiplication by demonstration.

COMING UP



Homebrew Hardware

Ten Programs to Help
Students Improve Their SAT
Scores

Software on a Shoestring
ProDOS

Apples in Law:
Legal Self-Help Software
Consumer Rights

Double Hi-Res Graphics

Music-Education Software

The Macintosh Section:
MacDraw

The Mac According to
Hogan

That's Entertainment:
Black Belt
Stellar 7

Insuring Your Apple

INDEX TO ADVERTISERS

READER SERVICE NO.	ADVERTISERS	PAGE	READER SERVICE NO.	ADVERTISERS	PAGE
250	Advanced Computer Products	182	115	Micro City	30
	Alf Products	64	140	Microcom, Inc.	107
203	Almaly Trading Corporation	158	132	Micro Design	37
	Applied Engineering	43	150	Micro Lab, Inc.	41
388	Artic Technologies, Inc.	146	319	Microsoft	12-13
	Artsci	141	320	Microsoft	48
108	Artsci	140		Micro Exchange, The	10
213	Assimilation Process	102		Micro Exchange, The	144
305	Axlon	108	237	Nibble Notch	173
178	Axlon	76	125	Nonagon Software	23
295	BASF	112	330	Northeastern Software	147
156	Baudville	55	231	Novation	69
249	Beagle Brothers	24	173	OHM/Electronics	38
112	Blue Chip Software	170	161	OHM/Electronics	130
227	Britco	26	352	One Step Software	181
	Business Computers of Peterborough	155	252	Orange Micro	166
306	Byte General, The	174	141	Origin Systems	125
116	Bytes and Pieces	183	360	Organizational Software Corporation	105
145	Caribbean Computer Sales, Inc.	184	200	Patton & Patton Software Design	82
292	CDA Computer Sales	179	376	PC Network	94-95
184	Central Point Software	78	133	Penguin Software	8
271	CH Products	157	155	Penguin Software	92
311	Compuserve	31	118	Pictronics	83
220	Computer Colorworks, The	32-33	152	Polaroid	16-17
163	Computer Cover Co.	104	146	Professor Jones	142
290	Computer Discount Products	132	299	Program Plus	131
135	Computer Mail Order	184	158	Prometheus Products	52
129	Conroy-Lapointe and Computer Exchange	27	122	Prometheus Products	159
234	Core Concepts	173	164	Pro/Pac	165
111	CPU	61	175	Protecto Enterprizes	46
139	Creative Solutions	119	127	Protecto Enterprizes	47
143	Creighton Development	127	310	Quark, Inc.	148
375	Custom Computer Products	142		Quorum Int'l Unlimited	146
138	Davong Systems	101	192	Random House	152
102	Dennison Computer Supplies	C-4	131	Rio Grande	124
222	Disk World, Inc.	77	183	Robo Systems	71
361	Disk World, Inc.	151		Safeware	135
110	Disk World, Inc.	194	239	Santa Cruz Operations	109
225	Dow Jones Software	121	200	Scarborough Systems, Inc.	4
	Dow Jones Software	122	206	Scarborough Systems, Inc.	6-7
	Dow Jones Software	123	173	Scooter	38
170	Enhancement Technology Corp.	1	161	Scooter	130
278	Expertelligence	106	103	Sensible Software	85
159	Fiberbilt	22	399	Sensible Software	28
390	Fogware	26	398	Sensible Software	28
396	Formula International	150	147	SGC	188
148	Frazier, Peper & Associates	126	168	Silicon Express	179
154	Funk Software	50	362	Sinequanon	165
265	Garden of Eden	169	260	Sir Tech	138
338	Haba Systems	96-97	177	Softech	118
114	Harper & Row Software	181	162	Softronics	20
349	Harvard Associates	114	334	Software Arts	116
	H & E Computronics	C-2	149	Software Arts	187
101	Hayes Microcomputer Products, Inc.	56	155	Software Discounters of America	185
266	Hesware	49	238	Spies Laboratories	185
109	Hesware	51	286	Street Electronics	5
212	Hesware	53	324	Street Electronics	135
144	Interactive Microware	158	205	Tecmar, Inc.	86
276	Jameco Electronics	172	353	Telexmax	54
323	Justin Case	114	283	Texprint	136
277	Kensington Microwave	C-3	255	Track House	171
134	Kensington Microwave	178	106	Tronix/Monogram	134
301	Koala Technologies	70	123	Transend	44
	Living Videotext	154	190	Utilico Software	42
214	Magnum Software	160	142	Videx	91
207	McGraw Hill	25	136	Vufax	115
272	Megahaus Corporation	84	165	Windslow Sales	143
			195	Zoom Telephonics	180

BEFORE YOU BUY ANOTHER PIECE OF SOFTWARE

CONSULT THIS BUYER'S GUIDE

Selecting the programs, systems and games for your personal computer can be an ordeal. You want the best package that's compatible with your system—at the right price!

LOOK NO FURTHER. THE OLYMPIC EDITION OF THE *CREATIVE COMPUTING 1984 SOFTWARE BUYER'S GUIDE* IS HERE!

The Editors of *CREATIVE COMPUTING* have awarded the Olympic Gold, Silver and Bronze medals to the leading software packages in the following categories:

- Full-feature word processors
- Home word processors
- Education: Pre-school, Elementary and Secondary
- Spreadsheets
- Database packages
- Games

Full descriptions, product reviews and screen photos of each award winner make this the definitive guide to the leading software of 1984!

In addition to the Olympic Ratings Guide, you'll find:

- A complete directory of software products with full program descriptions, system requirements and prices, PLUS
- A full listing of software



manufacturers, with names, addresses, types of software made and compatible hardware for each product!

If you own an Apple, Atari, Commodore 64, TRS-80 Color Computer, or any IBM PC, and you're in the market for new business, educational, personal productivity, recreational and utility programs, take the ordeal out of shopping...save money and get the best package for your system *at the best price!*

Order your copy of the CREATIVE COMPUTING 1984 SOFTWARE BUYER'S GUIDE today!

Also available at your local newsstand and computer store.

Creative Computing 1984

SOFTWARE BUYER'S GUIDE

CN 1914, Morristown, NJ 07960

FB4F

YES!

I'm enclosing \$4.95 (\$3.95* plus \$1 postage & handling) for the 1984 SOFTWARE BUYER'S GUIDE. (Outside USA \$6.)

Mr./Mrs./Ms. _____ print full name

Address _____

City/State/Zip _____

*Residents of CA, NJ and NY State add applicable sales tax.



THE INDEPENDENT GUIDE FOR apple COMPUTING

Please indicate which of the following microcomputers you currently own and/or plan to buy in the next 12 months.

Table with 3 columns: Computer Model, 1 Own, 2 Plan to Buy. Rows include Apple II, Apple IIc, Apple IIe, Apple III, Lisa, Macintosh, Other (specify), and None.

3 For what, if any, business application(s) do you use the microcomputer you currently own?

Grid of numbers for marking responses, ranging from 101 to 1000.

PLEASE PRINT CLEARLY—Use only one card per person.

Form fields for NAME, PHONE NO., COMPANY, TITLE, ADDRESS, APT., CITY, STATE, ZIP, and a note about zip code delivery.

4 [] Please send me 1 year (12 issues) of A+ for \$19.97 and bill me. (Full 1 year subscription price \$24.97.)



THE INDEPENDENT GUIDE FOR apple COMPUTING

Please indicate which of the following microcomputers you currently own and/or plan to buy in the next 12 months.

Table with 3 columns: Computer Model, 1 Own, 2 Plan to Buy. Rows include Apple II, Apple IIc, Apple IIe, Apple III, Lisa, Macintosh, Other (specify), and None.

3 For what, if any, business application(s) do you use the microcomputer you currently own?

Grid of numbers for marking responses, ranging from 101 to 1000.

PLEASE PRINT CLEARLY—Use only one card per person.

Form fields for NAME, PHONE NO., COMPANY, TITLE, ADDRESS, APT., CITY, STATE, ZIP, and a note about zip code delivery.

4 [] Please send me 1 year (12 issues) of A+ for \$19.97 and bill me. (Full 1 year subscription price \$24.97.)



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

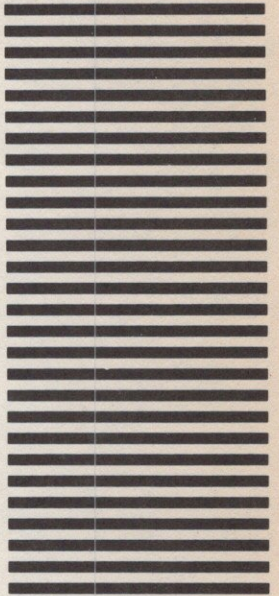
BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 27346, PHILADELPHIA, PA

POSTAGE WILL BE PAID BY ADDRESSEE



P.O. Box 7715
Philadelphia, PA 19101



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

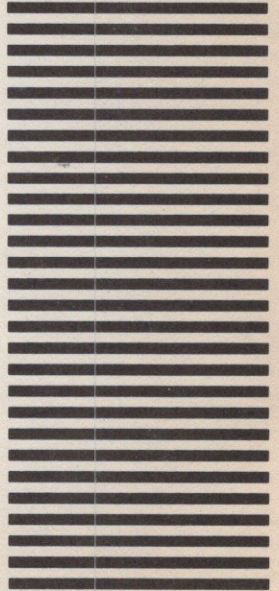
BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 27346, PHILADELPHIA, PA

POSTAGE WILL BE PAID BY ADDRESSEE



P.O. Box 7715
Philadelphia, PA 19101



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 performance to 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.



**K KENSINGTON
MICROWARE™**

CIRCLE 277 ON READER SERVICE CARD



IBM PC is a registered trademark of International Business Machines Corporation

INTRODUCING A NEW BREED OF ELEPHANT.™



The Elephant Memory System

Introducing Elephant Premium Floppy Disks. Specially designed for your most demanding business needs, they'll protect your data when other disks won't. In fact, they exceed industry certification standards by more than 50%. Which is why we say Elephant Never Forgets.™

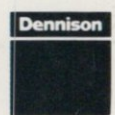
Plus, Elephant Premium is the only floppy disk that features The Elephant Memory System™ — a labeling and filing system that makes it easy to store, reference and protect your disks.

And since they're compatible with the IBM PC® and other popular business computers, our Elephants will be right at home in your office.

For the Elephant dealer nearest you, call 1-800-343-8413. In Massachusetts, call collect 617-769-8150.

ELEPHANT NEVER FORGETS.

CIRCLE 102 ON READER SERVICE CARD



Serving business for over 140 years.