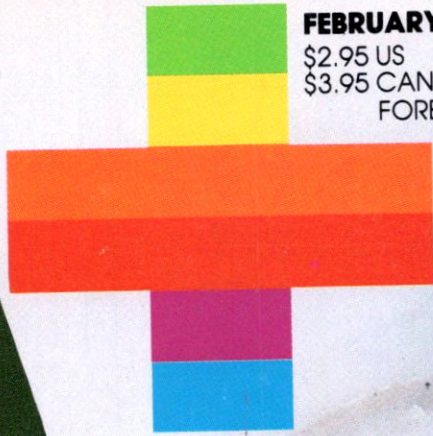
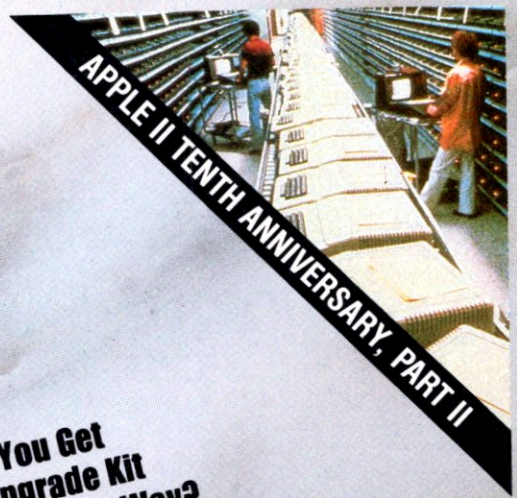


A



FEBRUARY 1987

\$2.95 US
\$3.95 CANADA,
FOREIGN



The #1 Apple II Magazine

Downloaded from www.Apple2Online.com

Should You Get
Apple's Upgrade Kit
or Is There a Better Way?

THE IIGS UPGRADE

APPLEWORKS REPORT

Annotated Bibliography,
Power Print, and
Keyword Searching

EVERYBODY'S PLANNER

Project Planning
and Management

IIGS COLOR MONITORS

Analog RGB Monitors
and Other Options

QUICK TAKE

Review of Uptime



*****3-DIGIT 371
#GAS0116S091 8#680488 8H

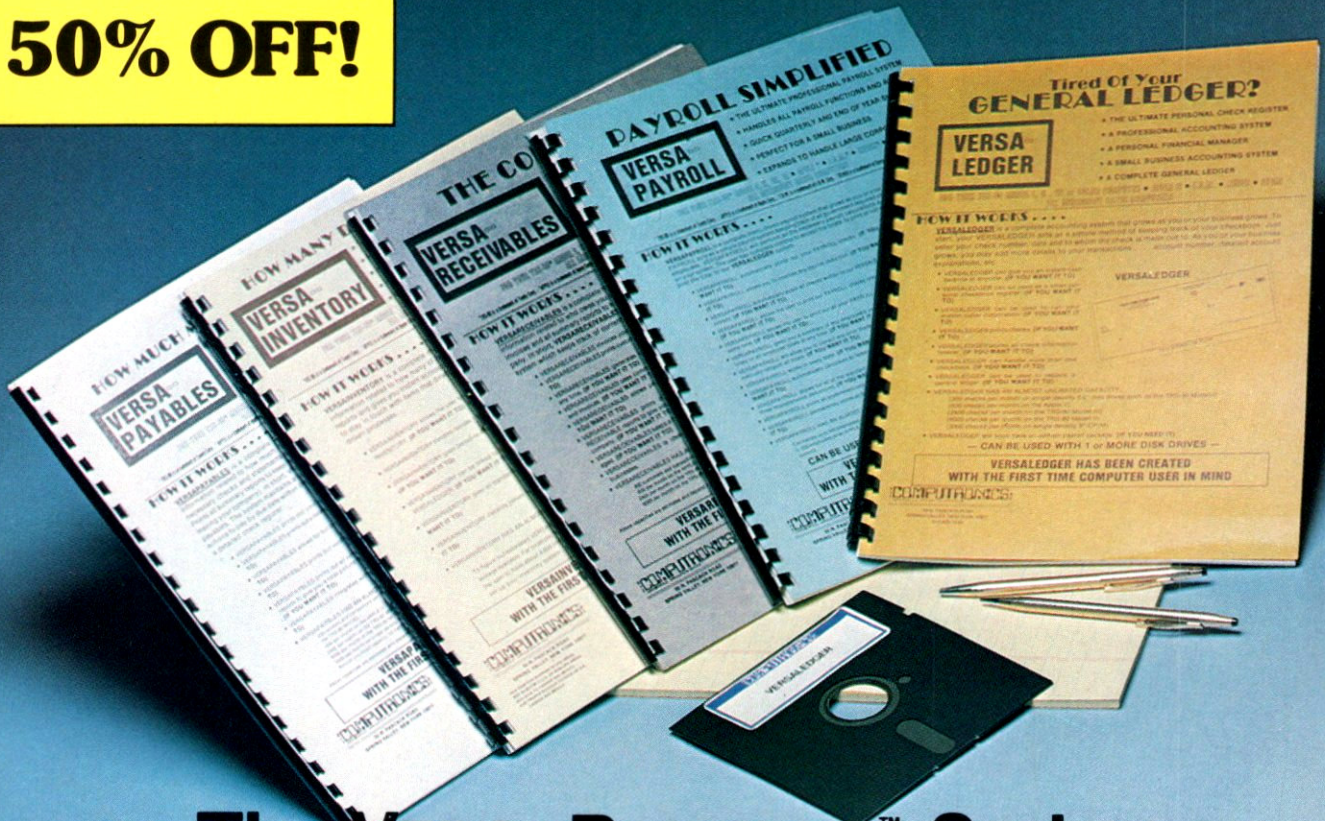
DR KENNETH BUCHHOLZ
WWW.APPLE2ONLINE.COM



Introducing the Most Powerful Business Software Ever!

FOR YOUR IBM • APPLE • MAC • TRS-80 • KAYPRO • COMMODORE • MSDOS OR CP/M COMPUTER*

50% OFF!



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.

FOR APPLE & MACINTOSH OWNERS ONLY!

Apple and Macintosh owners *only* may now take 50% off our listed price of any module(s) from our VersaBusiness Series. All sales are final (our normal 30-day money back guarantee does not apply to sale items).

To Order: (Outside NY State) (Inside NY State)
Write or call Toll-free 1-800-431-2818; 1-800-331-0362
Other Inquiries Call 914-425-1535

*add \$4.95 for shipping in UPS areas *add \$6.95 to CANADA or MEXICO
*add \$5.95 for C.O.D. or non-UPS areas *add proper postage elsewhere

DEALER INQUIRIES WELCOME

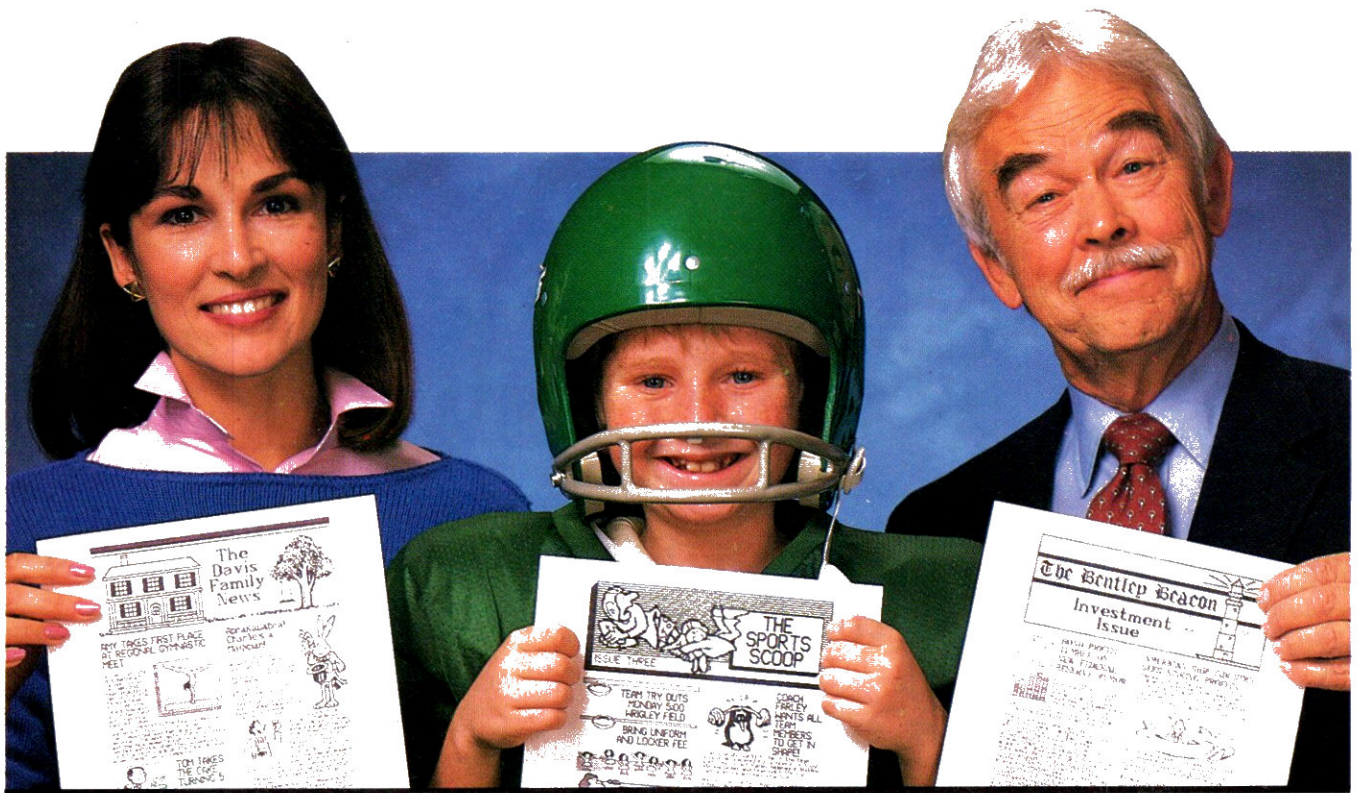
All prices and specifications subject to change / Delivery subject to availability.



COMPUTRONICS!

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

CIRCLE 335 ON READER SERVICE CARD



The Newsroom™

Design, Create and Print Out Your Very Own Newspaper.



Look who's making news.

The Newsroom™ is an exciting program complete with everything you need to create fun and sophisticated newspapers that are uniquely yours.

Families, schools and businesses everywhere are using The Newsroom to tell their story.

Here's what you can do.

The Newsroom is surprisingly easy to use. You're in control of all design elements, starting with over 600 pieces of delightful clip art included in the program. Combine pieces, alter them, or create your own



clip art included in the program. Combine pieces, alter them, or create your own



images with The Newsroom's dynamic drawing and editing tools. Whatever the nature of your news, you'll find art that fits the situation.

You can enter text with The Newsroom's word processor in any of five different fonts that automatically wrap around pictures. You can print out on legal or letter size paper using any popular computer printer. And, if you have a modem, you can send and receive newspapers between other owners of The Newsroom, no matter what computer they're using.

Now Available for
Apple II+, IIe, IIc
IBM PC
Commodore 64/128

More clip art to add to your collection.

Clip Art Collection Volume 1™ offers an additional 600 pieces of art in a variety of categories. You'll find the perfect piece to illustrate even the rarest of topics.

Clip Art Collection Volume 2™ offers over 800 pieces of art for businesses large and small.

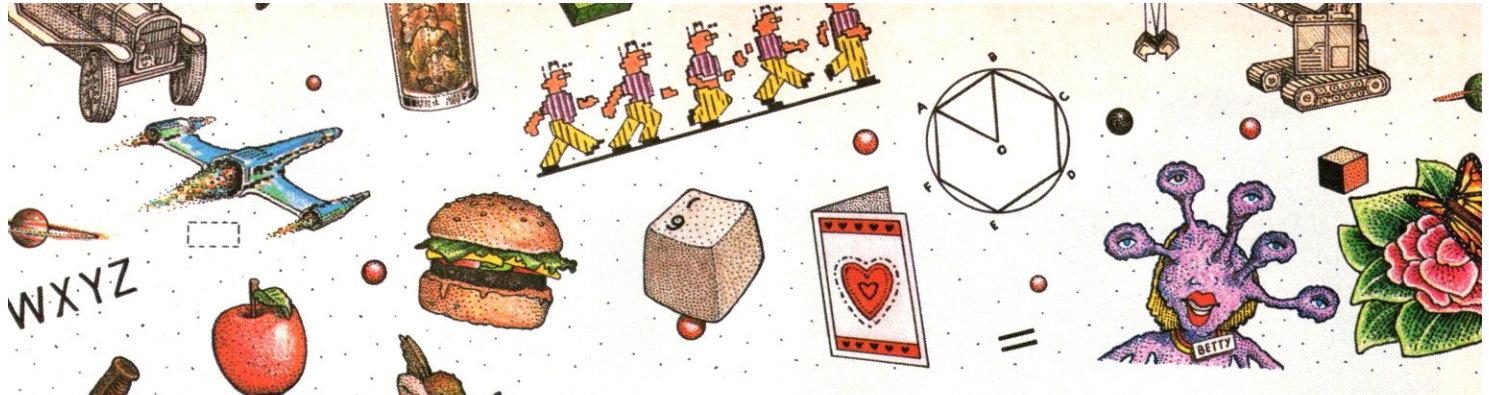


The Newsroom is for everyone. Look for it at your favorite software store.

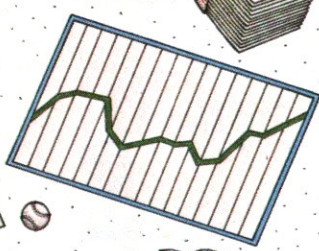
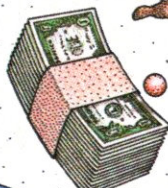
SPRINGBOARD

The Newsroom: Commodore 64/128—\$49.95, Apple II+, IIe, IIc & IBM PC—\$59.95, Clip Art Collection Volume 1—\$29.95, All formats, Clip Art Collection Volume 2—\$39.95, All formats, Springboard Software, Inc. • 7808 CreekrIDGE Circle • Minneapolis, MN 55435 • (612) 944-3915.

CIRCLE 261 ON READER SERVICE CARD



WXYZ



N
%



YOU'LL SWEAR YOU

Eleven new ways to do things like they've never been done before.

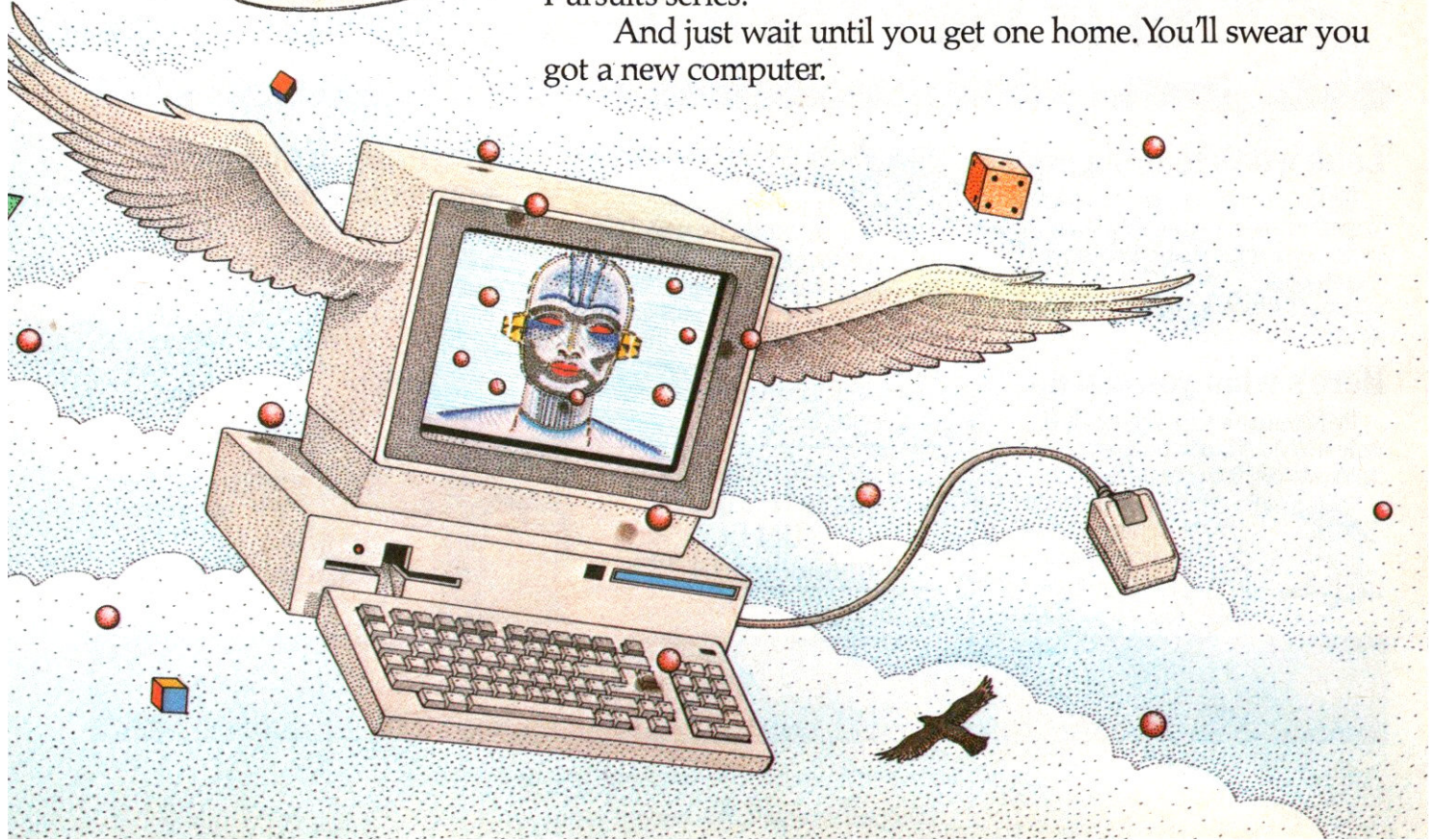
Leave it to Brøderbund to do things a little differently. All kinds of things.

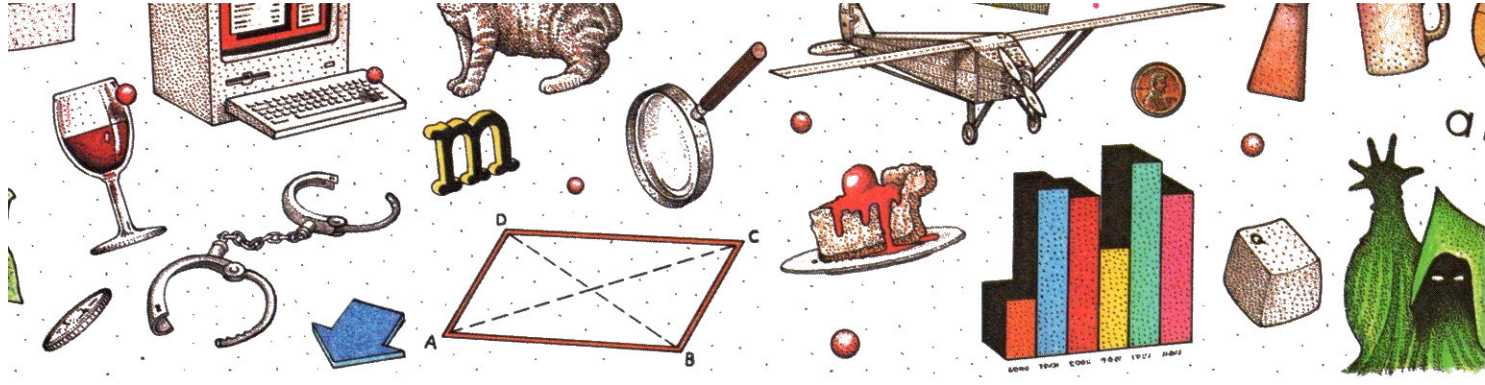
Like learning how to type. Keeping the family books. Or making your own toys and printing your own party invitations.

At Brøderbund, we've become famous for software that not only seems to transform your computer, but does it with a sense of style, adventure and fun that quite simply makes you feel great about what you can accomplish with your computer.

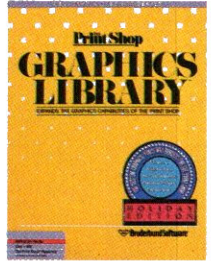
This fall, our exciting releases include entries in our Productivity, Entertainment, Creativity and Hobbies & Pursuits series.

And just wait until you get one home. You'll swear you got a new computer.

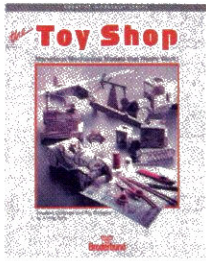




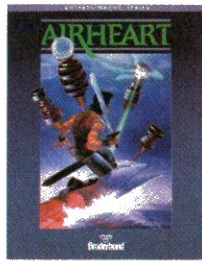
GOT A NEW COMPUTER.



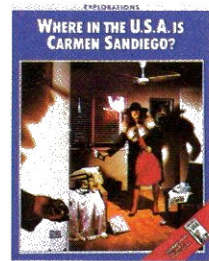
The Graphics Library Holiday Edition has over 100 custom graphics, fonts and borders specially designed for 27 holidays.



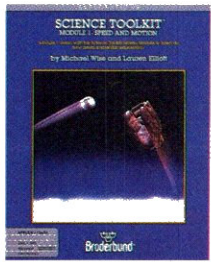
Make your own toys. Twenty marvelous mechanical models that really work.



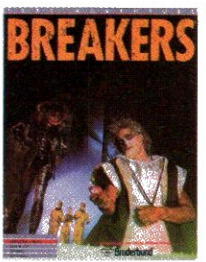
A double hi-res, 3-D color adventure. Pilot your jet sled through sky and sea and try to save the prince.



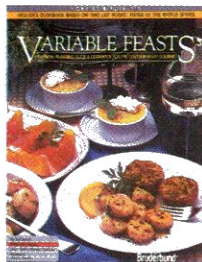
A mystery educational adventure where you're the detective and the whole USA is your beat.



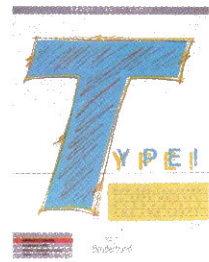
Enhance Science Toolkit Master Module with new tools, new experiments and new knowledge.



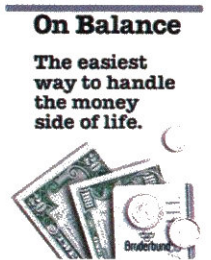
The Lau people have a slight problem. Out of control social misfits called Breakers. Help!



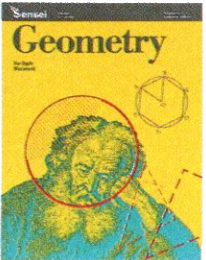
A complete guide to party planning and entertaining with food. Includes menus, recipes and shopping lists.



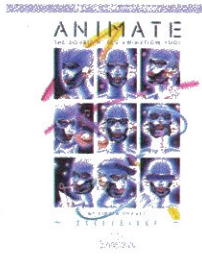
The latest research meets the computer. You learn to type quickly, accurately and for keeps.



Take control of the family finances! This really is the easiest way to manage the money side of life.



An interactive geometry tutor with all the excitement of Macintosh graphics.

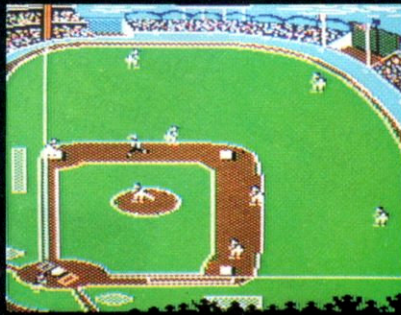
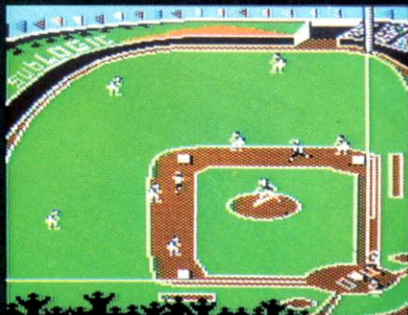


Create detailed drawings and bring them to life in double hi-res movies and cartoons.

Broderbund®
 Look for Broderbund Products at your favorite software dealer or call Broderbund at (415) 479-1185.

● APPLE II ▲ ATARI 520ST ◌ COMMODORE ■ IBM IBM ● MACINTOSH

© Broderbund Software, Inc. 17 Paul Drive, San Rafael, California 94903-2101
 Apple, IBM, Commodore and Atari are registered trademarks of Apple Computer, Inc., International Business Machines Corp., Commodore Electronics, Ltd. and Atari Corp., respectively. Macintosh is a trademark licensed to Apple Computer, Inc.



B A S E B A L L

From the author of FOOTBALL comes an incredibly sophisticated, realistic and complete statistical baseball simulation for one or two players. Game play, manager's functions, graphics, and a statistical library establish BASEBALL as the ultimate sports simulation program.

Game Play

BASEBALL's underlying statistical framework simulates the realities of baseball like never before. Within this framework, the program considers each player's batting statistics against both left-handed and right-handed pitchers, and pitchers statistics vs. left- and right-handed batters. Every player's fielding and base-running abilities are also considered (an important factor when attempting to steal a base, etc.).

Select the team you'd like to manage, then pick the team you want to play against. Every team from the 1985 season is accurately represented, along with eight classic teams from the past. Determine your starting lineup, designate a starting pitcher, and make player substitutions when necessary. You call the plays, offense and defense. In a one-player game, your computer opponent displays uncanny intelligence in reacting to your managing decisions.

Manager's Functions

Built-in manager's functions provide extra versatility. You can trade team players, draft new* players, create your own team, even form your own league. The program's stat-tracker keeps track of your team's season statistics and individual player year-to-date stats.

CIRCLE 268 ON READER SERVICE CARD

Graphics

BASEBALL's highly-detailed animated graphics give you a perfect view of the playing field. Each player acts and moves individually on every play. Three different stadiums are included with the program, and an optional Stadium Disk lets you play in any Major League stadium in the United States.

Statistics

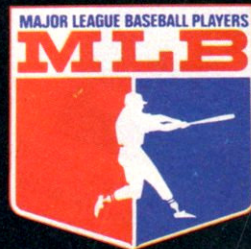
BASEBALL can maintain a complete statistical record of each team player's performance. All player stats and game Box Scores can be displayed on the screen or sent to an external printer for a hardcopy printout.

BASEBALL also includes a unique Auto-Play option that lets the computer play a complete game in less than three minutes. A whole series of games can be played unattended, and an entire season of player and team statistics can be compiled over several days with all game stats printed out for your records.

See Your Dealer...

or write or call for more information. BASEBALL is available on disk for the Apple II line of computers. For direct orders please enclose \$49.95 plus \$2.00 for shipping and specify UPS or first class mail delivery. Visa, MasterCard, American Express, and Diners Club cards accepted.

Apple II is a trademark of Apple Computer, Inc.



© 1986 MLBPA

subLOGIC

Corporation
713 Edgebrook Drive
Champaign IL 61820
(217) 359-8482 Telex: 206995

Order Line: (800) 637-4983
(except in Illinois, Alaska, and Hawaii)

A+

The #1 Apple II Magazine

PUBLISHER SYDNEY H. ROGERS
EDITOR IN CHIEF FREDERIC E. DAVIS
TECHNICAL EDITOR CHIP CARMAN
SENIOR EDITOR LISA RALEIGH
SENIOR COPY EDITOR EVA LANGFELDT
MANAGING EDITOR LESLIE STEERE
ASSOCIATE EDITOR CAROL PERSON
EDITORIAL ADMINISTRATOR MARJORIE GAE BRANDON
EDITORIAL ASSISTANT MARY BOHANNON
ART DIRECTOR PETER A. TUCKER
ASSOCIATE ART DIRECTOR FABIAN COOPERMAN
ART ASSISTANT AE KYUNG KUARK
MECHANICAL ARTISTS STEVE CAMPBELL
 NANCY BROWN
 SAHNTA PANNUTTI
CONTRIBUTING EDITORS CHARLES RUBIN
 MICHAEL CALLERY ROBERTA SCHWARTZ
 GARY LITTLE RHODA SIMMONS
 RUSS LOCKWOOD DAVID THORNBERG
 STEVE ROSENTHAL MICHAEL WIESENBERG

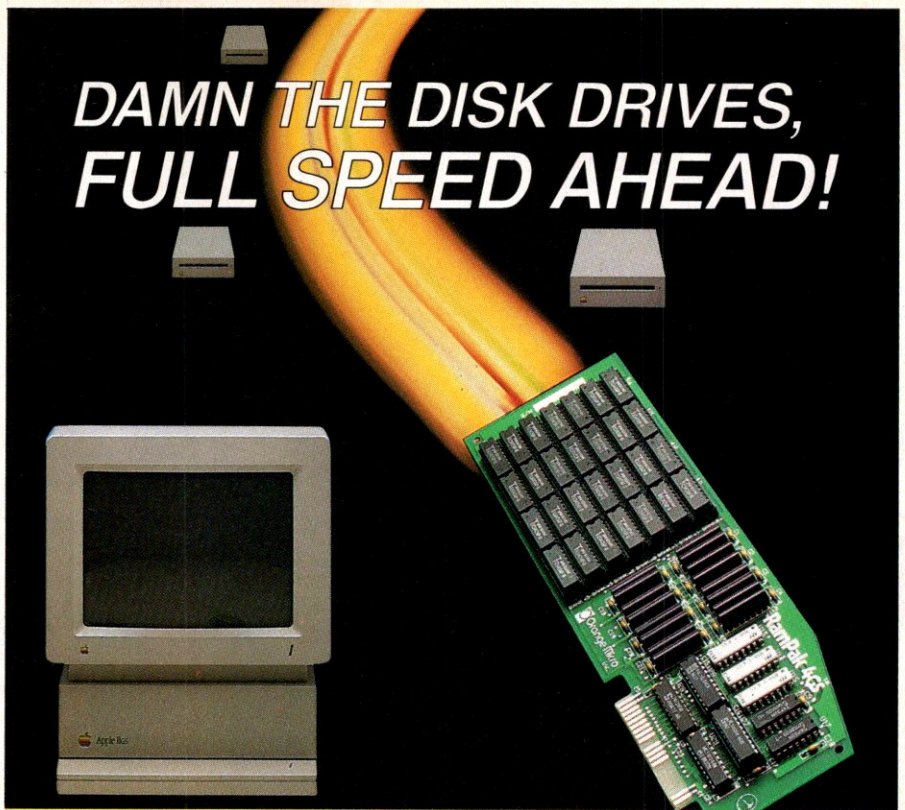
EDITORIAL OFFICE
 11 DAVIS DRIVE
 BELMONT, CA 94002
 (415) 598-2290
ADVERTISING/BUSINESS OFFICE
 ZIFF-DAVIS PUBLISHING CO.
 A DIVISION OF ZIFF
 COMMUNICATIONS CO.
 ONE PARK AVENUE
 NEW YORK, NY 10016
 (212) 503-5209
 A + , P.O. BOX 2965
 BOULDER, CO 80322
 (303) 447-9330

SUBSCRIPTION INQUIRIES

ADVERTISING DIRECTOR SUZANNE M. ZELLNER
NORTHEAST MANAGER THOMAS E. RICHARDSON
SOUTHEAST MANAGER PETER STANGEL
MID-WEST MANAGER THOMAS J. LUTZKE
NORTHWEST MANAGER DAVID J. EZEQUELLE
SOUTHWEST MANAGER CHRIS M. TICE
ADVERTISING COORDINATOR MICHAEL CROUCH
ASSISTANT TO PUBLISHER HELEN KEMPISTY
SINGLE-COPY SALES DIRECTOR ROBERT WOLTERS DORF
SINGLE-COPY RETAIL SALES CAROL BENEDETTO
CIRCULATION MANAGER CHARLES MAST
CLASSIFIED ADVERTISING KATHRYN CUMBERLANDER
ADVERTISING PRODUCTION MANAGER LISA FRANEY

ZIFF-DAVIS PUBLISHING COMPANY
 A DIVISION OF ZIFF COMMUNICATIONS COMPANY
PRESIDENT KENNETH H. KOPPEL
SENIOR VICE PRESIDENT, MARKETING PAUL CHOOK
VICE PRESIDENT, OPERATIONS BAIRD DAVIS
VICE PRESIDENT, CONTROLLER JOHN VLACHOS
VICE PRESIDENT, CREATIVE SERVICES HERBERT STERN
VICE PRESIDENT, CIRCULATION ALICIA MARIE IVANS
VICE PRESIDENT, CIRCULATION SERVICES JAMES RAMALEY
VICE PRESIDENT, MARKETING SERVICES ANN POLLAK ADELMAN
VICE PRESIDENT, DEVELOPMENT SETH ALPERT
VICE PRESIDENT HUGH TIETJEN
BUSINESS MANAGER GARY A. GUSTAFSON
PRODUCTION DIRECTOR WALTER J. TERLECKI
ZIFF COMMUNICATIONS COMPANY
CHAIRMAN PHILIP B. KORSANT
PRESIDENT KENNETH H. KOPPEL
SENIOR VICE PRESIDENT PHILIP SINE
VICE PRESIDENT LAURENCE USDIN
VICE PRESIDENT WILLIAM PHILLIPS
VICE PRESIDENT J. MALCOLM MORRIS
VICE PRESIDENT STEVEN C. FEINMAN
TREASURER SELWYN I. TAUBMAN
SECRETARY BERTRAM A. ABRAMS

A+ THE INDEPENDENT GUIDE TO APPLE COMPUTING ISSN (#0740-1590) is published monthly for \$24.97 one year, \$43.97 two years, and \$57.97 three years. Additional postage \$6 for Canada, \$6 other foreign by Ziff-Davis Publishing Co., a division of Ziff Communications Company, One Park Ave., New York, NY 10016. Second-Class Postage paid at New York, NY 10016 and at additional mailing offices. **POSTMASTER:** Send address changes to A+, P.O. Box 2965, Boulder, CO 80321.
 A+ is an independent journal, not affiliated in any way with Apple Computer, Inc. Apple is a registered trademark of Apple Computer, Inc. Entire contents Copyright © 1986 Ziff-Davis Publishing Co., a division of Ziff Communications Company. All rights reserved; reproduction in whole or in part without permission is prohibited. The following are trademarks of Ziff-Davis Publishing Co., a division of Ziff Communications Company: A+, A+. The Independent Guide for Apple Computing, MacTips, Rescue Squad, That's Entertainment. **PERMISSIONS:** Material in this publication may not be reproduced in any form without permission. Requests for permission should be directed to the Licensing Manager, Jean Lamensdorf, Ziff-Davis Publishing Company, a division of Ziff Communications Company, 1 Park Ave., New York, NY 10016. BPA membership (Selected Market Audit Division) applied for Oct. 1983. **BPA**



The RamPak 4Gs™ propels your IIgs to incredible performance levels.

Your disk drive can torpedo performance

When your computer pauses to access data from the disk drive, you slow down. Adding a RamPak 4Gs Memory Subsystem reduces your dependence on the disk drive and speeds up your Apple IIgs. The RamPak 4Gs allows your Apple® IIgs to reach its full potential as a powerful computing system. With a standard memory of 512K, the RamPak 4Gs can easily be expanded to 4 megabytes, giving you unprecedented processing capabilities.

RAM power, not just RAM expansion

Also included is our exclusive Memory Management Software, which drastically increases the throughput of your system. The Disk Caching feature stores your most

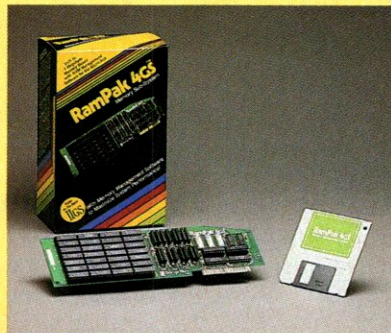
often used data in main memory, eliminating the time you wait for disk access. Our unique Dynamic Cache Allocation will manage system memory automatically, so your system will always be at peak efficiency.

Unique user interface

All of the power of your RamPak Memory Subsystem is selectable through intuitive pull-down menus. Now, for the first time, you can enjoy the powerful simplicity of managing your system just by clicking your mouse. Even the extensive memory diagnostics can be selected from the straightforward menu.

Available now at your local Apple Dealer

The RamPak 4Gs is an important part of any Apple IIgs system. You can relax knowing that it's from Orange Micro. With seven years in the Apple enhancement business, we are recognized as the leader for innovative products and excellent support. Ask your dealer for the RamPak 4Gs and go full speed ahead with your Apple IIgs.



© Orange Micro, Inc., 1986



1400 N. Lakeview Ave., Anaheim, CA 92807
 (714) 779-2772 Telex: 5101001014 ORANGE MICRO

IIGS UPDATE

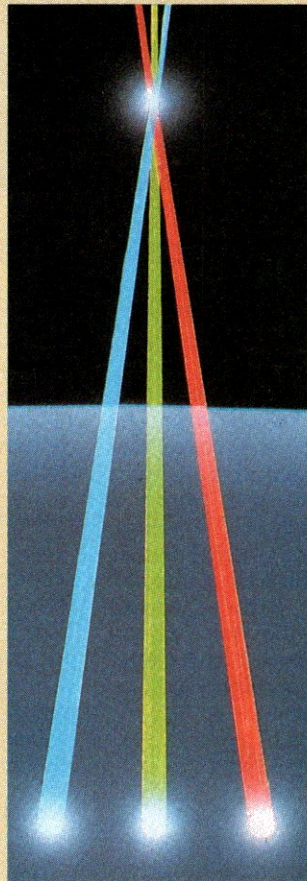
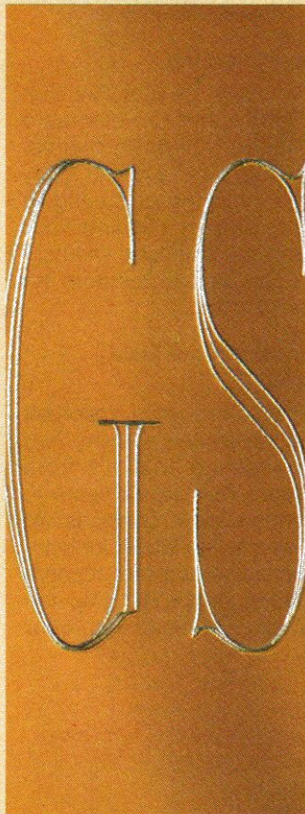
COVER STORY

34

UPGRADING TO THE IIGS

BY GARY B. LITTLE

Apple will soon provide a IIGS upgrade kit for IIe owners. But that's only one way to step up to the power of the IIGS. No matter which approach you prefer, you can take many of your old peripherals and software programs along with you.



APPLE IIGS

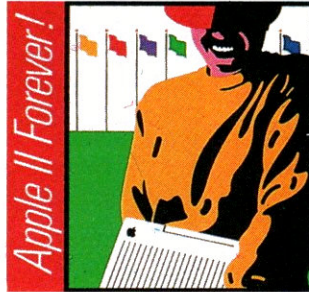
54

THE IIGS SHOWS ITS COLORS

BY MICHAEL FISCHER

What's the best type of display to use with your new IIGS, and what sorts of displays won't work with it at all? Here's a look at the options.

HISTORY



51

THE NEXT DECADE: AN INSIDER'S VIEW

BY JEAN-LOUIS GASSÉE

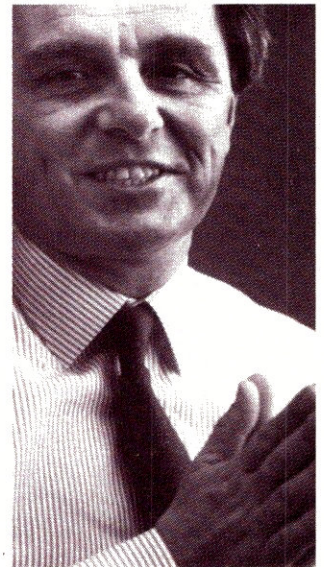
Jean-Louis Gassée, Apple's vice president of product development, gives a glimpse into the future of personal computing.

45

APPLE'S FIRST TEN YEARS, PART II

BY THOM HOGAN

In the second of two parts honoring Apple's ten-year anniversary, we look at the people who made the products possible. Although most of the original crew of renegades has moved on to other ventures, a new breed of renegade leads Apple today.



SOFTWARE

60

EVERYBODY'S PLANNER

BY IVES BRANT

Project management for almost any small business

QUICK TAKE

67

UPTIME

BY RUSEL DEMARIA

This disk-based magazine for Apple II users adds animation and interaction to your reading.

48

BACK IN TIME

BY LISA RALEIGH

Apple's first decade has been an eventful one. This timeline hits some of the highlights.

T E N T S

COLUMNS

9
EDITOR'S PAGE

85
THE LEARNING CURVE
BY DAVID D. THORNBURG
To upgrade or not—that is the question for educators.

89
SPEAKING OF GRAPHICS
BY ROBERTA SCHWARTZ
AND MICHAEL CALLERY
Color on the Apple IIGS—palettes, color mixing, and dithering



95
GAMEPORT
BY BOB LINDSTROM
Bob interviews Chris Crawford, the author of Balance of Power, and explores what we can expect next from this gaming wizard.

113
TELECOMMUNICATIONS
BY RUSS LOCKWOOD
This month Russ recalls predictions he made last year and makes a few more for 1987.



125
THOUGHTWARE
BY STEVE ROSENTHAL
There's more to upgrading to the IIGS than simply buying hardware. The real trick may lie in attitude adjustment.

DEPARTMENTS

15
LETTERS

25
NEWSPLUS
BY LISA RALEIGH AND CHIP CARMAN
News and views of the personal-computer industry

DEPARTMENTS

40
PRODUCT SPOTLIGHT
Envoy Disk Controller, Roland keyboards, Apple IIc numeric keypad, Voice Master, PS Series, Graphics Tool Kit, Type!, Perfect College, and Graphics Scrapbook

71
A+ APPLEWORKS REPORT
What's the best AppleWorks book for you? Take a look at this month's AppleWorks bibliography. This month's department also explores keyword searching, reviews Power Print, and provides tips and answers to reader queries.



90
GRAPHICS GALLERY
This month's exhibition includes a skyline, a feline, and three faces.

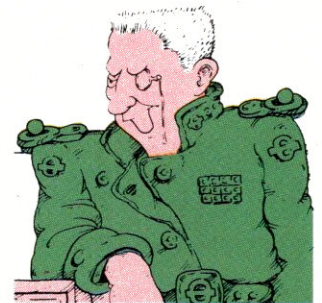
102
THAT'S ENTERTAINMENT
Following "GamePort" are reviews of Mind Pursuit, Shard of Spring, The Coveted Mirror, and Elite.

109
COMPUTER CALISTHENICS
BY MICHAEL WIESENBERG
A new puzzle involving rational numbers, and the solution to November's puzzle about palindromes.

117
TIPS AND TECHNIQUES
Useful hints for getting more out of your Apple II

118
PIPELINE
BY CAROL PERSON AND RHODA SIMMONS
New products for the entire Apple II family

127
RESCUE SQUAD
BY GARY B. LITTLE



129 **A+ MART**

131 **A+ DIRECTORY**

134 **INDEX TO ADVERTISERS**

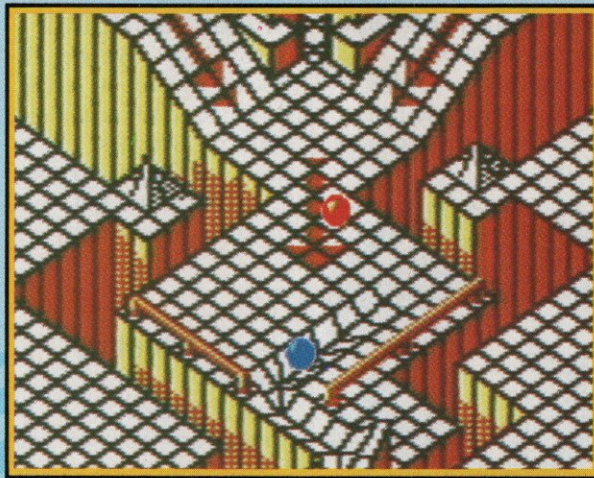
136 **COMING SOON**

Go Ahead, Lose Your
Marbles ...

MARBLE MADNESS

is Here !!!

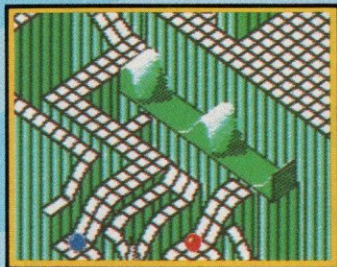
The game that
drove you crazy at
the arcades now
comes home. Same
exciting gameplay,
same blow-away
graphics, sounds
and music. We've
even added an
Incredible all-new
secret level.



A unique game
experience that's
crazy fun for every-
one. Two players
race to the goal
line, or one player
races against the
clock. It's sports
competition, kine-
tics and strategy.

Ultimate Competition for 1 or 2 players.

The object is simple. Race your marble to the goal line, and don't let anything get in your way. It sounds easy, but it just might drive you nuts.

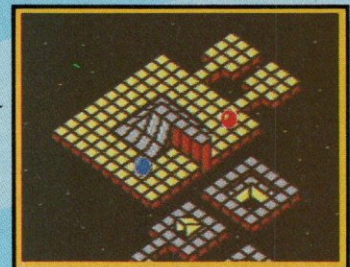


Spectacular Animation
Fantastic 3-D terrains are
the raceways. Zany (but dangerous)
enemies await your every turn.
Avoid the deadly steelles and
the pounding hammers. Watch
out for the hungry marble
munchers. Even surf a
mechanical wave!



Secret Level

If you can find it, just wait till
you try to get through it!



Incredible Madness

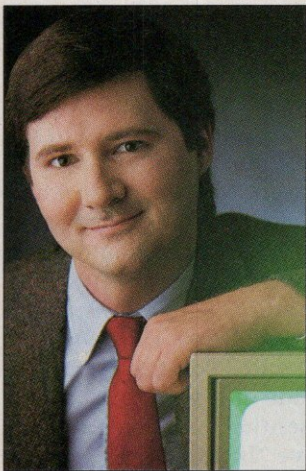
Marble Madness, the ultimate
in exciting non-stop action.
Each level has its own "person-
ality" and creatures to contend
with, as well as its own orig-
inal music score. It's not easy
being a marble - make it to
the Ultimate Level and you'll
know why.



ELECTRONIC ARTS™

How to order: Visit your retailer. If you are unable to find the product at your local retailer, you can call 800-245-4525 for direct VISA or Mastercard orders (in CA call 800-562-1112). The direct price is \$29.95 for the Commodore version. Amiga version is \$49.95. Apple, Atari and IBM versions coming soon. To buy by mail, send check or money order to Electronic Arts Direct Sales, P.O. Box 7530, San Mateo, CA 94403. Add \$5 for shipping and handling (\$7 Canadian). Allow 4 weeks for delivery. There is a 14-day, money-back guarantee on direct orders. For a complete product catalog, send 50¢ and a stamped, self-addressed envelope to Electronic Arts Catalog, 1820 Gateway Drive, San Mateo, CA 94404. Commodore and Amiga are registered trademarks of Commodore Business Machines. Apple is a registered trademark of Apple Computer. IBM is a registered trademark of International Business Machines, Inc. Marble Madness® 1984, 1986 Atari Games Corporation and Electronic Arts.

Screen shots represent Commodore 64 version. Others may vary.
Marble Madness is a registered trademark of Atari Games Corporation.



As soon as production of IIGS system units is running smoothly, Apple will begin shipping the long-awaited Iie-to-IIGS upgrade kits.

THE UPGRADE DEBATE

Apple is still catching up on the huge backlog of IIGS orders that have piled up as a result of the production delays that have plagued the IIGS since its introduction last fall. As soon as production of IIGS system units is running smoothly, Apple will begin shipping the long-awaited Iie-to-IIGS upgrade kits.

The Apple Iie-to-IIGS upgrade kit allows Iie owners to take their system unit to their dealers and have their old computer turned into a functional equivalent of the Macintosh-like IIGS for about \$500. Although the computer you wind up with looks like the Iie, it is actually a true IIGS.

Smart Move for Apple

There is little doubt that the Apple Iie-to-IIGS upgrade is another marketing coup for Apple. The upgrade not only gives Iie purchasers a reward for buying an Apple product, but it also gives prospective customers a sense of security about making the decision to buy an Apple computer. Apple offered Macintosh owners upgrades from 128K to 512K to Mac Plus, and now it is offering Iie owners an upgrade to the more powerful IIGS.

Many people are reluctant to buy a personal computer because they are afraid it will rapidly become outdated or eclipsed by another model. Apple's upgrades help address this fear and probably will steer a significant number of fence sitters toward their local Apple dealers and away from competitors.

Other Paths

The Iie-to-IIGS upgrade kit is not the only way to upgrade. Even though buying the upgrade kit may be the path of least resistance, it may be better for you to sell your Apple Iie system (or some part of it) and get a genuine IIGS in the spiffy new gray case with the designer-styled keyboard and mouse.

Also, if you happen to own a II, II Plus, or IIC, the Iie-to-IIGS upgrade kit isn't an option for you—selling the old to buy the new is the only way to go. Most people have more money invested in their software and peripherals than they do in their system unit; your investment in these items is retained when you swap system units because most software and peripherals for the older 8-bit Apple II's work just fine with the new 16-bit IIGS.

Not everyone thinks upgrading to the IIGS is a good idea. Many people tell me they are content with their current systems. Others feel that the Iie is more reliable than the IIGS. And some people simply can't afford to upgrade. Another factor to consider is whether adding a hard disk, more memory, and an accelerator board to your existing system would give you the best performance increase for the price.

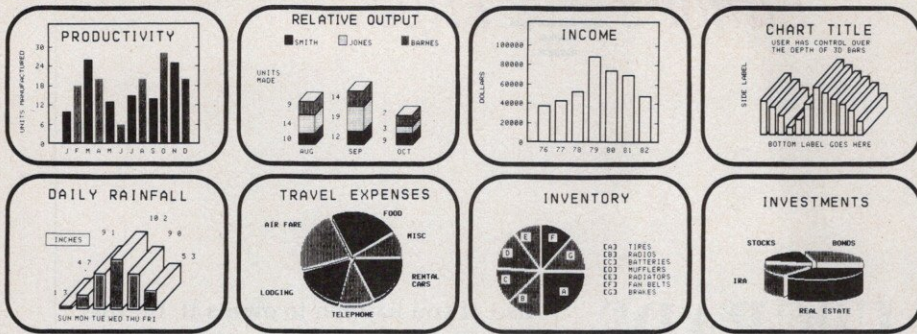
In a few months there will be yet another attractive option: You will be able to upgrade an Apple II to MS-DOS for about the same price as the IIGS upgrade kit.

We know of two prominent Apple hardware developers that are currently working on MS-DOS options for the Apple II series, Orange Micro of Grappler fame and Applied Engineering of RamWorks fame. Orange Micro's product is an external box for the IIGS code-named "DOS Boot." The box houses a shrunken-down PC clone that includes an 8088 processor and an MS-DOS-compatible disk drive. Applied Engineering's product, code-named "Little Blue," is a plug-in board that works with the Apple II Plus, Iie, and IIGS. Little Blue has many niceties, such as the ability to read and write Apple and MS-DOS diskettes with the same disk drive, the ability to use existing Apple II resources such as clocks and hard disk drives, and a speedy 8 MHz 8088 processor that runs faster than a standard IBM PC.

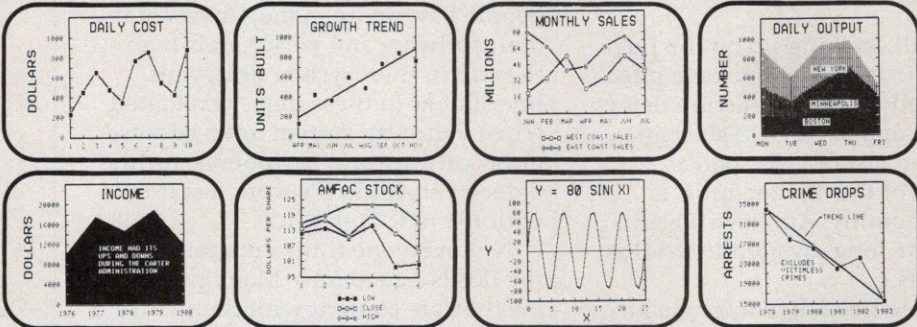
MS-DOS seems like a logical next step for the multitude of Apple II

ChartPower!

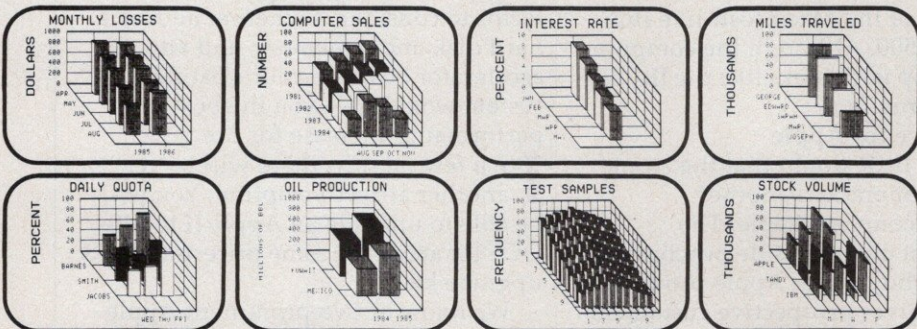
- For all Apple computers
- Prints on almost any printer
- Convert keyboard data to charts in seconds



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



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



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

TYPE ON CHARTS SIGNS & POSTERS
AWARD CERTIFICATES NEWSLETTERS
ORGANIZATIONAL CHARTS INVITATIONS
ADVERTISEMENTS REPORT COVERS SIGNS

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

- Buy any two disks for \$39.90.
- Choose three disks for \$49.85.
- Check/VISA/MasterCard/COD.
- 3 months money-back guarantee.
- Get all four disks for \$59.75.
- Or send \$3.00 for a really great demo disk.
- Requires Apple II and a dot-matrix printer.



800-826-2989 (Nationwide)
 800-231-7316 (California)
 (209) 473-2862 for tech. info.

SPECTRAL GRAPHICS SOFTWARE
 6333 Pacific Avenue
 Stockton, CA 95207

FRED

FREDERIC E. DAVIS / EDITOR IN CHIEF

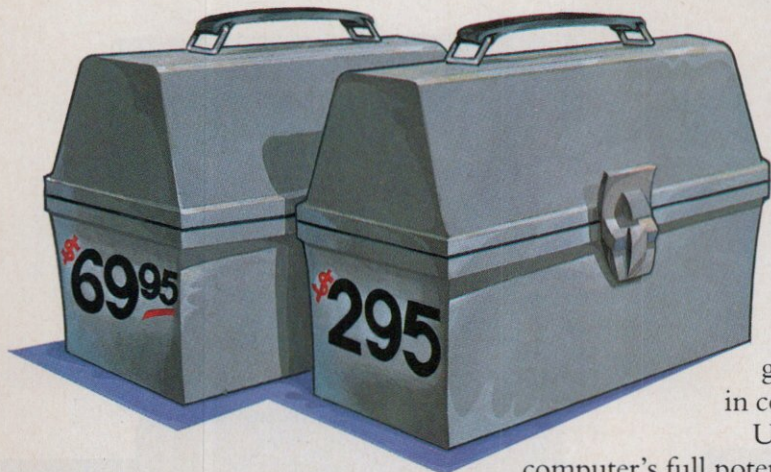
CP/M users. MS-DOS started out as a 16-bit knockoff of CP/M, and the two operating systems use many of the same commands. Also, CP/M on the Apple II is used primarily for dBASE II and WordStar; users of these two programs may find it appealing to upgrade to programs such as dBASE III Plus and WordStar 2000, which require MS-DOS.

Many Choices

Should you get the Iie-to-IIGS upgrade kit? Should you try selling your current Apple II to buy the IIGS? Should you just soup up your current system? Or should you just stay with what you've got? These tough questions are now facing all Apple II users, and we at A+ want to help you make the decision that's right for you. To find out more about the ins and outs of upgrading, see our cover story, "Upgrading to the IIGS," by Gary Little; this month's "Thoughtware" column, "The Human Side of Upgrading," by Steve Rosenthal; and an educator's perspective "Is the IIGS Upgrade a School's Best Buy?" in David Thornburg's Learning Curve column. In addition to providing this month's coverage, we'll continue to track the progress of the IIGS in upcoming issues, and we'll be sure to keep you posted on MS-DOS upgrade options as soon as the hard facts are in.

I've been struggling with the upgrade debate myself for quite a while, and I think I've finally made up my mind about what I'm going to do. I'm going to get the Iie-to-IIGS upgrade kit because selling my system is too much of a hassle; besides, I've grown fond of my familiar Apple Iie, and the idea of having a high-powered IIGS system inside my old Iie case has a certain charm. When the MS-DOS options are available, I'll plug one of those into the system and have the best of three worlds: The vast world of MS-DOS software; the vast world of Apple II software; and the growing world of Macintosh-like IIGS software. Whichever decision you make, there's no denying that the Apple II is the world's most versatile computer.

HONESTLY. THERE IS NO FREE LUNCH.



And even if there were, you couldn't afford it. Not when it comes to getting help with your taxes. What you save now by buying an inexpensive tax preparation program can end up really costing you later.

Only Tax Preparer® by HowardSoft® gives you the tax break you have coming. Other programs look like glorified calculators in comparison.

Unlike the others, Tax Preparer puts your computer's full potential to work for you. Simply and easily.

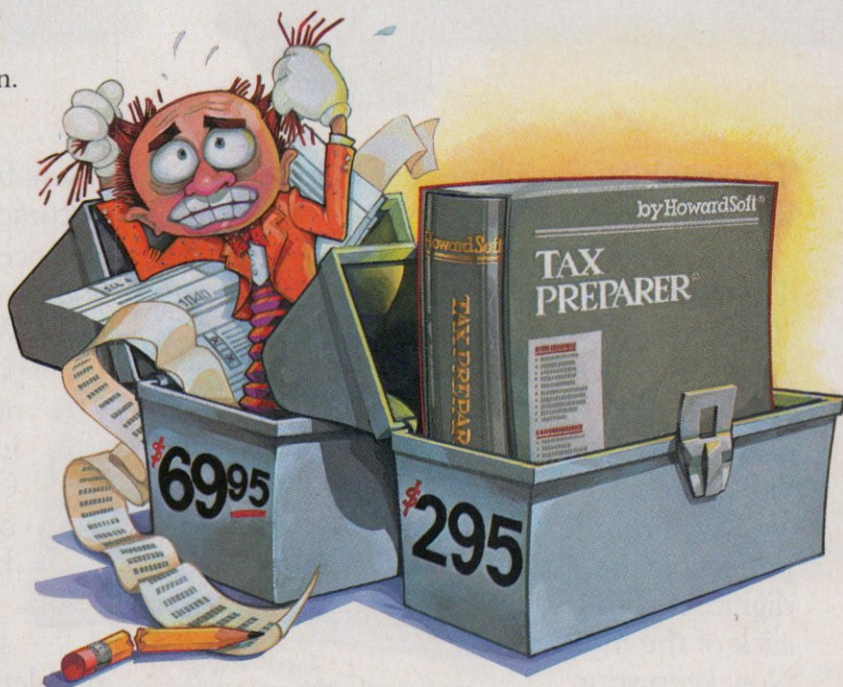
It learns the tax forms to the letter, so you don't have to. It makes sense out of confusing credits and deductions, reveals tax opportunities, and helps protect you from making entries that don't conform to the latest tax laws. And it gives you added protection by performing not just some calculations, but all of them.

Tax Preparer is not only smart, it's organized. Make one change and it's reflected throughout the entire return. You end up with a finished document, printed out in IRS-accepted format, ready to drop in the mail. You won't need to labor with handwritten additions or corrections. All this on your IBM-PC, IBM-compatible, or Apple II Series Computer.

And best of all, it's blessedly easy to use.

No other program can give you even a taste of all this.

So, just stop by your favorite dealer for a demonstration. And remember. Pay a little more for HowardSoft and get a return that's a whole lot easier to digest.



HowardSoft®

The software investment
you can count on.

1224 Prospect Street, Suite 150, La Jolla, CA 92037 (619) 454-0121

Ask your dealer about Tax Preparer's California State Supplement and our Partnership Edition.® Plus Real Estate Analyzer.® All from HowardSoft.

IBM is a trademark of International Business Machine Corporation. Apple is a trademark of Apple Computer, Inc. HowardSoft, Tax Preparer, Partnership Edition and Real Estate Analyzer are trademarks of Howard Software Services.

AST[®] Introduces



The graphics possibilities are infinite and infinitely simple.

Plug in. Turn on. Digitize. That's all it takes to transfer "live" video images into your Apple[®] IIgs.[™] Just plug in the AST-VisionPlus[™] card. Turn on your video camera or VCR to find the perfect picture. And digitize it with a click of the mouse. Now keep your eyes on the screen.

The image that materializes is unbelievably sharp and realistic. No matter what video signal you send... black and white, color, graphics or text. With the ability to choose 16

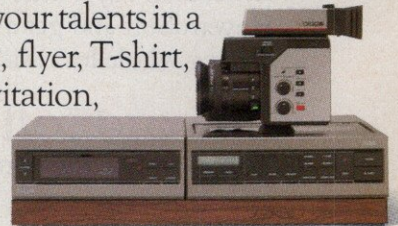
colors from a palette of 4,096, every vision becomes a masterpiece.

Once you've got all the images you need, you can turn out the lights or turn out more ideas. With AST-VisionEffects,[™] IIgs paint or page layout programs you can explore new dimensions in video publishing. Invert your image. Stretch it. Scrunch it. Change the coloration. Rearrange the composition. The only limits are drawn by your imagination.

Show off your talents in a school report, flyer, T-shirt, newsletter, party invitation, catalog and much, much more. With the Apple IIgs and the AST-VisionPlus, you've got the power



The video image that goes in your IIgs prints out on the Image-Writer II[™] and LaserWriter[®] in fine detail.



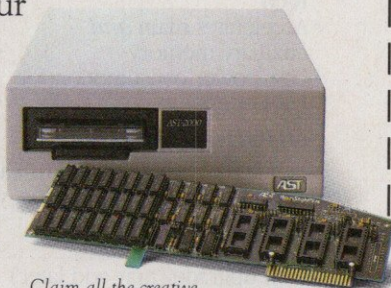
You can use any standard (NTSC) video device, such as a video camera, VCR or tuner, to collect a library of images.

Video Publishing.



to make visions a reality.

More Products for the IIgs. Give your Apple IIgs room to grow. AST offers two new expansion solutions. RamStakPlus™ is the only RAM expansion card with ROM expandability. And our AST-2000™ is a unique 20 Mbyte SCSI hard disk with unlimited storage on the integrated tape backup. It is designed to work with future AppleTalk™ networking applications.



Claim all the creative space you need with AST's unique memory and storage products.

For more information on all of AST's Apple IIgs products, visit your nearest AST-authorized Apple Dealer, or call the AST Apple Products Group at (714) 553-0340

BBS: (714) 660-9175, FAX: (714) 660-8063.
 AST Research, Inc., 2121 Alton Avenue, Irvine, California 92714-4992.

Once an image is captured, it can end up almost anywhere.



Yes, I want more information about AST's Apple IIgs products

AST-VisionPlus RamStakPlus AST-2000

Name _____

Title _____

Company _____

Address _____

City/State/Zip _____

Phone _____

AST Research, Inc., 2121 Alton Avenue, Irvine, CA 92714-4992

ATTN: Apple Enhancement Products Group

A+2/87



All of the graphics that appear in this ad were created with AST-VisionPlus and the Apple IIgs. Flower graphics were enhanced using PaintWorksPlus from Activision, Inc. AST registered and AST-VisionPlus, AST-VisionEffects, AST-2000 and RamStakPlus trademarks AST Research, Inc. Apple registered and IIgs, AppleTalk ImageWriter II and LaserWriter trademarks Apple Computer, Inc. Copyright 1986 AST Research, Inc. All rights reserved.

To boldly go at speeds no man has gone before.



With the TransWarp™ accelerator, your IIe™ or II+™ is 40% faster than the IIGs!

Computing at warp speed!

It's an experience you shouldn't miss. And with TransWarp, you won't have to. Because TransWarp will run your IIe or II+ software *3.6 times faster* — that's 40% faster than Apple's IIGs!

No more yawning while your Apple™ slowly rearranges text or calculates spreadsheets. With 256K of ultra-fast RAM, TransWarp speeds up *all* Apple software—including AppleWorks, and all educational software, graphics and games. And it's compatible with all standard peripheral cards (such as RamWorks and Apple memory cards), hard disks, 3½" UniDisks, 80-column cards, modems, clock cards, mice and more! You name it, TransWarp accelerates it. There's even a 16 bit upgrade chip available.



"TransWarp is great! I have replaced all my other accelerators with it!"

Steve Wozniak, the creator of Apple Computer

An important difference.

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

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

A cinch to use.

Simply plug TransWarp into any slot in your Apple II, II+ or IIe—including slot 3 in the IIe. Instantly you'll be computing

at speeds you only dreamed about before. And should you ever wish to run at normal speed, simply press the ESC key while turning your Apple on.

Since TransWarp is completely transparent, you won't need preboot disks or special software. It's ready to go right out of the package!

Speed = Productivity

Imagine the productivity gains you'll achieve when your programs are running over three times faster. TransWarp is so powerful, your Apple will make IBM PCs™ and even ATs™ look like slowpokes.

- 3.6 MHZ 65C02
- 256K of ultra-fast on-board RAM
- Accelerates main *and* auxiliary memory
- Low power consumption for cool operation
- Totally transparent operation with all software
- Plugs into any slot, including slot 3 on the Apple IIe
- Accelerated 16 bit option available
- 5-year warranty

Satisfaction guaranteed!

Give *your* Apple the TransWarp advantage. With our risk-free 15-day money back guarantee, you have nothing to lose but wasted time. Call today!

TransWarp accelerator \$279
16 bit upgrade (may add later) \$89

For fast response:

Call Applied Engineering, 9 a.m. to 11 p.m., 7 days at (214) 241-6060. MasterCard, VISA and C.O.D. welcome. Texas residents add 5½% sales tax. Add \$10.00 if outside U.S.A. Or mail check or money order to Applied Engineering, P.O. Box 798, Carrollton, TX 75006.

AE Applied Engineering
The Apple enhancement experts.

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

We invite your comments.
Letters

THE IIC ISN'T 'CUTE'

Dear A+: I want to use your column to express my exasperation with people's attitudes (especially salespeople's) toward the Apple IIC.

A few weeks ago, while in a computer store to check out the new IIGS, I overheard a customer (bringing in his Macintosh for service) look at the IIC and remark to the salesman: "What a cute little computer. I have a good mind to buy one for my kids." Today, while attending an Apple products promotion at a local shopping mall, I overheard the salesperson describing the Apple product line by saying: "This is our IIC, the perfect beginner's computer."

I have owned a IIC for 18 months, and I am currently using it to run two businesses with combined sales in excess of \$2 million. It handles my most advanced BPI accounting packages. The IIC handles my payroll, a 3000-person customer database, 1000 mailing labels per month (it is the key to my direct-mail program), several 85K spreadsheets, menu and brochure layouts, and a check-writing program for my smaller business. When I have finished using it, my IIC teaches my kids algebra, multiplication, and spelling, and it entertains them with The Print Shop and a few dozen other software programs.

I have added a 3.5-inch drive, an external 5¼-inch drive, an ImageWriter II, a mouse, 528K of additional memory, a modem, MacroWorks to enhance the speed of my AppleWorks program, and Catalyst to handle all my business programs on one disk, and I have ordered an external numeric pad to process numbers faster. And all this takes up

less than 1½ square feet of my desk (so I have room for other things such as a telephone and a calculator).

It has given me the ability to crunch massive amounts of sales data otherwise impossible to analyze by hand-accounting methods. I can chart and print graphs, and my accountant receives flawless data to construct my financial statements (those statements that the computer doesn't already do for me). The computer prints checks that make my smaller business look like a multinational conglomerate to the people I do business with! I am starting to transmit data files 2000 miles away to a business associate in California. I haven't even begun to discuss the hours of time I save each week over old-fashioned hand-bookkeeping methods or the money I save in accounting fees.

Does it sound as though I like this thing? I wouldn't trade it for a IIGS, a Mac, or an IBM PC/AT. It paid for itself in the first month of operation, and it has never once been back for service (nor has any component, except to enhance the motherboard for the new 3.5 UniDisk).

So I don't want to hear my IIC described in terms of *cuteness* or *beginner's* anymore. The IIC's only limitations are those of its owners.

Mark Strothman
Milwaukee, WI

GRANNY SMITH?

Dear A+: After seeing the new Apple IIGS firsthand, I would suggest that it was really named after the most delicious apple of them all, the Granny Smith.

Kenneth D. James
Jessup, MD

II PLUS MINUS UPGRADE

Dear A+: Your November 1986 editorial struck a responsive chord in me and probably a considerable number of other Apple II Plus owners as well. You stated, "The IIE-to-IIGS upgrade is great, except that II Plus and IIC owners are left behind." Amen to that! I also agree with your statement that "II Plus owners should at least have been able to upgrade to a IIE."

I've been waiting quite a while for Apple to give those II Plus owners who covet a IIE or IIC some sort of upgrade path, but to no avail. With the introduction of the IIGS, I thought the price of the IIE and IIC would drop a little, but I certainly can't see any difference.

I know there are others like me among your readers. Every time we read a review of a really neat program, we get to the system requirements and read "Apple IIC or IIE with 128K RAM." That gets discouraging after a while.

Come on, Apple... loosen up a bit! Offer II Plus owners a way to upgrade our machines, and we'll love you for it.

H.G. Payne, Jr.
Bedford, TX

ORPHANED APPLES

Dear A+: My November issue of A+ just arrived and is completely covered with articles about the new Apple IIGS. As I read each article, I was impressed. The new Apple II has everything that had been promised and more—great graphics and sound capabilities plus memory expansion that would make any other computer's monitor turn green with envy. I read about the upcoming software for the new II, the great possibilities it could have in the classroom, and the new peripherals that would be introduced. It sounded like an Apple lover's delight!

Then it hit me. These were the same types of article I read so intently two years ago when I was search-

Computers

Central Point Software	
Laser 128K Computer	389.00
<i>The Laser 128 includes an Expansion Slot, RGB Video Output, Parallel Printer Port, and a 10 Key Numeric Keypad! Most Apple Compatible Computer Available at Any Price!</i>	
Laser 128 2nd Disk Drive (5 1/4", 1/2 height)	139.00
Laser 128 800K 3.5" Drive w/Controller	279.00
Laser 1282-Slot Expansion Box	69.00
Laser 128 Cables (Parallel, Serial, or RGB)	24.00

Back-Up Utilities & Boards

Alpha Logic Locksmith 6.0	58.00
Central Point Software	
Copy II Plus Version 6	20.00
Wildcard II	70.00
Computer Applications	
Nibbles Away III/NADOL	29.00
Utilico Software	
E.D.D. IV	28.00
E.D.D. IV Plus (II, III, I/II w/Disk II)	79.00
E.D.D. IV Plus (I/II w/DuoDisk or UniDisk 5.25")	89.00

Entertainment

Accolade	
Dam Busters or Fight Night	20.00
Hard Ball or Laws of the West	20.00
Psi 5 Trading Co.	20.00
SunDog V2.0	20.00
Activision	
Alcazar or Master of the Lamps	25.00
Alter Ego (Male or Female)	32.00
Borrowed Time or Space Shuttle	25.00
Countdown to Shutdown or Rocky Horror Show	25.00
Ghost Busters or Labyrinth	25.00
Great American Road Race	25.00
Hacker, Hacker II, or Tass Times in Tontown	25.00
Little Computer People Discovery Kit	25.00
Mindshadow or Tracer Sanction	25.00
Murder on The Mississippi or Shanghai	25.00
Star League Baseball	25.00
Avalon Hill Under Fire!	36.00
Bantam Publishing	
Cave of Time or Escape	22.00
I'Damiano the Wizard of Paratestrada	25.00
Sherlock Holmes: "Another Bow"	25.00
Baudville Video Vegas	18.00
Broderbund Airheart	23.00
Breakers	29.00
Captain Goodnight & the Islands of Fear	23.00
Championship Lode Runner or Karateka	23.00
Data East	
Karate Champ or Kung Fu Master	24.00
DataSoft Alternate Reality	
"The City" or "The Dungeon"	23.00
Bruce Lee, The Goonies, or Zorro	19.00
Gunslinger or Conan	19.00
Theatre Europe	21.00
Mind Pursuit or Crosscheck	19.00
Never Ending Story or 221B Baker Street	19.00
Electronic Arts	
Adventure Const. Set or Starfleet I	34.00
Age of Adventure or One-On-One	11.00
Amnesia or Robot Rascals	31.00
Arctic Fox or Ring Quest	38.00
Bard's Tale or Reach For The Stars	31.00
Bard's Tale II: The Destiny Knights	34.00
Battlefront or Make Your Own Murder Party	28.00
Carriers At War or Europe Ablaze	34.00
ChessMaster 2000 or Ogre	28.00
Lords of Conquest	28.00
Music or Pinball Construction Set	11.00
7 Cities of Gold or Super Boulder Dash	11.00
SkyFox, Archon II, or Scrabble	28.00
Software Golden Oldies or Dark Lord	24.00
Timothy Leary's Mind Mirror or Marble Madness	24.00
EPYX	
Ballblazer or Rescue on Fractalus	25.00
Championship Wrestling or Destroyer	25.00
G.I. Joe or Pitstop II	25.00
Summer Games II or Winter Games	25.00
Temple of Apshai Trilogy	25.00
World Games or The Movie Monster Game	25.00
World's Greatest Baseball Game	24.00
World's Greatest Football Game	25.00
Firebird Licensees, Inc.	
Elite	22.00
Colossus Chess IV	25.00
Hayden Software Sargon III	32.00
Infocom A Mind Forever Voyaging	28.00
Cuthroats, Seastalker, or Ballyhoo	25.00
Deadline, or Starcross or SpellBreaker	31.00
Hitchhiker's Guide or Trinity	35.00
Infidel or Sorcerer	25.00
Leather Goddesses of Phobos or Moon Mist	25.00
Witness, Planetfall, or Enchanter	25.00
Zork I, Wishbringer, or Foolsitzy	25.00
Zork II, Zork III, or Suspect	28.00
Micro League Sports	
Micro League Baseball	25.00
General Manager/Owner	25.00
Microprose Crusade in Europe or Conflict in Vietnam	25.00
Gunship or Decision In The Desert	25.00
F-15 Strike Eagle	22.00
Silent Service	22.00
Solo Flight or Nato Commander	22.00
Mindscape	
Balance of Power	31.00
Dick Francis' High Stakes or Sub Mission	25.00

Indiana Jones: "Revenge of The Ancients"	25.00
Infiltrator or Bop 'n' Wrestle	19.00
James Bond: "A View To Kill"	25.00
James Bond: "Goldfinger"	25.00
Racter	29.00
Rambo: "First Blood Part II"	25.00
Stephen King's "The Mist"	25.00
The American Challenge Sailing	25.00
The Halley Project	29.00
Omnitrend Software	
Omnitrend's Universe I	64.00
Omnitrend's Universe II	41.00
One Step Software	
Golf's Best Pinehurst	19.00
Golf's Best St. Andrews	19.00
Origin Systems Moebius	
AutoDuel	41.00
Ultima III: Exodux or Ultima IV	41.00
Random House	
APBA Major League Baseball	39.00
Tournament Bridge	30.00
Sierra On-Line Championship Boxing	22.00
Kings Quest I, II, or III	35.00
The Black Cauldron	22.00
Simon & Schuster	
Star Trek (Kobayashi Alternative)	25.00
Sir-Tech Wizardry	
Knight of Diamonds	22.00
Legacy of Olylygamyn	25.00
Rescue Raiders	22.00
Wizardprint	16.00
Usurper: The Mines of Qyntarr	27.00
Spectrum Holobyte	
Gato	22.00
Strategic Simulations	
Battalion Commander or Objective Kursk	25.00
Battle For Normandy or Field of Fire	25.00
Battle Group	36.00
Battle of Antientam	30.00
Gemstone Warrior, or Wizard's Crown	24.00
Geopolitique 1990 or Rails West	25.00
Germany 1985 or Carrier Force	38.00
Imperium Galactico or BroadSides	25.00
Kampfgruppe or Relogier 88	25.00
NAM or Professional Tour Golf	24.00
North Atlantic '86 or Warship	38.00
Phantasia II, or Panzer Grenadier	24.00
Ring's of Ziffin, or Colonial Conquest	24.00
Roadwar 2000 or Shard of Spring	24.00
U.S.A.A.F. or Mech Brigade	36.00
War in Russia	49.00
Sublogic	
Flight Simulator II	35.00
Jet	35.00
Tellarium	
Nine Princes in Amber	24.00
Perry Mason: Mandarin Murders	24.00
Windham Classics Alice in Wonderland	26.00
Below The Root or Swiss Family Robinson	26.00
Wizard Of Oz or Treasure Island	26.00

Beagle Brothers	
Alpha Plus	21.00
Beagle Graphics	31.00
Flex Text or Frame Up	15.50
Font Mechanic, Minipix Disk #1, #2, or #3 (ea.)	15.50
Shape Mechanic	21.00
Broderbund Toy Shop	39.00
Toy Shop Refill	18.00
Animate	44.00
Dazzle Draw	38.00
Drawing Table (Apple IIGS)	59.00
Print Shop Enhanced or Fantavision	32.00
Print Shop (Apple IIGS)	46.00
Fantavision (Apple IIGS)	39.00
NewsMaker (Apple IIGS)	59.00
Print Shop Companion	25.00
Print Shop Graphics Library I, II, or III or Holiday Ed.	16.00
Print Shop Paper Refill	12.95
Data Transforms Formfill 1.5	54.00
Font Paks 1-15 ea.	14.00
Electronic Arts Movie Maker	27.00
Penguin Software	
New Complete Graphics System	26.00
The Graphics Magician	26.00
Simon & Schuster	
Great INTL Paper Airplane Const. Kit	25.00
Springboard Newsroom	35.00
Certificate Maker	30.00
Certificate Maker Library #1	21.00
Newsroom Clip Art Collection Vol. 1	18.00
Newsroom Clip Art Collection Vol. 2	25.00
Newsroom Clip Art Collection Vol. 3	18.00
Graphics Expander Vol. 1	25.00
Spinnaker T-Shirt Shop	34.00
StyleWare, Inc.	
TopDraw (Apple IIGS)	65.00
Unison World Printmaster	25.00
Art Gallery I	25.00
Art Gallery II or III	19.00
Weekly Reader Stickybear Printer	23.00

Apple Computer	
Access II (I/II, I/II only)	62.00
Comuserve	
Comuserve Starter Kit	27.00
Dow Jones	
Dow Jones Membership Kit	22.00
Hayes Smartcom I	72.00
PBI Software Commworks (I/II & I/II)	65.00
Softronics Softform 2	159.00
United Software Industries	
ASCII: Express Pro: ProDOS or Dos 3.3	75.00
ASCII Express Mousetalk	99.00

Communications

Apple Computer	
Apple Logo // 128K (I/II, I/II only)	85.00
Barron's	
Computer SAT Revised Version	32.00
Baudville Guitar Wizard	18.00
Ted Bear Discovers...Rainy Day Games	18.00
Better Working	
File & Report or Spreadsheet	38.00
Homework Helpers: Math	32.00
Word Problems	32.00
Homework Helpers: Writing	32.00
Typing Made Easy	32.00
Word Processor	38.00
Broderbund	
Science Tool Kit Master Module	45.00
Science Tool Kit Module I or II	26.00
Type!	29.00
Variable Feasts	32.00
Welcome Aboard Muppets!	25.00
Where in the World is Carmen, San Diego?	26.00
Where in the USA is Carmen, San Diego?	29.00
CBS Software America Coast to Coast	23.00
Body in Focus or Dinosaur Dig	23.00
Forecast! or T-Rex	28.00
Goren's Bridge	45.00
Mastering The SAT	56.00
Success w/Algebra (ea.)	20.00
Success w/Math (ea.)	14.00
Davidson & Associates	
Alge-Blaster, Classmate or Math Blaster	28.00
Grammer Gremlins	28.00
Homeworker	52.00
Speed Reader II	39.00
Speed Reader Data A, B, D, or D	11.95
Spell-it or Word Attack!	28.00
Designware	
European Nations & Locations	29.00
Grammer Examiner	29.00
Remember	49.00
Spellcopter	25.00
States & Traits or Mission Algebra	29.00
The Body Transparent	29.00
DLM	
Create With Garfield! Deluxe Edition	28.00
Decimal Discovery or Fast Track Fractions	32.00
Ted Bear-rels of Fun	28.00
Writing Adventure	42.00
Fisher Price	
First Man on The Moon Math	26.00
Jungle Book Reading	26.00
Peter Rabbit Reading	26.00
Peter & The Wolf Music	26.00
Groler Publishing EduCalc	32.00
Friendly Filer or Easy Graph	26.00
Science Island or Treasure Hunter	26.00
Harcourt, Brace, Jovanovich	
Computer SAT	26.00
Intracorp, Inc.	
Intracourse Anal. & Comp. Module	59.00
Learning Company	
BumbleBee, Games, or Reader Rabbit	25.00
Gertrude's Puzzles or Secrets	28.00
Juggle's Rainbow	19.00
Magic Spells or Word Spinner	22.00
Math Rabbit or Writer Rabbit	25.00
Moptown Hotel, Parade, or Number Stumper	25.00
Robot Odyssey I or Rocky's Boots	25.00
Mindscape Bank Street Storybook	32.00
Bank Street Music Writer	32.00
Crossword Magic	32.00
Keyboard Cadet or Luscher Profile	25.00
Perfect Score SAT	45.00

Key Player	31.00
RunRun	28.00
Pinpoint I/II Upgrade Kit	23.00
PinPoint Ram Enhancement	23.00
PinPoint Modem Enhancement	23.00
PM Software ProFILER 2.1	52.00
Professional Software Fleet System 3	49.00
Integrated Word Processing, Spell Checking & Thesaurus	
Quark Catalyst I/II V3.0	59.00
Word Juggler & Lexicheck I/II	59.00
Roger Wagner Publishing	
Mouse Write (ver. 2.6.8)	89.00
Sensible Software Bookends-ProDOS	67.00
Sensible Grammar ProDOS (3.5" & 5.25")	56.00
Sensible Speller-Dos or ProDOS w/3.5 & 5.25"	69.00
Sensible Writer	56.00
Sierra On-Line Smart Money	52.00
Homework Plus (128K) w/Speller	45.00
Simon & Schuster	
JK Lasser's Income Tax	45.00
Webster's Spelling Checker (ProDOS)	38.00
Sir-Tech Software, Inc.	
The Clan Practical Accountant	59.00
Software Publishing	
All Programs for I/II with 128K or I/II	
PFS: Workmates (File/Report/Plan/Write)	149.00
PFS: Graph	76.00
PFS: File/Report Bundle	76.00
PFS: Write or Plan (I/II, I/II)	76.00
StyleWare, Inc. Multiscribe 2.0	46.00
(128K I/II or I/II)	65.00
Multiscribe GS (Apple IIGS)	27.00
Picture Manager	27.00
Desk Accessories	27.00
Multiscribe Spell Checker	15.00
Fontpaks	15.00
VIP Software VIP Professional	145.00
(Lotus 1-2-3 Work-Alike)	
Word Perfect Corporation	
WordPerfect V1.1 (I/II & I/II)	85.00
WordPerfect (Apple IIGS)	85.00

Educational Software

Addison Wesley Smart Eyes	38.00
Apple	
Apple Logo // 128K (I/II, I/II only)	85.00
Barron's	
Computer SAT Revised Version	32.00
Baudville Guitar Wizard	18.00
Ted Bear Discovers...Rainy Day Games	18.00
Better Working	
File & Report or Spreadsheet	38.00
Homework Helpers: Math	32.00
Word Problems	32.00
Homework Helpers: Writing	32.00
Typing Made Easy	32.00
Word Processor	38.00
Broderbund	
Science Tool Kit Master Module	45.00
Science Tool Kit Module I or II	26.00
Type!	29.00
Variable Feasts	32.00
Welcome Aboard Muppets!	25.00
Where in the World is Carmen, San Diego?	26.00
Where in the USA is Carmen, San Diego?	29.00
CBS Software America Coast to Coast	23.00
Body in Focus or Dinosaur Dig	23.00
Forecast! or T-Rex	28.00
Goren's Bridge	45.00
Mastering The SAT	56.00
Success w/Algebra (ea.)	20.00
Success w/Math (ea.)	14.00
Davidson & Associates	
Alge-Blaster, Classmate or Math Blaster	28.00
Grammer Gremlins	28.00
Homeworker	52.00
Speed Reader II	39.00
Speed Reader Data A, B, D, or D	11.95
Spell-it or Word Attack!	28.00
Designware	
European Nations & Locations	29.00
Grammer Examiner	29.00
Remember	49.00
Spellcopter	25.00
States & Traits or Mission Algebra	29.00
The Body Transparent	29.00
DLM	
Create With Garfield! Deluxe Edition	28.00
Decimal Discovery or Fast Track Fractions	32.00
Ted Bear-rels of Fun	28.00
Writing Adventure	42.00
Fisher Price	
First Man on The Moon Math	26.00
Jungle Book Reading	26.00
Peter Rabbit Reading	26.00
Peter & The Wolf Music	26.00
Groler Publishing EduCalc	32.00
Friendly Filer or Easy Graph	26.00
Science Island or Treasure Hunter	26.00
Harcourt, Brace, Jovanovich	
Computer SAT	26.00
Intracorp, Inc.	
Intracourse Anal. & Comp. Module	59.00
Learning Company	
BumbleBee, Games, or Reader Rabbit	25.00
Gertrude's Puzzles or Secrets	28.00

In Connecticut Call (203) 378-3662

Peachtree/Eduware Algebra 1, 2, 3, or 4	23.00
Algebra 5 & 6	29.00
Decimals or Fractions	23.00
Compu-Read (V.3.0)	18.00
Introduction to Counting	23.00
PSAT or SAT Word Attack Skills	18.00
Spelling Bee w/Reading Primer	23.00
Writing Skills 1, 2, 3, 4 or 5	23.00
Personal Choice Software	
Term Paper Writer	38.00
PinPoint Micro Cookbook (//e or //c)	28.00
Appetizers, Desserts, or Soups & Salads	11.95
Random House Charlie Brown's ABC's	20.00
Charlie Brown Typing is a Ball	20.00
Garfield Double Dares	20.00
Garfield Eat Your Words	20.00
Mr. & Mrs. Potato Head	20.00
Snoopy Writer or Fix-It	20.00
Sensible Software Report Card	34.00
Scarborough Systems	
MasterType New & Improved	25.00
MasterType's Writer (5 1/4" or 3 1/2")	45.00
MasterType's Filer	25.00
Scholastic Wizware Agent U.S.A.	25.00
Math Shop or Success with Typing	32.00
Microzine 1	23.00
Operation: Frog or Turtle Tracks	25.00
Logic Builders	25.00
Story Tree or Story Maker	25.00
Simon & Schuster Chem Lab	25.00
Lovejoy's Preparation for SAT	39.00
Typing Tutor III	32.00
Kermit's Electronic Storybook	22.00
Spinneraker	
Delta Drawing	25.00
Facemaker: Golden Edition	26.00
Fracture Fever, Story Machine, or Facemaker	17.00
In Search Of...	21.00
Kidwriter	25.00
Kindercamp or Kids on Keys	19.00
Megabots	19.00
Snooper Troops Case 1 or II	21.00
Springboard Early Games	21.00
Fracture Factory or Make a Match	18.00
Mask Parade or Easy as ABC	24.00
Rainbow Painter or Puzzle Master	24.00
Terrapin Enhanced Terrapin Logo V3.0	64.00
Weekly Reader Stickybear Series: Sticky Bear ABC, Car Builder, Codes & Cyphers, Basic, Basket Bounce, Bop, Drawing, Math, Math II, Math Word Problems, Music, Numbers, Opposites, Reading, Reading Comprehension, Shapes, Spellgrabber, Typing, & Townbuilder (each)	23.00

Modems	
Anchor Automation	
Signalman Express 1200	235.00
Signalman Lightning 2400	355.00
Volkmodem 12	179.00
Hayes Hayes Micromodem //e	139.00
Hayes 300 Baud Smartmodem //c	159.00
Hayes 300 Baud Smartmodem	139.00
Hayes 1200 Baud Smartmodem	379.00
Hayes 2400 Baud Smartmodem	579.00
Transet 1000	269.00
Novation Novation Apple Cat II	189.00
Novation 212 Apple Cat II	355.00
Novation 2400 Baud Professional Modem	479.00
Prometheus	
Pro Modem 1200 (External)	279.00
Pro Modem 1200G (Non Expandable)	199.00
Pro Modem 1200A (Single Card)	199.00
Pro Modem 300c	89.00
Communications Buffer (2K Exp. to 512K)	105.00
Alphanumeric Display	69.00
U.S. Robotics	
U.S. Robotics Courier 1200	199.00
U.S. Robotics Courier 2400	399.00
Zoom Telephonics Zoom/Modem //e	105.00
Zoom/Modem //e Plus	115.00

Accelerators/Ramcards	
Z-80/80 Col.	
Advanced Logic Systems Add-Ram 16	65.00
Add-Ram 80/64	52.00
Apple Computer	
Apple II Memory Expansion Card	225.00
Apple //e Extended 80 Col. Card	89.00
Apple //e Enhancement Kit	45.00
Applied Engineering	
RamWorks III (64K to 3 MB)	Call
RamWorks Expander 512k or 2Meg Version	Call
RamFactor (256K to 1MB)	Call
Z-RAM Ultra 1 (256K or 512K)	Call
Z-RAM Ultra 2 or 3 (256K to 1Meg)	Call
GS-RAM (256K to 1.5Meg)	Call
Phasor (//+, //e, and //GS)	139.00
TransWarp Accelerator (//+ and //e)	219.00
ViewMaster H.O. (//+ and //e)	105.00
ViewMaster 80 (//+)	119.00
Z-80 Plus	119.00
Apricorn Apricorn 64K Extend-It	75.00
Apricorn 16K Ramcard II+	79.00
AST Research SprintDisk w/256K SprintDisk w/512K	269.00
Checkmate Technology	
MultiRam CX (256K)	139.00
MultiRam CX (512K)	175.00
MultiRam CX+ Piggyback (512K)	199.00
MultiRam //e (128K)	129.00
MultiRam RGB (128K)	169.00
MultiRam //e (320K)	159.00
MultiRam RGB (320K)	189.00
MultiRam //e (576K)	189.00
MultiRam RGB (576K)	219.00
MultiRam RGB (832K)	249.00
MultiRam RGB (1024K)	269.00
Zee-80A	55.00

Micro Sci Micro Sci 80/64e	52.00
Titan Industries Saturn 128K Ram Accelerator //e	219.00

Multifunction Cards	
AST Research Multi I/O Clock/Calendar	99.00
Multi I/O Clock/Calendar/2 Ser. Ports	139.00
Prometheus VERSAcad	129.00
Quadram Multicore w/OK Multicore w/256K	149.00
	279.00
Street Electronics	
Business Card Parallel	179.00
Business Card Serial	159.00

Printer Interface Cards	
Apple Apple Super Serial Card	115.00
Apricorn Apricorn //c	54.00
Super Serial Card	92.00
Orange Micro	
Pro Grappler (Apple IIGS)	79.00
Serial Grappler Plus	75.00
Grappler+	79.00
Buffered Grappler+	119.00
Grappler //c	79.00
Imagebuffer 64K (For ImageWriter II Printer)	69.00
Hot Link	49.00
TextPrint Print-It! (Parallel or Serial)	132.00
Thiware Choice of Parallel, Serial (ImageWriter //), or Serial (ImageWriter II)	
Finger Print Plus II+, //e, //c	89.00
Finger Print G+	69.00
(Par. Interface Grappler Compatible)	69.00
Finger Print Super Serial Card	69.00

Clock/Calendar Peripherals	
Applied Engineering TimeMaster H.O.	99.00
BSR Interface	39.00
//e System Clock	65.00
Quadram Pro Dos Clock/Calendar Card	62.00
Creative Peripherals //c System Clock	55.00
SMT No Slot Clock (II+ & //e)	69.00
Street Electronics Livewire	70.00
Thunderware Thunderclock Plus	109.00
X-10 (USA) Inc.	
X-10 Powerhouse Computer Interface	49.00
X-10 Wall Switch Module	15.00
X-10 Lamp Module	15.00
X-10 Appliance Module (Specify 2 or 3 Pin)	15.00

Video Cards	
Video 7 Color Enhancer //e	119.00
Color Enhancer //c	89.00
Screen Enhancer //e	89.00
Screen Enhancer //c	49.00

Accessories	
Kensington System Saver	59.00
Cool - Time	69.00
Curtis Diamond	30.00
Curtis Emerald	36.00
Curtis Ruby	54.00
Curtis Sapphire	47.00
Apple Mouse //e	119.00
Apple Mouse //c	89.00
Pico Universal Joystick II+, //e, //c	25.00
Hayes Mach II Joystick	29.00
Hayes Mach III Joystick	35.00
Kraft Quickstick //c	49.00
Kraft Universal 3 Button Joystick (II+ //e, //c)	32.00
Koala Pad Plus w/Graphics Exhibitor	79.00
Trackhouse Keypad (//e Standard)	85.00
Trackhouse Keypad (//e Programmable)	139.00
Mockingboard A Board	65.00
Mockingboard B (Speech Chip)	65.00
Mockingboard C Board	119.00
Echo II Plus	99.00
The Cricket //c	82.00
Rainbow Paper Pak (300 Sheets)	12.00
ImageWriter Ribbon-Black	4.50
ImageWriter Ribbon-Color	5.00
ImageWriter II - 4 Color Ribbon	12.00
ImageWriter Rainbow Pack (6 Colors)	27.00
Environmental Software: Apple Skins	
Apple //c or //e w/Monitor II Cover	19.00
Apple //c w/Color Monitor Cover	21.00
Apple //e Professional System Cover	23.00
Apple //c, //e, or UniDisk Drive Cover	7.00

Blank Media	
5 1/4" Blank Diskettes	
BASF 5.25" SS/DD (box of 10)	10.00
Verbatim 5.25" SS/DD (box of 10)	10.00
Sony 5.25" SS/DD (box of 10)	10.00
Maxell 5.25" SS/DD (box of 10)	10.00
Nashua 5.25" SS/DD (box of 10)	12.00
Memorex 5.25" SS/DD (box of 10)	13.00
3M 5.25" SS/DD (box of 10)	12.00
3 1/2" Blank Diskettes	
BASF 3.5" DS/DD (box of 5)	14.00
Bulk (Sony) 3 1/2" DS/DD (box of 10)	21.00
Centech 3 1/2" DS/DD Color Disks (box of 10)	24.00
Sony 3.5" DS/DD (box of 10)	24.00
Fuji 3.5" DS/DD (box of 10)	24.00
Maxell 3.5" DS/DD (box of 10)	24.00
Verbatim DS/DD (box of 10)	25.00
3M 3.5" DS/DD (box of 10)	27.00
C. Itoh 3.5" DS/DD Color Disks (box of 10)	29.00

Printers	
Brother	
M-1109AP ImageWriter Compatible	269.00
M-1409 (180cps Dot Matrix NLQ) 10"	349.00
M-1509 (180cps Dot Matrix NLQ) 15"	389.00
HR-20 (20cps) Daisywheel	349.00
HR-35 (35cps) Daisywheel	729.00
TwinWriter 5	Call
Epson LX-86	Call
FX-85	Call
Call For	Call
FX-286	Call
Most	Call
LQ-800/1000	Call
Recent	Call
EX-800/1000	Call
Low/Low!	Call
LQ-2500	Call
Prices	Call
Juki	
5100 (18 cps) Daisywheel/Par.	429.00
6200 (30 cps) Daisywheel/Par.	569.00
6300 (40 cps) Daisywheel/Par./Ser.	749.00
Okidata Okimate 20 Color Printer	125.00
Microline 182P (120cps Dot Matrix 10")	229.00
Microline 183P (120cps Dot Matrix 15")	389.00
Microline 192Plus	359.00
(200cps Dot Matrix 10")	
Microline 193Plus	529.00
(200cps Dot Matrix 15")	
Microline 292P (240cps Dot Matrix 10")	509.00
Microline 293P (240cps Dot Matrix 15")	649.00
Panasonic KXP-1080AP (100 cps) ImageWriter Compatible	249.00
KXP-1080i (120 cps) NLQ Mode	219.00
KXP-1091i (160 cps) NLQ Mode	269.00
KXP-1092 (180 cps) NLQ Mode	329.00
KXP-1592 (160 cps) NLQ Mode	449.00
KXP-1595 (240 cps) NLQ Mode	599.00
KXP-3131 (16 cps) Daisywheel	269.00
KXP-3151 (23 cps) Daisywheel	409.00
Toshiba	
P-321 24 Pin (216cps) Par./Ser. 10"	499.00
P-341 24 Pin (216cps) Par./Ser. 15"	739.00
P-351 24 Pin (288cps) Par./Ser. 15"	1079.00

Disk Drives/Hard Drives	
Central Point Software	
Mix and Match 5 1/4 & 3 1/2" Drives:	
Universal Disk Controller	119.00
Universal Disk Controller/800KB Drive Bundle	279.00
First Class Peripherals	
Sider 10MB Hard Drive	559.00
Sider II 20MB Hard Drive	729.00
B Sider Tape Backup	559.00
Hi-Tech Peripherals Full Height 5 1/4" Drive for Apple //e	129.00
Half Height 5 1/4" Drive for Apple //e or //c	129.00
Apple //c Drive Adaptor	15.00
Micro Sci	
A2 Full Height	149.00
A5 Slimline //e	149.00
A5 Slimline //c	159.00
Micro Sci C2 Controller	49.00
Mitac	
AD-3C Slimline //e or //c	129.00
Pico Products	
Apple Half-Height II+, //e, //c	139.00

ProAPP ProAPP 20 MB Hard Disk System (//+, //e, & //c)	Call
Video Technology Computers, Inc.	
Laser FD 100c (Apple //c)	139.00
Laser FD 100 (Apple II Series)	139.00

Monitors	
Amdek Color Monitor 600 (RGB)	399.00
Princeton Graphics	
HX-9 9" RGB Color	399.00
HX-12 12" RGB Color	429.00
Taxan 115 12" Hi-Res Green	125.00
116 12" Hi-Res Amber	129.00
620 12" Hi-Res RGB Color (640x200)	389.00
410-80/84 RGB-II Interface	179.00
Teknika MJ-22 RGB Color Monitor	259.00

Ordering Instructions

VISA AND MASTERCARD ACCEPTED

To order, call us anytime Monday thru Friday 9:00 to 9:00, Saturday 10:00 to 6:00. For fast delivery if ordering by mail, send cashier's check, certified check or money order. Fortune 1000 & Government checks honored immediately. Personal and other company checks allow 2-3 weeks to clear. Mastercard & Visa, include card # & expiration date. Connecticut residents add 7.5% sales tax. Sorry, we cannot accept COD's. Purchase Orders: All merchandise FOB CT, and Handling. Please call (203) 378-3662 for credit information and terms.

Shipping Charges — Software Only — \$3.00

Minimum charge U.S. Mainland, U.S. Postal, APO, and FPO add 3% (\$5.00 Min.); Alaska or Hawaii add 6% (\$10.00 Min.); Canadian orders add 12% (\$15.00 Min.). Foreign Orders except Canada—Add 18% (\$25.00 Min.).

Hardware — Please call for shipping charges.

Our Policy — Your credit card is not charged until we ship. No surcharge is added for charge orders. In we must ship a partial order the shipment that completes the order is sent freight free. We do not guarantee machine compatibility. All products are new and include factory warranty, therefore All sales are final. Defective software will be replaced by the same item only. Defective hardware will be replaced or repaired at our discretion. Prices & availability subject to change without notice. Products purchased in error, subject to 20% restocking fee. All returns must have an authorization number or they will not be accepted. Call (203) 378-3662 to obtain one before returning defective products for replacement.

Visit Our New Showroom:

Exit 32 off I-95

2505 Main Street

Stratford, CT 06497

CODE - AP0201

PROGRAMS

PLUS

75 Research Drive
Stratford, Conn. 06497

Telephone Hours: Monday-Friday 9-9;
Saturday 10-6

Showroom Hours: Monday-Friday 9-6;
Saturday 10-6

Orders Only TOLL-FREE **1-800-832-3201**

COVER UP



Macintosh Plus
Cover Ups Available Now

COVER UPS: Contemporary dust covers made of first quality 400 denier rip stop nylon. **COVER UPS** are water resistant and anti-static. They will not tear, crack or create lint problems as do many vinyl and cloth covers. All seams and hems are double stitched for that finished look. **COVER UPS** will outlast the useful life of your computer, insuring years of worry free protection. We specialize in dust covers for Apple products and update our product line frequently. *Don't hesitate to protect your new Apple!* Individual covers available for most components, plus specially designed one piece covers for larger sets, such as the Apple II's, IBM PC's, and COMPAQ's. Available in six attractive colors: **Bone** (similar to the Mac), **Blue**, **Brown**, **Rust**, **Smoke** (gun metal grey), and **Tan**.

Macintosh/Mac Plus Sets (Specify)		Prices
#M1B	Macintosh, Keyboard, and Mouse	\$19.95
#M1	Macintosh, Keyboard, Imagewriter ¹ , and Mouse	\$27.95
#M2	Macintosh, Keyboard, Imagewriter ¹ , External Drive (400/800K), and Mouse	\$29.95
#M5	Macintosh, Keyboard, Large Imagewriter, and Mouse	\$29.95

Apple IIc Sets		Prices
#C1	Apple IIc CPU, Monitor ² , and Mouse (Separate covers)	\$18.95
#C2	Apple IIc CPU, Monitor ² , External Disk Drive, and Mouse	\$24.95
#C3	Apple IIc CPU, Monitor ² , Imagewriter ¹ , External Disk Drive, and Mouse	\$29.95
#C4	Apple IIc CPU, Monitor ² , Scribe, External Disk Drive, and Mouse	\$29.95

Apple IIe Sets		Prices
#E1	Monitor ³ atop IIe CPU (One piece cover. Components available)	\$23.95
#E11	E1 with Imagewriter ¹ (Two covers)	\$31.95
#E2	Monitor ³ atop Profile DuoDisk atop IIe CPU, (One piece cover. Components available)	\$26.95
#E21	E2 with Imagewriter ¹ (Two covers)	\$34.95

- 1 - Substitute **Imagewriter II** for Imagewriter. Any set add \$1.00.
Substitute **Laserwriter** for Imagewriter. Any set add \$5.00.
- 2 - Substitute IIc **Color Monitor** for Green Monitor. Any IIc set add \$1.00.
- 3 - Substitute IIe **Color Monitor** for Monitor II. Any IIe set add \$1.00.

Other **COVER UP** Sets Available Including IBM and Compaq.

STAND-UPS: Universal printer stands designed to raise your printer for easy viewing and provide ample space below for paper storage. Our **STAND-UPS** are metal with a textured powder coat finish (same as your printer), and include molded rubber booties to protect your printer and desk top. Available in black or computer white. **STAND-UPS** are truly the first reasonably priced printer stands. Retail Value \$23.95 *Direct Order* \$18.95

SLIP-UPS: Our own special mouse pad. Help keep your mouse clean and rolling easy. Two sizes and four colors to choose from: Blue, Brown, Bone, and Red.

Lil Slip-Up — 6" x 8" Pad (Complete screen coverage and more - Pictured above)	Only \$ 4.95
Big Slip-Up — 8" x 9 1/2" Pad (Room to spare)	Only \$ 7.95

Imagewriter Ribbons (First Quality. Satisfaction Guaranteed)

Black:	\$4.50/ribbon	Box of six Only \$21.95/\$3.66 ea.
Colored: (Mix or match)	\$6.00/ribbon	Box of six Only \$26.95/\$4.50 ea.

Available in six colors: Red, Blue, Green, Brown, Yellow, and Purple.

Scribe Ribbons

Black:	\$6.00/ribbon	Box of six Only \$26.95/\$4.50 ea.
---------------------	---------------	------------------------------------

◀ **PAK-UPS:** Now you can take it with you — your diskettes that is. Designed to conveniently hold 2, 4, 6, or 8 diskettes (3 1/2"). (5 1/4" **PAK-UPS** available soon.) **PAK-UPS** are a lightweight convenience carrier for your diskettes that will easily fit in your briefcase or vest pocket. Velcro closure holds your diskettes safe and secure. Available in eight colors: Black, Brown, Blue, Bone, Green, Red, Smoke, and Tan.

Retail Value \$11.95 *Direct Order* \$9.95 or 2/\$16.95

ORDERING: Phone or mail order. We accept Visa & M/C.
SHIPPING: Continental U.S. UPS Ground \$3.00, 2nd Day Air \$4.00.
SCHOOLS: Purchase Orders Accepted.

★ **SPECIAL: FREE SLIP-UP** with the purchase of any **COVER-UP** set. ★
 For a limited time only when you purchase direct.



Computer Cover Co.
 P.O. Box 3080, Laguna Hills, CA 92654
 CA (714) 380-0085 - Others (800) 235-5330

Macintosh/Mac Plus, Apple IIc, Apple IIe, Mac XL are all registered trademarks of Apple Computer.

ing for a replacement for my abandoned TI-99/4A. Then the new computer on the block was the "new" Apple IIc and was billed as the "everything you'll ever need is in there" computer. My wife is a third-grade teacher with Apples in her school, so what better computer to buy, right? Wrong!

Now I read no upgrade is planned for the II Plus or the IIc. I find that "all I'll ever need" just won't be enough. The new hard disk is a great device if you're a IIe or IIGS owner, but it's no good for my "closed" IIc. (It is an Apple, isn't it?) If that isn't bad enough, even my color stands out in the new all-gray crowd!

Well, I guess I'll stick with my trusty IIc, Apple monitor, and Apple printer (even though they are just white) and wait for Applied Engineering or some of the other fine companies to keep coming up with innovative "goodies" to keep my IIc up to date. Believe me, that's cheaper than getting a new computer every two years.

Glen Seigler
 Walterboro, SC

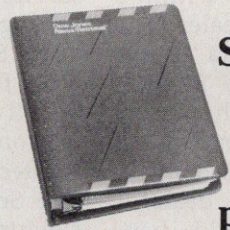
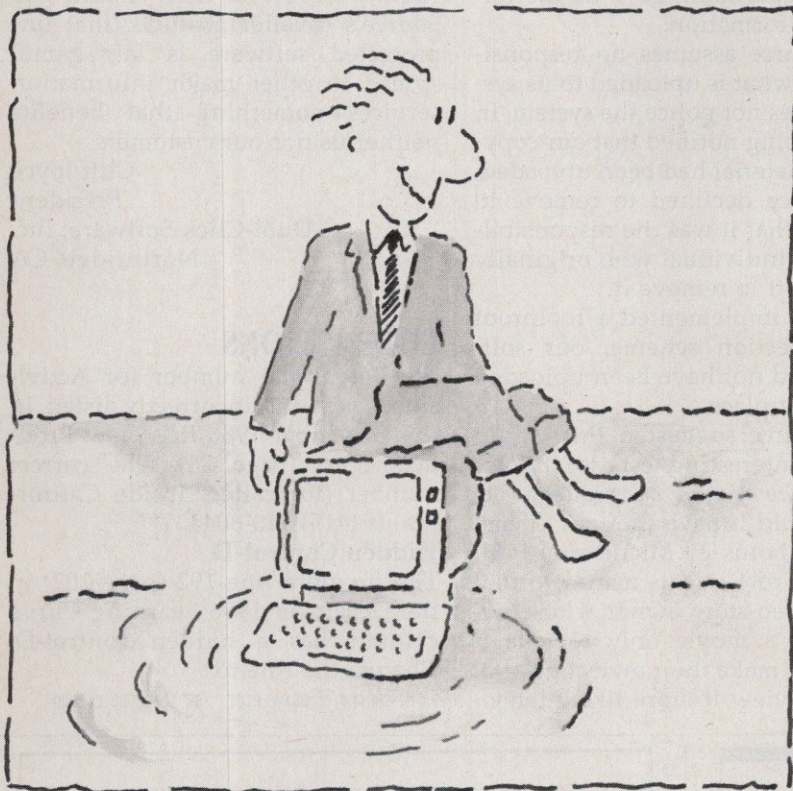
WARNING! DOES NOT WORK WITH MOUSE

Dear A+: I am writing to let you know of a slight hardware/software problem I had. Not too long ago, I purchased an Apple IIc system from my local dealer. Things seemed to be going along great until I kept running into software that would not work with the mouse, just the joystick. The software was The Newsroom and Graphics Expander from Springboard and the software that goes along with the X10 Powerhouse computer interface. I took the software over to a friend who has an Apple IIe, and it seemed to work fine, so I discounted it as a compatibility problem between the IIe and the IIc. The whole deal was really bothering me, so I took the suspect software down to the dealer that I purchased the IIc from and tried it out—everything worked!

This is what I found out:

In October 1986 Apple released a new version of the IIc. This version has platinum-colored keys and a new motherboard, equipped for the new plug-in memory-expansion card that Apple also introduced. My dealer discovered in an Apple II

GET YOUR FEET WET.



Sample Dow Jones News/Retrieval® — the nation's premier online

business and financial resource—without getting in over your head.

For only \$49.95, the News/Retrieval Membership Kit lets you and your colleagues plumb the depth of this valuable news and information service.

Eight free hours* of online time will get you started. There's a User's Guide to show you the way, step by step. And a year's subscription to *Dowline* (the magazine of News/Retrieval) gives

you background on and suggested applications for our offerings.

Stay on top of the competitive situation in your industry. Check on the positions of your company and clients. Keep up with breaking news or call up past news from *The Wall Street Journal* (online exclusively with News/Retrieval) back to January 1, 1984.

You can analyze a wealth of financial data, tap a pool of general knowledge, even plan a trip using almost any computer and modem, terminal or communicating word processor.

The Dow Jones News/Retrieval Membership Kit. It can help you embark on a wave of success... and not feel soaked.

To order or for more information, call **1-800-345-8500, Ext. 335.** (Alaska, Hawaii and foreign, call 1-215-789-7008, Ext. 335.)

Or use the coupon.

YES! I WANT TO GET MY FEET WET!

- Corporate offer—\$49.95 Each** includes:
 - 8 Free Hours* • Multiple Passwords
 - User's Guide • 1 Year of *Dowline*
 - \$12 Annual service fee waived for 1 year
- Personal offer—\$29.95 Each** for individual use, includes:
 - 5 Free Hours*
 - Single Password • User's Guide
 - 1 Year of *Dowline* • \$12 Annual service fee waived for 1 year
- Send more information**

\$_____ ENCLOSED (Check/Money Order) Bill me later Charge to: AmExp MC VISA

(If you pay by credit card, all subsequent usage charges will be billed to your credit card.)

Card No. _____ Exp. Date _____

Signature _____

Name _____ Title _____

Company _____

Address _____

City/State/Zip _____

Daytime Phone Number _____

Mail to: DJN/R Membership Kit, P.O. Box 300, Princeton, NJ 08543-0300

ATTN: John McGovern HOAA0207E

*Per account. Limited to new subscribers only. Free time (8 hours per Corporate offer, 5 hours per Personal offer) must be used within 30 days after receipt of password(s). Certain databases have fees over and above usage charges which are excluded from free time offer.

Dow Jones News/Retrieval®
Fuel for your ideas.

compatibility guide that the above-mentioned software does not work with the IIc. Well, it does work, just not with a mouse. An Apple representative in the store at the time said there was no difference between the two machines.

I am proud to say that within a few minutes the Apple dealer (The Computer Terminal, Santa Maria, CA) had an "older" style motherboard in my computer, humming along just fine. Having moved to Apple from Atari, I was amazed with the service I got from the dealer—something I never would have achieved with Atari Corporation.

Richard W. Hawley II
Santa Maria, CA

A SOURCE OF TROUBLE

Dear A+: Your November 1986 "NewsPlus" column discussed recent events regarding pirate BBSs. Although we most definitely applaud the action taken by the SPA against the Star Chamber, we wish to disagree with the general comment that commercial services usually police their own systems. Our own recent experience with The

Source indicates otherwise. Recently, we discovered that a portion of one of our commercial software packages had been uploaded to The Source and made available to all subscribers without our knowledge or permission. The Source's customer-service department gave us the following information:

- The Source assumes no responsibility for what is uploaded to its system. It does not police the system; in fact, on being notified that our copyrighted material had been uploaded, The Source declined to remove it, claiming that it was the responsibility of the individual who originally uploaded it to remove it.
- Had we implemented a foolproof copy-protection scheme, our software could not have been uploaded in the first place.
- The Source suggested this would make an interesting test case (implying that we should pursue legal action? Would it have thought so had we been Lotus or Microsoft?) It likened its role in this matter to that of the video-store owner whose clients rent a movie only to take it home and make their own copy of it. I tend to view it more like a televi-

sion station that rents a copy of *Top Gun* from the video store and then exhibits it for free over the airwaves.

Our company does not favor or use copy-protection schemes. We fear, however, that the growing trend away from copy protection could well reverse itself should The Source's cavalier attitude (that unprotected software is fair game) spread to other major information services—something that benefits neither us nor our customers.

Cliff Joyce
President
Dubl-Click Software, Inc.
Northridge, CA

CORRECTIONS

The telephone number for Activision, Inc., was incorrectly listed in the December 1986 IIGS New Products chart (page 78). The correct number (for callers inside California) is (415) 940-6044.

Hidden Control-D

The program line 192 (page 102) in the December 1986 Learning Curve column has a hidden control-D. Change the line to:

PRINT CHR\$(4); "BSAVE PICT";S:"";A\$2000,L\$2000"

Attention! HORSE RACING FANS...

Here's the game you've
been waiting for...

1 to 4
Players
Ages
10 to
Adult

A DAY AT THE RACES

Game 1 - "The Spectator"

- Horse Selection
- Win/Place/Show
- Scratch Sheets

A DAY AT THE RACES

Game 2 - "The Owner"

- Manage a Stable
- Complete Data Sheets
- Various Track Conditions

8 Races
Daily!

\$39⁹⁵

**Two Games
In One!**

Available for the Apple IIe
and IIc with 64K and 80
column capacity.

TO ORDER: Please send check
or money order to:
B/T ENTERPRISES
P.O. BOX 360916
MILPITAS, CA 95035-0619
or call 408-946-6019 with your
Visa or MasterCard Number.
DEALER INQUIRIES INVITED

Please allow 2-3 weeks for delivery.
Add \$2.50 for shipping and handling.
California residents add 7% sales tax.



CIRCLE 102 ON READER SERVICE CARD

APPLE COMPATIBLE DISK DRIVES

100% APPLE COMPATIBLE
90 DAY WARRANTY

11+ 11e HALF HEIGHT	\$99.00
11c HALF HEIGHT	\$99.00
DUAL HALF HEIGHT	\$220.00

100% MACINTOSH COMPATIBLE
1 YEAR WARRANTY

400K EXTERNAL DRIVE	\$99.00
800K EXTERNAL DRIVE	\$215.00

MEMORY BOARDS FOR IIe & IIc

RAMWORKS III	256K	\$190.00
MULTIRAM RGB	256K	\$175.00
MEGORAM	256K	\$150.00
Z-RAM 11	256K	\$230.00
MULTIRAM C	256K	\$190.00
TRANSWARP		\$230.00

DISK CONTROLLER CARD	\$ 39.00
SUPER SERIAL CARD	\$ 59.00
16K CARD	\$ 35.00
COOLING FAN W/SURGE	\$ 29.00

VISA-MASTERCARD-C.O.D.-P.O.

Memory Plus Distributors

2628 West Baseline Rd.

Mesa, AZ 85202

M-F 10am to 6pm MST

Mail Order Only (602) 820-8819

CIRCLE 152 ON READER SERVICE CARD

Preferred Computing

ORDER
TOLL FREE
1-800-327-7234

Computer Accessories

When Only the Best Will Do!



We only sell proven products that work. By selling only the industry best, we can assure you of the highest level of reliability and performance. Selling large volumes of a smaller product line allows us to have the lowest discount prices and fast same day shipment.

AE APPLIED ENGINEERING™

RamWorks III™ If you have a IIe this card is perfect and if you use AppleWorks, it's an absolute must! Applied Engineering was the first company to expand AppleWorks and they're always 6-12 months ahead of the competition. And you can stay current with our FREE SOFTWARE UP-GRADES. Why settle for a partial compatible when you can have a real RamWorks at a discount price.

RamWorks III 256K **\$169**
 RamWorks III 512K **\$209**
 RamWorks III 1 MEG **\$279**
 RamWorks III 1.5 MEG **\$389**

65C816 16 Bit Card Requires RamWorks II or III and Apple IIe. Enhances VIP Professional. **\$149**

RamWorks RGB Option Even if you bought a RamWorks just to use the RGB option, it would be worth it. The Applied Engineering RGB option has 4 text colors, runs both Apple and IBM RGB monitors, and is compatible with Apple's standard for RGB, includes cables. **\$99**

(See our new RGB monitor at right.)

TransWarp™ We tested all the accelerators and TransWarp was 20-300% faster than the others. Runs cool too! **\$219**

Z-80 Plus™ Runs all CP/M® software, works with Sider hard disk. There are over 5000 CP/M® programs out there and this card runs them all. Includes operating system and manual, a great value. **\$109**

Timemaster H.O.™ Timemaster H.O. has the most features and is the easiest to use. It comes with more software than any other clock card. It even adds 15 new commands to BASIC! **\$99**

Viewmaster 80™ Super resolution, total software compatibility and everything you need to run AppleWorks on a II+ or Franklin. **\$109**

RamFactor™ If you have a II+ or would rather use slots 1-7 in your IIe or IIgs, RamFactor is for you. It is fully compatible with Apple's memory card, runs AppleWorks on a IIe, II+ or IIgs and has a battery back-up option.

RamFactor 256K **\$189**
 RamFactor 512K **\$224**
 RamFactor 1 MEG **\$299**
 Battery Back-up **\$149**

Extended 80 Column Card with 64K Comes with full documentation. **\$69**

gsRAM & gsRAM Plus These cards offer much greater performance and expansion capabilities than Apple's memory card and unlike most others, gsRAM and gsRAM Plus use standard RAM's so further expansion is easy and economical. Only gsRAM and gsRAM Plus can expand AppleWorks 2.0 internal limits and include a built-in printer buffer.

gsRAM 256K **\$139**
 gsRAM 512K **\$179**
 gsRAM 1 MEG **\$249**
 gsRAM 1.5 MEG **\$319**
 gsRAM 2-8 MEG **Call 214-484-5464**
 gsRAM Plus 1 MEG **\$529**
 gsRAM Plus 2-8 MEG **Call 214-484-5464**

IIc System Clock™ **\$69**

Z-RAM Ultra For all IIc's
 Ultra 1: 256K **\$169**
 Memory Only 512K **\$209**
 Ultra 2: 256K **\$209**
 Memory & Clock 512K **\$249**
 1 MEG **\$319**
 Ultra 3: 256K **\$259**
 Memory, Clock & 512K **\$299**
 CP/M 1 MEG **\$369**

Phasor Simply the best sound and speech synthesizer for the II+, IIe, or IIgs. **\$139**

More Quality Products

Ultra Hi-Res RGB Monitor/TV This Sony RGB monitor uses a 13" ultra hi-res CRT for super sharp 80 column text and great graphics. But in addition to being the best RGB monitor available this unit is also a 180 channel cable ready television set with remote control. Try it. You WILL like it. (List \$625) **Only \$499**

RGB Cable For above **\$29.00**

5-1/4" Disk Drive Super quiet direct drive compatible with all Apple software and Apple controller card. A top quality unit with 1 year warranty. **Only \$119**

5-1/4" Disk Controller Runs up to 2 drives. **\$49**

16K RAM Card For Apple II and II+ **\$69**

Heavy Duty Apple Power Supply With over twice the output current of Apple's original power supply. This unit can run even fully loaded Apples. **\$59**

DataShield Uninterruptable Power Supply Keeps your Apple running through power transients, voltage drops, brownouts and blackouts. Provides constant flow of power in a blackout for 15-20 minutes, allowing an orderly shutdown. **\$299**

Kensington System Saver Fan with 2 power outlets and surge protector. **\$69**

Internal 1200 Baud Modem Cermetek 1200, for Apple IIe, II+ and IIgs runs at 1200 and 300 baud. Auto-dial, auto-answer with built-in speaker. Hayes compatible, with built-in communications software. Comes complete with cable and manual. (List \$299) **\$149**

Pinpoint's AppleWorks Accessories The best available and they are written to fully utilize Applied Engineering's RAM cards. (Includes RAM enhancement software). Together a \$118 value. **Only \$69**

256K RAMS 150ns. 5 year warranty. Set of 8 **\$39**

VIP Professional Lotus 1-2-3 Work-alike. For IIe & IIc (List \$249) **\$169**
 For IIgs (List \$299) **\$199**

SPECIAL!

RamWorks™ That's right, RamWorks not RamWorks II. RamWorks is the memory card that started the revolution. RamWorks can expand to 512K on the main board and up to 1 meg with an optional 512K piggy-back and can accept Applied Engineering's new RGB option. A 512K RamWorks gives AppleWorks a 360K desktop. Comes with Applied Engineering's newest software. Hurry, at this price they won't last long. **With 512K \$139**

Why buy from us?

1. Toll free 800 number for orders.
2. We almost always ship from OUR stock and we never let ourselves run out of Applied Engineering products. Call us before 3 P.M. and it ships today.
3. All memory cards have factory installed and tested RAM chips.
4. We're nice guys that want to help. We want our business to grow because of repeat customers and word of mouth.
5. We handle only the industry's best. We've tested and used all the products we sell.
6. 15 day money back satisfaction guarantee on hardware. If you don't like something, we'll give you your money back. No hassles.
7. We'll support, service and warranty everything we sell.
8. No surcharge is added for charge cards and we won't charge your card until we ship.
9. No sales tax is collected on orders outside Texas.
10. All shipments are insured by us.

Order by mail: Send check or money order to Preferred Computing, P.O. Box 815828, Dallas, TX 75381

Order by phone: 1-800-327-7234 Visa, MasterCard or COD Texas, Hawaii and Alaska 1-214-484-5464

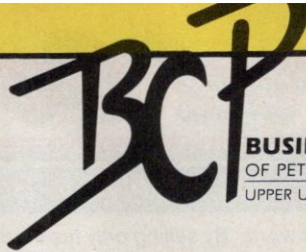
Orders only call 1-800-327-7234

Questions and Customer Service call 1-214-484-5464
 Texas residents add 5½% sales tax

Prices subject to change without notice



William F. Gollan
President



BUSINESS COMPUTERS
OF PETERBOROUGH, INC.

UPPER UNION ST. • PO Box 94 • W. PETERBOROUGH, NH 03468-0094

“We're celebrating...”



COMPUTERS	
Apple Computer	
All Products	CALL
Central Point	
Laser 128	389.95
Disk Drive 5 1/4"	139.95
Disk Drive 3 1/2" 800k	179.95
Disk Drive 3 1/2" 800k w/Cont.	278.95
Expansion Box	69.95
MODEMS	
D.C. Hayes	
Micro Modem IIe w/sw	138.95
Smart 1200	374.95
Smart Modem 1200A	CALL
Smart Modem 2400	579.95
Prometheus	
Pro 300 IIc w/sw	89.95
Pro 1200	278.95
Pro 1200 A w/sc	248.95
US Robotics	
Password 1200	199.95
Courier 2400	398.95

PERIPHERALS	
Amdek	
Color 600 RGB	399.95
Apple Computer	
Mouse II E	118.95
Mouse II C	88.95
Super Serial Card	114.95
Applied Engineering	
RamFactor II w/256k	189.95
RamFactor II w/1mB	289.95
RamWorks III w/64k	159.95
RamWorks III w/1mB	269.95
ZRam IIC w/1mB	379.95
ZRam Ultra I w/512k	199.95
ZRam Ultra II w/1mB	298.95
ZRam Ultra III w/1mB	348.95
Checkmate Tech	
Multiram II E	119.95
w/64k + 80	164.95
w/128k + 80 + RGB	128.95
w/128k + 80 + RGB	168.95
w/320k + 80	158.95
w/320k + 80 + RGB	188.95
w/576k + 80	188.95
w/576k + 80 + RGB	218.95
w/832k + 80 + RGB	242.95
w/1024k + 80 + RGB	268.95
w/1344k + 80 + RGB	418.95
w/1600k + 80 + RGB	448.95
w/1792k + 80 + RGB	478.95
CX	
w/256k	139.95
w/512k	174.95
w/768k	329.95
w/1024k	354.95
w/1536k	399.95
Curtis	
Emerald	35.95
Printer Stand	17.95
Ruby	53.95
Disks 5.25" (10)	
3m SS/DD	11.95
Maxell SS/DD	10.95
Memorex SS/DD	13.95
Verbatim Bonus SS/DD	10.95
Verbatim SS/DD w/Free CL Kit	16.95
Disks 3.5" (10)	
Fuji DS/DD	26.95
Maxell DS/DD	28.95
Memorex SS/DD	25.95

Apple
Mac w/1mb
\$1699.95
Mac w/512k
\$1329.95

PERIPHERALS	
First Class Peripherals	
10-mb Sider	489.95
20-mb Sider II	729.95
Kensington	
System Saver	58.95
Koala Technologies	
Koala Pad +	78.95
Joysticks	
Kraft	31.95
Kraft Quickstick	49.95
Hayes Mach III's	35.95
Hayes Mach IV's	CALL
GRAPHIC INTERFACES	
Orange Micro	
Grappler + w/16k	118.95
Grappler + w/64k	144.95
Grappler C	78.95
Grappler RS-232C	74.95
Hot Link IIc	48.95
Image Buffer II w/64k	68.95
ProGrappler	75.95
Textprint	
Print It	130.95
Thirdware	
Fingerprint +, IIC (ea)	88.95
Fingerprint G +, SS (ea)	68.95

PRINTERS	
Apple*	
Imagewriter II 10"	499.95
Citizen	
MSP 120D (120 cps) 10"	189.95
MSP 10 (160 cps) 10"	289.95
MSP 20 (200 cps) 10"	329.95
MSP 15 (160 cps) 15"	389.95
MSP 25 (200 cps) 15"	489.95
MSP 35 Daisywheel (35 cps) 15"	499.95
Epson America	
All Products	CALL
Juki	
6000 Daisywheel (10 cps)	218.95
6100 Daisywheel (18 cps)	349.95
6200 Daisywheel (30 cps)	489.95
6300 Daisywheel (40 cps)	688.95
Okidata	
ML 192 + (200 cps) 10"	359.95
ML 193 + (200 cps) 15"	529.95
Silver Reed	
Exp 800 Daisywheel (40 cps)	669.95
Star	
NX 10 (120 cps) 10"	239.95
NX 15 (120 cps) 15"	349.95

BUSINESS SOFTWARE	
ALS	
Spellworks	30.95
The Handlers	58.95
Apple	
Appleworks	198.95
Arrays	
Home Accountant	44.95
Tax Advantage	44.95
Batteries	
Paper Clip	37.95
BPI Software	
AR, GL, PR, AP, IC (ea)	218.95
Broderbund/Bankstreet	
Filer, Mailer, Writer, Speller (ea)	43.95
Compuserve	
Subscription Kit	26.95
Intuit	
Quicken	34.95
Meca	
Managing your \$ V 2.0	118.95
Megahaus/Works Series	
Mega.Report.Think (ea)	78.95
Microsoft	
Multiplan	60.95
Monogram	
Dollars & Cents IIc, II + (ea)	71.95
Forecast	37.95
PBI	
CommWorks	64.95
Graphworks	44.95
JEEVES	28.95
Quark	
Catalyst, Word Juggler 3.0 (ea)	58.95
Roger Wagner	
Mouse Write V 2.6	88.95
Write Choice	41.95

BUSINESS SOFTWARE	
Sensible Software	
Bookends—Ext.	81.95
Sensible Grammar	55.95
Sensible Writer (new)	68.95
Speller IV, Bookends (ea)	68.95
Sierra On Line	
Homeward +, Filter (ea)	44.95
Smart Money	51.95
Simon & Schuster	
JK Lassens Income Tax	44.95
Websters Speller Ck.	37.95
Software Publishing	
PFS:WR, GR RP, PL (ea)	75.95
PFS:File/Report	75.95
PFS:Workmates	148.95
Sorcim/IUS	
Super IIIA	108.95
Styleware	
Multiscribe	45.95
United Software	
ASCII Express	74.95
Word Perfect	
WordPerfect V 1.1	84.95

UTILITIES/LANGUAGES	
Activision	
Christmas Kit	20.95
Designers Lib. Sports	17.95
Designers Lib Sci-Fi	17.95
Designers Pencil	25.95
Greeting Card Maker	26.95
Kitchen's Game Maker	31.95
Bantam	
Walt Disney Card & P. Shop	25.95
Walt Disney Comic Strip	25.95
Baudville	
Actors & Actions	17.95
Business	33.95
Blazing Saddles	28.95
Take 1	33.95
Beagle Brothers	
Alpha Plot, D-Code, Extra-K, Triple Dump (ea)	20.95
Juki	
Apple Mech., Bag, Diskquick, Flex-Text, Font Mech., Frame-Up, IO Silver, Pronto Dos, Util. City (ea)	16.95
Basic, Big U., Dbl. Take, Fat Cat, Macro Works, Probyter, Screens (ea)	
	18.95
Compiler	41.95
DOS Boss, Silicon Salad (ea)	13.95
Graphics	30.95
GPLE	25.95
Mini Pix #1, 2 (ea)	15.95
Power Print	20.95
Tip Disk #1	12.95
Typefaces	15.95
Borland International	
Turbo Pascal 3.0 (Reg. cpm)	44.95
Turbo Tool (Reg. cpm)	34.95
Turbo Tutor	21.95
Broderbund	
Animat	43.95
Print Shop	31.95
Print Shop Companion	24.95
Print Shop Enh., Fantavision (ea)	31.95
Print Shop GL 1,2,3 (ea)	16.95
Print Shop Refill Paper	13.95
Toy Shop	38.95
Toy Shop Refill	17.95
Central Point	
Copy II +	20.95
Wildcard II	69.95
Data Transforms	
Fontrix	53.95
Font Set(s) (ea)	13.95
Funk	
Sideways	38.95
Mindscape	
Mister Pixel's	
Cartoon, Paint Set (ea)	26.95
Color Me (Main)	25.95
Hugga, Rainbow, Shirt & Tink Tonk (ea)	13.95
Polarware	
Complete Graph. Sys.	25.95
Graph. Magician Paint/Anim.	25.95
Graph. Magician Jr.	14.95
Pinpoint	
Document Checker	38.95
Informace	44.95
Modem Enh. Kit	22.95
Keylayer	CALL
Pinpoint (New)	49.95
Pinpoint Ram Exp.	22.95

UTILITIES/LANGUAGES	
Pinpoint Spellchecker	38.95
Pinpoint Toolkit	27.95
Point to Point	69.95
RunRun	27.95
Springboard	
Certificate Maker	29.95
Newsroom	34.95
Newsroom Clip Art V1, V3 (ea)	17.95
Newsroom Clip Art V2	24.95
Newsroom Graphic Exp V1	24.95
Barrons	
Computer SAT	32.95
Better Working	
File/Report, Spread., WP (ea)	38.95
Homework Math/Word	31.95
Homework Writing	31.95
Typing Made Easy	31.95
Broderbund	
On Balance	CALL
Science Tool Kit Mast.	44.95
Science Tool Mod 1, 2	25.95
Toy Shop	38.95
Type	28.95
Variable Feast, Geometry	CALL
CBS	
Adventure Master	14.95
Body in Focus, Coast to Coast, Dinosaur Dig (ea)	22.95
Goren's Bridge	44.95
Mastering SAT	54.95
Success Series (ea)	24.95
Davidson Associates	
AlgeBlaster, Classmate, Mathblaster, Spell-It, Work Attack (ea)	27.95
Grammar, Gremlin	27.95
Homeworker	51.95
Speed Reader II	38.95
Designware	
Body Trans., Europe Nations, States & Traits, Gram. Exam. (ea)	28.95
Remember	48.95
Spellcopter, Spellakazam (ea)	24.95
Electronic Arts	
Cut & Paste	11.95
Financial Cookbook	35.95
Movie Maker	26.95
Fisher Price	
Alpha Build, Logic Levels, Up & Add-Em, SeasPELLer (ea)	16.95
Man-on-Moon, Jungle Reading, Peter R. Reading, Peter W. Music (ea)	25.95
Harcourt Brace	
SAT	25.95
Hayden	
SAT Math, Verbal (ea)	38.95
Learning Company	
Addition Mag., Magic Spells (ea)	25.95
Bumble Plot, Games, Reader Rabbit, Moptown Hotel, Parade (ea)	24.95
Gertrudes Secrets, Puzzle (ea)	27.95
Juggie's Rainbow	18.95
Robot Odyssey, Rocky's Boot (ea)	31.95
Mindscape	
Bank St. Story B.	24.95
Keyboard Cadet, Lusher Profile (ea)	24.95
Perfect Score SAT	44.95
Pinpoint	
Added Menu's (ea)	11.95
Micro Cookbook	27.95
Random House	
Charlie Brown Series +	

CALL TODAY—ORDERS ONLY 1-800-845-3003



"We'll support, service, and warranty everything we sell and stand behind it 100%."

FREE T-SHIRT
with every order
over \$99.95!!

7 years serving Apple II users. Join us!

EDUCATIONAL/PERSONAL

All Products (ea)	19.95
Scarborough	
Boston Diet, Personal Net Worth (ea)	51.95
Mastertype New, Filer (ea)	26.95
Mastertype's Writers	44.95
Run For \$, Song Writer (ea)	29.95
Simon & Schuster	
Chem Lab, Great Paper Air P. (ea)	24.95
Lovejoy's SAT	38.95
Make a Match, Math Buster (ea)	22.95
Typing Tutor III	31.95
Spinnaker	
Adv. Creator, Trains, Sum Ducks, Counting Parade, Alpha. Zoo (ea)	20.95
Delta Drawing	24.95
Fraction Fever	17.95
Grandma's House	17.95
In Search of	20.95
Kids on Keys	18.95
Kid Writer	24.95
Kindercomp	18.95
Math Busters	23.95
Rhymes & Riddles	17.95
Snooper Trooper 1,2 (ea)	20.95
Story Machine	17.95
Springboard	
Early Games	20.95
Easy ABC, Mask Parade (ea)	23.95
Fraction Factory	18.95
Music Maestro	23.95
Piece Cake Math	23.95
Puzzle Master, Rainbow P., Stickers (ea)	20.95
Timeworks	
Evelyn Wood Reader	45.95
Silvia Porter & Planner	61.95
Silvia Porter Inv. Mng.	61.95
Xerox/Weekly Reader	
Sticky Bear Series (ea)	22.95

GAMES SOFTWARE

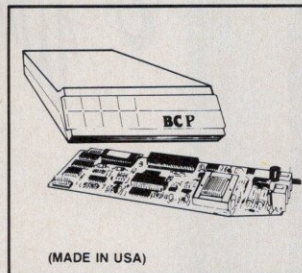
Access	
Beach-Head II	23.95
Accolade	
DamBusters, Fight N., Hard Ball, Laws of West, Psi 5, Sundog 2.0 (ea)	20.95
Double Accolade	31.95
Activision	
Alcazar, Borrowed Time, Countdown to Shut., Ghostbuster's Hacker, H.E.R.O., Little CPU Disc., Master Lands, Mindshadow, Pitfall, Road Race, Rock N' Space Shuttle Tracer Sanction, Zenii (ea)	24.95
Alter Ego	31.95
Hacker II, Shanghai (Ea)	24.95
Star Lge. Baseball	20.95
Avalon Hill	
Under Fire	35.95
Avant Garde	
Dave Winfield	23.95
Theisman's ProFootball	23.95
Broderbund	
Airheart	22.95
Art of War, Serpents Star (ea)	28.95
Breakers	28.95
Capt. Goodnight, Champ. Lode R., Karateka (ea)	22.95
Mask of Sun	24.95
Where in the World...	25.95
CBS	
Murder by Doz.	24.95
Datasoft	
Alternate Reality	27.95
Bruce Lee, Conan, Goonies, Mr Do, Zoro, Pooyan (ea)	22.95
Dig Dug	21.95
Never Ending Story	22.95
Electronic Art	
Age of Adv., Super B. Dash, 1 on 1, Music Const. Set, Pinball Const. Set, 7 Cities Gold, Archon (ea)	10.95
Adv. Const. Set, Carriers At War, Wilderness Europe Ablaze (ea)	33.95
Lords of Conquest	CALL
Epyx	
Baseball, BallBlazer, Champ, Wrestling, Destroyer, Eidolon, Fax, Football, G.I. Joe, Koronis Rift, Mission Impossible, Summer Games 1,2, Pitstop, Winter Games (ea)	24.95
Karate, SuperCycle, World Games	CALL
Hayden	
Sargon III	31.95

GAMES SOFTWARE

Infocom	
Cutthroats, Seastalker, Zork I, Wishbringer, Witness, Hitchhikers, Forbidden Quest, Enchanter, Planet Fall, Ballyhoo, Footblitsky (ea)	24.95
Deadline, Starcross, Spellbreaker Suspended (ea)	30.95
Leather Goddess, Trinity, Moonmist Mind Voyaging	27.95
Suspect, Zork I/II, Sorcerer, Infidel	27.95
Micro Lge. Sports	
Baseball	24.95
Microprose	
Acro Jet, F-15, Gunship, Nato C., Silent Serv., Solo Flight (ea)	22.95
Conflict Viet., Crusade Europe, Decision Desert (ea)	24.95
Mindscape	
American Challenger, Forbidden Castle, James Bond View K, James Bond Gold F., Steven King's Mist, Voodoo Island, Halleys P., Rambo Part II (ea)	24.95
Deja Vu	39.95
D. Francis High Stakes, Racter (ea)	28.95
Tinka's Mazes, Sub-Fair, Adventure, Buddy Boots, Tuk (ea)	22.95
Uninvited	CALL
One Step	
Golf's Best Pinehurst	18.95
Golf's Best St. Andrew's Old	18.95
Origin	
Autoduel, Moebius (ea)	40.95
Orge	CALL
Ultima 3 & 4 (ea)	40.95
Polarware	
Coveted Mirror, Crimson Cr. (ea)	14.95
Oo-Otopos, Swords Kadash, Xyphus (ea)	14.95
Sierra On Line	
Black Caldron	24.95
Kings Quest 1,2,3 (ea)	31.95
Simon & Schuster	
Star Trek	24.95
Sir Tech	
Rescue Raiders	21.95
Wizardry 1	31.95
Wizardry 2	25.95
Wizardry 3,4 (ea)	28.95
Wizprint	16.95
Spectrum	
Gato	21.95
Orbiter	CALL
Strategic Simulations	
Baltic 85	24.95
Battalion Commander	24.95
Battle Group	35.95
Battle Normandy	24.95
Broadsides	24.95
Carrier Force	37.95
Colonial Conquest	24.95
Computer Baseball	29.95
Field of Fire	24.95
Gemstone Warrior	23.95
Geopolitique 1990	24.95
Germany 85	37.95
Imperium Galactum	24.95
Kampfgruppe	38.95
Nam	23.95
N. Atlantic 86	38.95
Panzer Grendier	24.95
Phantasie II	24.95
Rails West	24.95
Rings of Ziffin	24.95
USAAF	35.95
War in Russia	48.95
Sublogic	
Flight Simulator II	34.95
Jet	34.95

7 Years Better Business Bureau

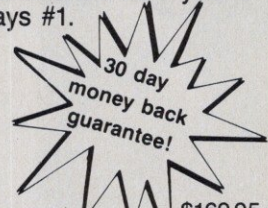
BCP Introduces OUR Superior Products...



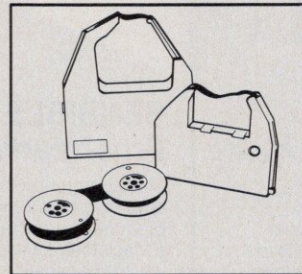
(MADE IN USA)

MODEMS

... unsurpassed reliability, unlimited tech support and a customer service department where you're always #1.



- JG-1200 (External, 1200 Baud, 1 yr. warranty) \$169.95
- JG-2400 (External, 2400 Baud, 1 yr. warranty) \$299.95
- PG1200A (Internal, 2400 Baud software, 2 yr. warranty) \$189.95



RIBBONS

... vacuum sealed to preserve freshness and long life. All six packs come carefully packaged in a convenient container for easy storage. Stock up now, so next time you won't run out.

	Black	Colors
*Apple Imagewriter I/II	24.95	28.95
*Apple Imagewriter II Rainbow	N/A	69.95
*Apple Scribe	34.95	N/A
*Brother HR 15/35 MS	30.95	N/A
*Epson MX-FX/Citizen 10"	24.95	28.95
*Epson MX-FX/Citizen 15"	33.95	39.95
*Epson LX 80/90	28.95	33.95
*Epson LQ800	34.95	40.95
*Epson LQ1000	39.95	N/A
*Okidata ML 82A, 92, 93	13.95	19.95
*Okidata ML 192, 193	36.95	42.95

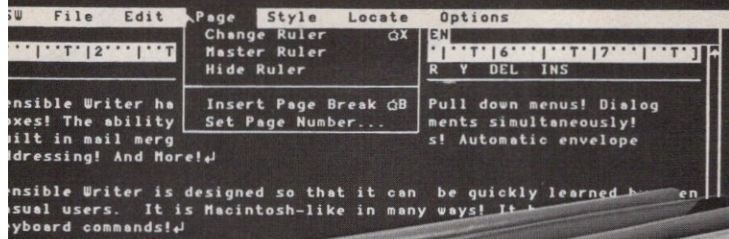
Colors: GR, BR, PU, BL, RD, YL.

Customer Service (603) 924-9406

- Our Terms and Conditions
- Shipping—Software \$3.00 min.
- Shipping—Hardware CALL
- APO/FPO 3% (\$6.00 min)
- Alaska/Hawaii 6% (10.00 min)
- Canadian 10% (15.00 min)
- Foreign 18% (25.00 min)
- PO's FOB NH + Handling
- Credit Card—0% Charge
- Prices Subject to Change
- 1 T-Shirt per order

CALL TODAY—ORDERS ONLY 1-800-845-3003

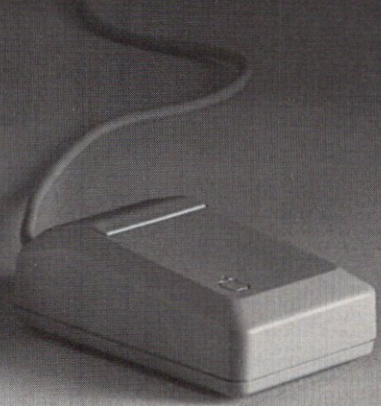
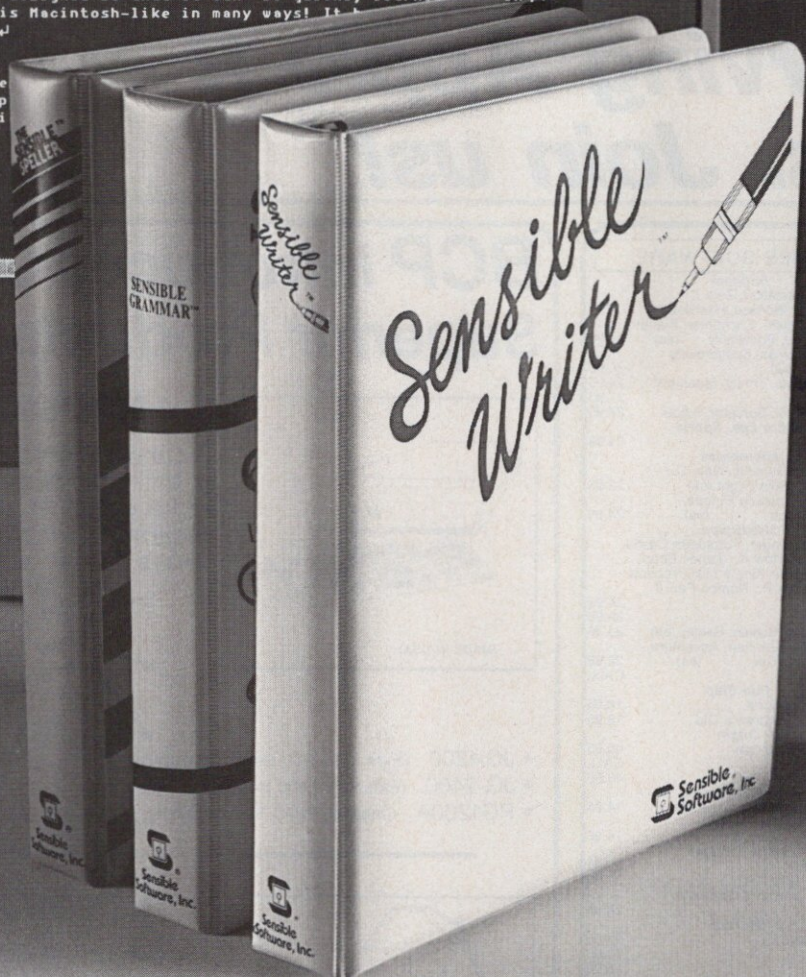




Sensible Writer is designed so that it can be quickly learned by even casual users. It is Macintosh-like in many ways! It has a Macintosh-style keyboard commands!

Sensible Writer is compatible with Appleworks. See the Sensible Speller available for Apple IIgs, //c or 5 1/4 or 3.5 uni-

THE SENSIBLE WAY TO WRITE



SENSIBLE WRITER™ **Word Processor**



Sensible Writer, for all its sophistication, is easy to learn. It is Macintosh-like and even a casual user can quickly pick it up. You can use a mouse, keyboard, or both. More than that, **Sensible Writer** has all the features you want! Pull down menus! Dialog boxes! The ability to handle two large documents simultaneously! Built-in mail merge! Rulers to format your documents! Automatic envelope addressing! And more!

Sensible Writer reads and writes Appleworks files directly. You'll like the way it automatically uses extended memory cards and utilizes up to 512K from them. You'll appreciate the convenience of a program which loads completely into memory and installs easily on hard disks.

Sensible Writer is designed especially for you, the serious word processor user who demands effective professional documents. It's fast, powerful, and full-featured. Compatible with **Sensible Grammar** and **Sensible Speller**, it is available for Apple IIgs, //c or enhanced 128K //e computers on 5 1/4 and 3.5 UniDisk for \$99.95.

SENSIBLE GRAMMAR™ **Proofreading Program**

This comprehensive program saves you embarrassment by checking your papers for grammatical and other writing errors. Featuring a Macintosh-style user interface, it is easy for you to use because it is AppleMouse compatible and also has keyboard commands for speed.

Sensible Grammar does more than check your writing style. It also checks capitalization, punctuation, and abbreviations too. It searches out inconcise, vague, wordy, repetitive, faulty, informal, pompous and sexist phrases. It also points out cliches and slang.

Sensible Grammar always keeps you in the driver's seat. It never overrides your judgment. It merely singles out possible mistakes or improper usage and suggests corrections. But you are free to accept or reject them.

Sensible Grammar is compatible with Appleworks and most ProDOS word processors and is available for Apple IIgs, //c and 128K //e computers on 5 1/4 and 3.5 UniDisk for \$99.95.

SENSIBLE SPELLER™ **Spelling Checker**

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

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

Sensible Speller is compatible with Appleworks and most ProDOS word processors. Supplied on UniDisk 3.5 as well as 5 1/4" disk, it is available for Apple II computers including IIgs. A non-ProDOS version is also available. Each is \$125.

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



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

CIRCLE 165 ON READER SERVICE CARD
210 S. Woodward, Suite 229, Birmingham, Michigan 48011 • (313) 258-5566

NewsPlus

The Software Publishers Association has paid \$1300 so far in rewards to individuals who report 'prosecutable' pirate bulletin boards.

BOUNTY HUNTER

The Software Publishers Association reports significant success with its program that awards a \$100 bounty to individuals who report "prosecutable" pirate bulletin boards. As of early November, the SPA had paid out \$1300 in rewards, \$600 of which went to a single, enterprising individual in California. The SPA considers the program so successful that it first extended the program until the end of 1986 and then on into 1987. At this writing, the deadline will be February 1, 1987, but it could creep further into the year. Interested bounty hunters should call Ken Wasch, executive director of the SPA, at (202) 452-1600.

WHICH PROGRAMS WORK?

When Apple introduced the IIGS last fall, it provided dealers with a compatibility guide listing the results of Apple's tests on 300 Apple II programs. As might be expected, a few glitches arose, and Apple has published an addendum, explaining which programs *do* work with the IIGS that it previously said did not. Among the seven titles listed are Computer SAT Preparation by Harcourt Brace Jovanovich, Pinpoint by Pinpoint Publishing, and Quicken by Intuit.

Other corrections concerned the ability of certain packages to work with special IIGS features, such as the control panel. In all, the addendum contained a mere 14 corrections. But the bottom line is this: If you're wondering if your old software works with the IIGS, the best bet is to call the publisher—or take the program in question into the store with you.

After all, a dealer with even the most current version of the compatibility guide has information about only 300 of the thousands of Apple II titles.

TESLER TAPPED

Apple Computer, Inc., wants to maintain its leadership position when it comes to technical innovation and has confirmed that commitment with an executive appointment. Apple recently named Larry Tesler, 41, to the newly created position of vice president of advanced technology. Tesler will also be a member of Apple's executive staff, meaning that the advanced-development group will be intimately involved in the company's long- and short-range planning.

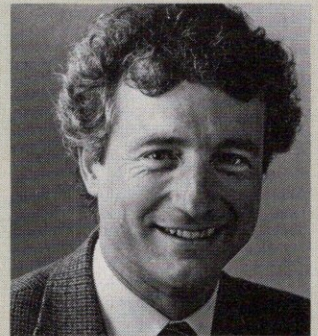


PHOTO COURTESY OF APPLE COMPUTER, INC.

And what sort of background does Tesler bring to this powerful position? Tesler has been at Apple for six years and is probably best known in the industry for his management role in the development of the now-defunct but then-revolutionary Lisa system. He is also a veteran of Xerox's Palo Alto Research Center (from which Apple has borrowed many user-interface developments) and Stanford University's Artificial Intelligence Laboratories. One Apple



insider suggests that Tesler might pursue the old Xerox PARC/Alan Kay notion of the Dynabook, a notebook-size computer.

APPLEWORKS ALERT

Here are a couple of items that came to our attention after the deadline for this month's "AppleWorks Report":

The National AppleWorks Users Group is offering half-day seminars across the country. The topic is "Beyond the Basics," and the fee is \$40 for members and \$45 for nonmembers. (Membership in this group costs \$24, which also entitles you to a newsletter, public-domain software, discounts on products and seminars, and access to an electronic bulletin board.) Several seminars have already taken place in the Midwest, but the group plans more on the East and West coasts. For more information, call NAUG in Canton, Michigan; (313) 397-1594.

Our other item concerns Bob (aka Rupert) Lissner, the programmer who wrote AppleWorks. Lissner has started an on-line bulletin board that supplies technical information to programmers who want to modify AppleWorks or write programs that work with it. The number to call is (702) 831-1722.

UNIQUE COPY PROTECTION

The Software Publishers Association program pays \$100 to individuals who offer information leading to the shutdown of bulletin-board systems that offer pirated software, and the ADAPSO Software Protection Committee has set aside \$45,000 for an antipiracy campaign to combat illegal copying of software at universities.



But Rabbi Alan Rosenbaum believes his company, Davka Corporation, may have a unique solution that is equally effective. The Chicago company specializing in religious-education software has the following words emblazoned on its diskettes: "UNAUTHORIZED REPRODUCTION OF THIS DISK IS IN VIOLATION OF THE BIBLICAL COMMANDMENT AND MAY BE AGAINST FEDERAL AND STATE LAWS." In other words, God will getcha if you don't watch it.

FILE-TRANSFER STANDARD PROPOSED

In November, writer and software author Gary B. Little proposed an Apple II Binary File Format standard that would make file transfers to commercial information services such as CompuServe, Delphi, GENie, and The Source simple and convenient. Currently, transferring Apple II files in binary form to commercial information services is frustrating. Although these services are able to receive a file's data in binary form, they don't receive the file's attribute bytes—the filename, file-type code, the file size, and so on. (ProDOS stores the attributes inside the disk directory, not inside the file itself.) Thus, binary files uploaded to these services are useless to those who download them.

Right now, the only acceptable way to transfer Apple II files to a service is to convert the file into lines of text and send the text file. Someone downloading the text file then converts it to a binary form, using the Applesoft EXEC command. The disadvantage of this technique is that the text version of the file is more than three times the size of the original binary file, making it expensive to upload and download. Sending a 32K IIGS super-high-resolution picture

using the text-file method would require nearly a 100K text file!

The solution to this problem is to upload a standard encoded binary file that contains not just the file's data but the file's attributes as well. After downloading the file, you must use a con-

1011001101000

1100110011100

1111010101000

1010010111010

version program to create the file with the required attributes. This encoding scheme is similar to MacBinary, the widely adopted file-transfer protocol for Macintosh files, except that a single Binary II file can hold multiple disk files, making it easy to keep a group of related files "glued" together when you send them to the on-line service.

If you are interested in this standard, you can obtain the documentation and conversion programs on the major on-line services. (On CompuServe in the MAUG section, download BINARY.DOC, BI2UP.EXE, and BI2DWN.EXE from data library 8.)

We think this proposed standard is well founded and perfectly timed for the new crop of IIGS desk accessories, pictures, and other public-domain software that is appearing on bulletin-board systems and commercial on-line services.

A disk each month delivered to you... packed with ten programs for your Apple.

DISCOVER UPTIME. You deserve the best from your Apple. Have the best and save the most with UPTIME.

We make it easy and inexpensive — a disk each month. You deserve value. At UPTIME we believe in value. That's why each month 30,000 people like you enjoy a disk packed full of programs and information.

Make your life easier & get more from your computer. Organize your life and be more productive with **home management** and **finance** programs. Have fun learning with our **educational** programs and fun relaxing with **games** and **adventures**. You'll find **business, graphics, utilities** & more!

Ten programs and more on every disk.

What's the opposite of "downtime"? It's UPTIME, of course. Just imagine... a disk each and every month, delivered right to your door and packed with programs for your Apple.

Subscribe now, with our introductory offer! Satisfaction guaranteed — or your money back.

Make the very next disk yours! Fill in the coupon and return it to us, or simply call. We'll start your subscription immediately, in addition to sending you...

**17
FREE
PROGRAMS**

Put work gloves on your Apple with **UTILITY TIME** — 17 programs including *Banner Maker*, *Musical Keys* and *Graphix Fun*. For **immediate service**, call toll-free: **1-800-437-0033** anytime, day or night.

**QUALITY PROGRAMS
LESS THAN
60¢ EACH**

NOW
FOR ALL
APPLE II
COMPUTERS



FROM **Volume 11, No. 1**

Micro Crossword Puzzle ■ Disk Verifier ■
Line Runner ■ Einstein Energy ■ Milli-
second ■ Calorie Counter ■ What To
Take ■ The Arcade ■ Ellipsoid
Maker + more!

CIRCLE 219 ON READER SERVICE CARD

SAVE 60% → 12

I'm an Apple enthusiast who wants more. Please start my subscription to UPTIME immediately.

Name _____

Address _____

City _____

Type of Computer _____
 Please send my **FREE Utility Time** disk (\$18.45 value)

Bill my: Visa MC Exp. Date _____

Signature _____
Account No. _____

Send to:
UPTIME · PO Box 299
Newport, RI 02840
(401) 849-4925 A2

6 Disk Issues \$72.00 (Add \$2 per issue in foreign countries, except Canada and APO)
3 Disk Issues \$30.00
1 Disk Issue \$11.95

State _____ Zip _____

Computer Network

CALL TODAY 1-800-621-0937

FREE Updates on Ramcard Software* • FREE Catalog with every order
10 DAY 100% MONEY BACK GUARANTEE ON ANY HARDWARE PRODUCT*

*In 10 days of receipt we will refund your money if you're not 100% satisfied with any Hardware Product shipped to you, (less shipping).

CHECKMATE TECHNOLOGIES

Multiram Iie 64k	\$ 119
Multiram Iie 320k	165
Multiram Iie 576k	205
Multiram Iie 768k	237
Multiram Iie 64k w/RGB	158
Multiram Iie 320k w/RGB	202
Multiram Iie 576k w/RGB	235
Multiram Iie 832k w/RGB	259
Multiram Iie 1meg w/RGB	279
16 bit Microprocessor Iie	159
Multiram Iic 256k CX	179
Multiram Iic 512k CX	239
Multiram Iic CX kit 16 bit	129
Multiram Iic CX +	CALL
CP/M RAM software	20
256K Ram Chips 150ns	4



NEW!

- 65C02 Processor
- Full 128k of RAM
- Built-in 5.25-inch Disk Drive
- Most Apple //c Compatible on the Market
- External Apple II-compatible expansion slot
- 10-key numeric keypad
- Mouse and Modem Interface
- Serial & Parallel interface

Laser 128
\$395
 AppleWorks Compatible

APPLIED ENGINEERING

Ramworks III 64k	\$ 140
Ramworks III 320k	188
Ramworks III 576k	226
Ramworks III 832k	268
Ramworks III 1 meg.	296
Ram Factor 256 to 1meg	CALL
Z-RAM II 256k //c	296
Z-RAM II 512k //c	340
Z-RAM II 768k //c	384
Z-RAM II 1 meg //c	515
Velwmaster (+/E)	106
Z-80 Plus (+/E)	106
Iic System Clock	66
Timemaster II H.O.	101
TRANSWARP	220
16 Bit Option for Iic/Ile	70
65C816 16 Bit Option Ile	139

NEW! CHRISTMAS SPECIAL

Ribbons \$3.00 ea

IMAGEWRITER, PROWRITER & EPSON FX80/ RX80

CHRISTMAS SPECIAL

FontWorks \$35.95

Add Different Fonts & Sideways Printing to AppleWorks

BUSINESS

ASCII Express ProDOS/DOS	ea	77.95
Bank Street Mailer		40.99
Bank Street Writer 64K/128K	ea	40.99
Bank Street Speller		40.99
Bank Street Filer 64K/128K	ea	40.99
BPI GA,AR,AP,PAY Pro	ea	208.95
Bookends ProDOS-2C/2E-128		64.95
CommWorks		74.95
Crosstalk		109.00
Dollars & Sense (Ile/Ile-128k)		67.95
Fontrix		63.00
The Graphics Department		65.00
Manage Your Money		102.00
MouseWrite 2C/E-ENH 128		115.00
Merlin Pro 2C/2E-128K		64.95
PFS 1st Success F/R/W Pro-128K		126.00
PFS File & Report	ea	68.50
PFS: Graph		68.50
PFS Write ProDOS-2C/2E-128K		68.50
PROFILER		68.95
Supercalc 3a 2C/2E ENH	CALL	
Think Tank		84.95
VIP Professional //e//c -256k	CALL	
Word Perfect		98.00
Your Personal NetWorth		50.00

APPLEWORKS

AutoWorks	27.95
FontWorks	37.95
FormsWorks	32.95
GraphWorks	55.95
HabaMerge	48.50
Haba Templates	19.95
InfoMerge	39.95
MemoWorks	22.95
MegaWorks	68.95
Pinpoint 2C/2E-Enh 128k ProDOS	34.95
Pinpoint Tool Kit	29.95
Pinpoint Pop-up Speller Checker	34.95
Pinpoint Print Enhancement	13.95
Pinpoint & Pop-up Speller Combo	68.00
Point to Point	85.95
Pinpoint Modem Enhancement	19.95
Pinpoint Ile Upgrade kit	19.95
Power Print	24.00
Quicken	52.95
ReportWorks	68.95
Sensible Speller DOS or ProDOS	ea 71.00
Sensible Grammar	59.95
Sideways ProDOS NEW!	36.95
SpellWorks	28.95
ThinkWorks	95.00

HOME-HOBBY

Copy II + or Choplifter	ea	22.50
Dazzle Draw		35.15
Fantavision		28.95
F-15 Strike Eagle or Lode Runner	ea	20.50
Flight Simulator II		29.95
GATO		20.95
Graphics Expander Req. Printshop		23.95
Home Accountant		39.00
King's Quest II VII (C/E-128K)	ea	29.30
Mind Prober		33.95
Newsroom +/E/C		30.50
Newsroom clip art I or III	ea	16.25
Newsroom clip art II		24.00
One on One or Silent Service	ea	24.95
Printshop +/C/E		26.75
Printshop GL 1,2,3	ea	14.25
Printshop Refill		12.25
Printshop Companion		22.50
Program Writer		39.95
Sargon III (II, Mac)		29.30
Seven Cities-Gold or Skyfox	ea	25.50
Star Trek-Kobayashi		24.50
Turbo Pascal (Req. CP/M) NEW		54.00
Ultima III / IV		34.95
Winter Games or Summer Games	ea	24.00

EDUCATION

Early Games for Young Children	18.00
Master Type	23.45
Math Blaster	29.30
Typing Tutor III	29.30
Word Attack	29.30
Speed Reader II	41.00
Mission Algebra	28.00
Spinnaker Full Line	CALL
Stickybear ABC's/Math/etc	ea 24.00
Where is Carmen San Diego?	ea 24.25
Algebra I thru IV	ea 26.95
Fraction Fever	17.95
Visible Computer 6502	37.95
Spell It	28.69
Snooper Troops 1 or 2	22.95
Rocky's Boots	31.95
Spellicopter or Turtle Tracks	24.00
Charlie Brown's ABC's	29.95
Beneath Apple Pro DOS	16.95
Story Maker	24.50
Turbo Tutor	24.95
Sticky Bear Reading	23.99
Certificate Maker	32.95

We Welcome School PO's

DISKETTES

Elephant SS/SD	9.95
Elephant SS/DD	12.95
Verbatim SS/DD	14.95
Diskettes 3 1/2 SS/DD	24.95
Diskettes 3 1/2 DS/DD	29.95
Diskette Cleaner kit 5.25	7.95
Disk Notcher (use both sides of disk)	9.95
Diskette Carousel (holds 72) 5.25	19.95
Disk Drives	
Disk Drive Ile Applied Eng.	119.00
Disk Drive Controller AE	67.95
Mitac Disk Drive //c	129.00
Mitac Disk Drive //e	119.00
//e Drive to //c - adapter plug	19.95

PRINTERS

Epson LX-80	279.95
Epson FX-85 80 col	419.95
Epson FX-286 136 col	609.95
Epson LQ 800 Ser. & Par.	619.95
RIBBONS	
Imagewriter	3.00
Imagewriter II 4-Color	9.95
Prowriter 8510	3.00
Epson FX/RX 80	3.00
Epson FX/RX 100	4.75
Epson LX-80	3.50
Okidata 192	4.95
COLOR RIBBONS CALL	

HARDWARE

Amdex 300 12"	123.00
Cables for Modems & Printers	ea 24.95
Color 300	225.00
Color 600	399.00
RGB Interface	127.00
A+ Mouse or Serial Grappler	ea 79.00
Kraft Quick Stick	49.00
Grappler +	72.00
Buffered Grappler + 16K	131.50
Hot Link, S-P cable for //c	44.00
Grappler C	75.00
A-B switch Box 25pin	59.95
A-B Switch Box 36pin	99.95
Mitac Monitor 9"	105.00

HARDWARE

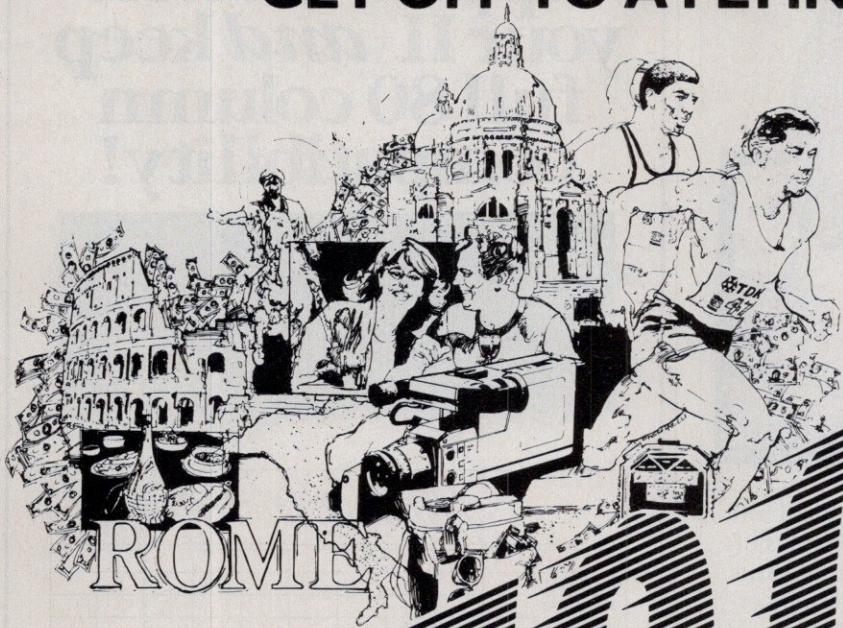
Wide Carriage Printer Stand	19.95
No-Slot Clock (SMT)	65.00
Koala Pad //e - //c	75.00
Mach III w/Fire (II+/Ile)	32.25
Ile 80Ram Card	55.95
System Saver	62.00
The Cricket //c	111.00
Thunderclock +	103.00
Disk Notcher	9.95
MODEMS	
Hayes Smartmodem 1200	358.00
Hayes Smartmodem 300	132.00
Micromodem Ile w/Smartcom I	129.00
Hayes 2400 External Modem	577.00

NO ADDITIONAL CHARGES FOR VISA & MASTERCARD ORDERS

For fast delivery send cashier's check, certified check or money order. Personal and company checks allow 15 days to clear. Shipping - Software (\$4.00 min.). Shipping - Hardware (please call). Sorry No C.O.D.'s. School P.O.'s accepted, terms net 15. Am. Ex-5%. *NM Res. add 5.25% sales tax. Prices & availability subject to change without notice. All products are new and include factory warranty, therefore all software sales are final. We do not guarantee compatibility. Products purchased in error subject to 15% restocking fee. Defective merchandise replaced with same item only. Foreign add 18% (\$25 min). Not Responsible for typographical errors. Mail Orders to COMPUTER NETWORK, 211 W. Fiesta #25, CARLSBAD, NM 88220
 *To update your Multiram, RamWorks, & Z-RAM software Disk, please send a Diskette with a self stamped package for Return. All RETURNS must include an RMA #, call before shipping products.

RUN AWAY TO ROME

GET OFF TO A FLYING START



WITH TDK'S

\$450,000

DASH FOR CASH

S W E E P S T A K E S

See world-class athletes perform in Rome while you continue to get a world-class performance from your quality TDK floppy disks.

2-\$50,000 GRAND PRIZES

If you're one of the lucky Grand Prize winners in TDK's "Dash for Cash" Sweepstakes, you'll receive a fully paid, 8-day/7-night deluxe trip for 2 to the World

Championships in Athletics to be held in Rome August 29-September 6, 1987. It includes round-trip airfare via Alitalia Airlines, luxury hotel accommodations and 2 VIP passes to the games as guests of TDK. All this plus \$40,000 in cash!

5-FIRST PRIZES

Five lucky first prize winners will win a fully paid Grand Prize trip for 2, complete with airfare, luxury accommodations and 2 VIP passes, compliments of TDK. Plus \$5,000 in cash!

50-SECOND PRIZES

Each of 50 second prize winners will receive a State-

of-the-Art Video Camcorder to record their favorite live sporting events or special family moments.

5,000-THIRD PRIZES

5,000 avid sports fans will receive a lightweight insulated sports cooler that keeps your favorite liquid refreshment as hot or cool as you like it.

15,000-FOURTH PRIZES

15,000 runners-up can keep tabs on the pace with a sporty high tech digital stopwatch that keeps track of time with pinpoint accuracy.

Go to your TDK dealer today and pick up your entry coupon in specially marked packages of TDK floppy disks or write for entry coupon

and official rules to "DASH FOR CASH", P. O. Box 2312, Yonkers, NY 10703. Include a self addressed, stamped envelope, except residents of Washington and Vermont. One request per envelope. All requests for entry coupons must be received by June 1, 1987. No purchase necessary. All entries must be received by midnight June 30, 1987. Void where prohibited.



TDK
OFFICIAL FLOPPY DISK
SUPPLIER TO THE
WORLD CHAMPIONSHIPS
IN ATHLETICS
ROME, ITALY.



TDK
THE NO-RISK™ DISK.

NewsPlus



DOS BOOT

No, it's not a subtitled film about a German submarine crew. It's a newly announced product from Orange Micro. DOS Boot, which is scheduled for release in April, is designed to allow you to run MS-DOS applications from a disk drive. Unlike Little Blue (the working name for a similar, upcoming product from Applied Engineering), though, DOS Boot will work only on the IIGs. Little Blue is designed to work with the Iie and II Plus as well.

LOOKING FOR WIZARDS

Many computer stores do not have the expertise to properly service all the hardware and software they sell. But expect to see more specialty bulletin-board systems (BBSs) and users' groups to fill the gap. For example, AST Research offers a BBS to disseminate technical information and software updates.

First Class Peripherals, the manufacturer of Sider (the \$499 ten-megabyte hard-disk drive for the II Plus, Iie, or IIGs), is searching users' groups for "Wizards" that it will train. A wizard will be able to make quick, limited on-site repairs of in-warranty products and answer technical questions. The company is asking that Apple users'

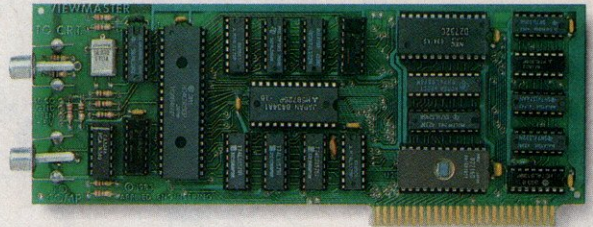
group presidents submit, in writing, the names of four qualified applicants, and three possible meeting dates. Your users' group must have 300 members, and at least 100 members present at the group meeting the Sider folks attend. For more information or to request a wizard presentation, please contact The Wizard Program, First Class Peripherals, 3579 Highway 50 East, Carson City, NV 89701.

COMPUTERS TO KENYA

Apple has made its first educational grant outside the U.S. to the Aga Khan Foundation's Computers in Education project in Kenya. Apple gave \$120,000 worth of equipment—33 Apple IIs, a Macintosh, software, ImageWriter printers, and other peripherals—to the project, which encourages both teachers and students to use computers as tools in the classroom. The project, which began in 1982, has expanded to include 4000 students and 250 teachers.

Viewmaster 80

Now run AppleWorks™ on your II+ and keep full 80 column compatibility!



	BUDE-IN SOFTWARE	SHIFT KEY SUPPORT	LOW POWER DESIGN	80 COLUMN HOME	7 x 9 DOT MATRIX	LIGHT PEN INPUTS	80 COLUMN OVERLIDE	INVERSE CHARACTERS
VIEWMASTER 80	✓	✓	✓	✓	✓	✓	✓	✓
SUPRTERM		✓					✓	✓
WIZARD 80				✓				
VISION 80	✓	✓						
OMNIVISION		✓					✓	✓
VIEWMAX 80	✓	✓		✓				
SMARTERM	✓	✓				✓	✓	
VIDEOTERM		✓	✓		✓	✓		✓

One look at the chart will give you some of the reasons there's only one smart choice in 80 column cards for your Apple. But the real secret to Viewmaster 80's success is something even better: Total compatibility.

Each Viewmaster 80 includes our powerful AppleWorks expand software, allowing AppleWorks to run on the II+ with only 64K (or more) memory. (We recommend the RamFactor memory card, but any compatible Apple memory card will work.) The software provides our full range of AppleWorks enhancements, including expanded records, word processor, multi-disk saving, time and date display on screen with any PRO-DOS clock, and more!

The Viewmaster 80 works with all 80 column applications, including DOS 3.3, PRO-DOS, CPM, Pascal, WordStar, Format II, Applewriter II, dBase II, Visicalc, Multiplan, and *hundreds* of others—including AppleWorks.

Here are just a few of the powerful features the Viewmaster 80 delivers for a great price (\$149):

- 80 Characters by 24 lines • Fully compatible with all Apple languages and software • Highest compatibility with existing 80 column software • Very low power consumption • High speed (18 MHz) scroll rate • Upper and lower case characters and true descenders, both inverse and normal; all on-screen editing functions are supported • User-definable cursor shape • Compatible with Apple II, II+ and Iie • Five-year warranty

Call today to order or for more information, 9 a.m. to 11 p.m. seven days, or send check or money order to Applied Engineering. MasterCard, VISA and C.O.D. welcome. Texas residents add 5% sales tax. Add \$10.00 outside U.S.A.

CP/M is a registered trademark of Digital Research, Inc.

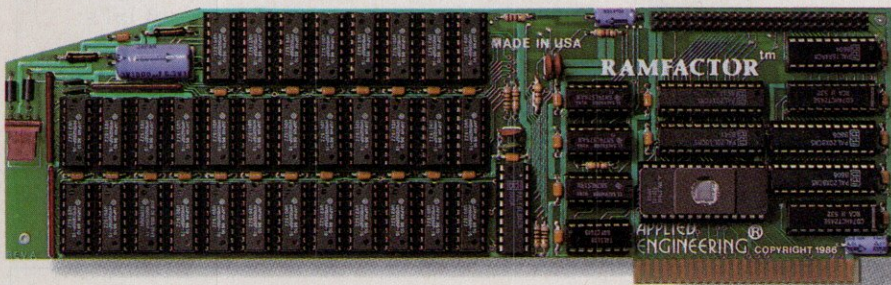
AE Applied Engineering
 P.O. Box 798, Carrollton, TX 75006
 (214) 241-6060

RamFactor™

The Highest Performance, Speed and Software Compatibility of Any Slot 1-7 Memory Card for the Apple II+, IIe or IIGS.

Now anyone with an Apple II+, Franklin, Laser 128, Apple IIe or IIGS preferring to use slots 1 through 7 can now enjoy the speed and performance that they've been waiting for.

With RamFactor, you'll be able to instantly add another 256K, 512K, or a full 1 MEG on the main board and up to 16 MEG with additional piggyback card. And since virtually all software is automatically compatible with RamFactor, you'll immediately be able to load programs into RamFactor for instantaneous access to information. You'll also be able to store more data for larger word processing documents, bigger data bases, and expanded spreadsheets. And with the battery back-up option you can switch on your Apple and any of your favorite software will be up and running in less than 1 second!



Very Compatible

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

AppleWorks Power

There are other slot 1-7 cards that give AppleWorks a larger desktop, but that's the end of their story. But RamFactor is the only slot 1-7 card that increases AppleWorks internal memory limits, increasing the maximum number of records in the database and lines permitted in the word processor, and RamFactor is the only standard slot card that will automatically load all of AppleWorks into RAM dramatically increasing speed and eliminating the time required to access the program disk, it will even display the time and date on the AppleWorks screen with any ProDos clock. RamFactor will automatically segment large files so they can be saved on 5¼", 3½", and hard disks. All this performance is available to anyone with an

Apple IIe, IIGS or II+ with an 80 column card. RamFactor, no other standard slot card comes close to enhancing AppleWorks so much.

True 65C816 16 Bit Power

RamFactor has a built-in 65C816 CPU port for direct connection to our IIe 65C816 card for linearly addressing up to 16 MEG for the most powerful 16 bit applications. (II+ 65C816 card under development.)

Powerful Program Switcher

With RamFactor, you can organize memory into multiple work areas and switch between them. Each work area can contain different programs and even different operating systems. Now you can switch from one program to another or even switch from AppleWorks to DOS 3.3 to CP/M to Pascal to ProDos in under a second. And with our Battery back-up option, you can have permanent storage for up to 20 years.

Quality and Support of the Industry Leader

RamFactor is from Applied Engineering the largest, most well supported manufacturer of Apple peripherals and the inventor of large RAM cards for the Apple. With our 5 year no hassle warranty and outstanding technical support, you're assured of the most trouble free product you can buy.

Features:

- Up to 16 MEG total memory, 256K to 1 MEG on main board. Up to 16 MEG with additional memory on piggyback card.
- Fully Apple II Memory Expansion compatible
- Compatible with Apple IIe, II+, IIGS, Franklin and Laser 128
- Battery back-up option allows you to turn on your Apple and run your favorite programs in less than 1 second!
- Automatically recognized by ProDos, DOS 3.3, Pascal and standard CP/M
- Built-in RamDrive™ software (a true RAM disk not disk caching)
- Systems are directly bootable from RamFactor if desired
- Built-in linear addressing 16 bit co-processor port
- Built-in self diagnostic software
- Automatic expansion with AppleWorks 1.3 or later
- Allows Apple II+ and IIe to run your AppleWorks without buying additional software
- Accelerates AppleWorks
- Displays time and date on the AppleWorks screen with any ProDos clock
- Fits any I/O slot except slot 3
- Fully socketed and user upgradeable
- Much, much more

RamFactor with 256K	\$239
RamFactor with 512K	\$289
RamFactor with 1 MEG	\$389
RamFactor with 2-16 MEG	CALL
Battery Back-up Option	\$179
65C816 16 Bit Card	\$159

Order RamFactor today . . . with 15 day money back guarantee and our "no hassle" five year warranty. See your dealer or call (214) 241-6060, 9 a.m. to 11 p.m., 7 days, or send check or money order to Applied Engineering, MasterCard, Visa and C.O.D. welcome. Texas residents add 5½% sales tax. Add \$10.00 if outside U.S.A.

AE Applied Engineering™
The Apple enhancement experts.

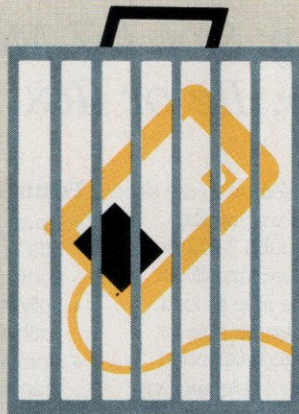
(214) 241-6060

P.O. Box 798, Carrollton, TX 75006

NewsPlus

MOVING MICE

Many moons after Apple introduced its Apple-Mouse, the company is formally urging its dealers to include mice in their standard demonstration setups. Not only that, but Apple is also encouraging dealers to show off Apple systems using two 3.5-inch-disk drives (more than a year after Apple brought out this size of drive). These suggestions to dealers may quell some complaints Apple receives for introducing technical advancements and then seeming to pay lip service to them rather than actively market them. This



ambivalence has been a problem for software developers who have jumped on the mouse or 3.5-inch-drive bandwagon at Apple's urging—only to find that not enough consumers were buying these peripherals. Now if Apple would only

bundle a mouse with the Apple IIe and IIc as it does with the Macintosh and the IIGS . . .

EXTENDED LIFE FOR MOUSEWORD

If Apple had thrown its full weight behind the mouse for the Apple II a while ago, perhaps International Solutions, Inc., could have done better. This California company, which went out of business last year, sold only mouse-based software (MouseWord, MouseCalc, and so on) and griped that Apple didn't promote the mouse as it

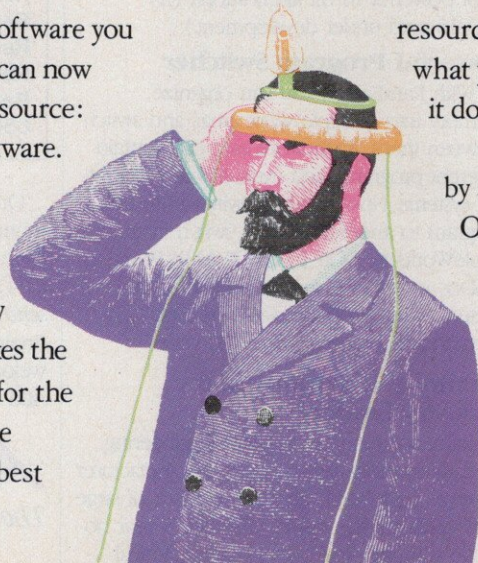
should have. Of course, that's all water under the bridge now—although ISI's departure from the scene does leave its former customers high and dry when it comes to ongoing product support and updates.

Enter Roger Wagner Publishing, Inc., another purveyor of mouse-driven software, namely the word processor, MouseWrite. The Southern California company recently announced an upgrade path for users of ISI's MouseWord. For \$75, owners of this word processing program can turn in their packages and receive a current version of Roger Wagner's MouseWrite.

If you feel like a lost soul when it comes to music software, get the bible.

Almost every bit of music software you could possibly want or need can now be found in a unique single source: Coda, the bible of music software.

Detailing over 500 items which range from software to accessories to books, Coda is a remarkably user-friendly catalog that takes the confusion out of searching for the right music software. It's the computer-using musician's best



resource today. In fact, if you can't find what you need in Coda, chances are it doesn't exist.

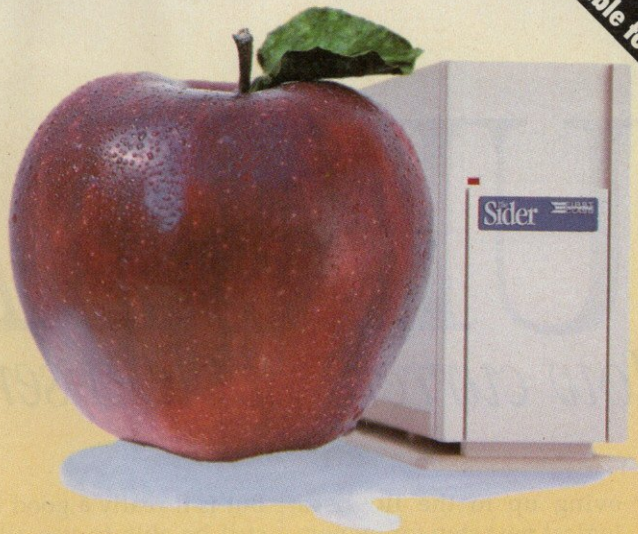
Order Coda today for only \$4.00, by simply calling the number below.

Or write to: Wenger Corp., 555 Park Drive, Dept. A2, Owatonna, MN 55060. It's not only inspirational, it's divine guidance.

Coda. 1-800-843-1337.
All major credit cards accepted.
Or call collect 1-507-451-1951.

CIRCLE 123 ON READER SERVICE CARD

ONLY \$499
Now Available for the Apple IIgs!



SIDER MAKES A GREAT APPLE PERFECT

First Class Peripherals introduces the first external 10-megabyte hard disk drive that is fully compatible with your Apple IIgs, II+ or IIe.

Sider is the Core of Your Apple's Production

Our Special Second Anniversary offer of **\$499** is the affordable solution you've been waiting for. Operating your Apple® IIgs, II+ or IIe can become cumbersome when you have to continuously shuffle and store floppies. First Class Peripherals has a solution to the "floppy shuffle"... the Sider.

Sider, a 10-megabyte subsystem, is an economic business tool that allows you to save time and money with a bootable hard disk that is reliable, fast and affordable.

The field-proven Sider was introduced in 1984. First Class Peripherals worked closely with Xebec to produce a quality hard disk that works with all major operating systems—DOS®, ProDOS®, CP/M® and Pascal®—and is interactive from one system to another. The Sider's hard disk has an access rate many times faster than that of a floppy disk, and the

storage on the 10-megabyte hard disk drive is equivalent to 72 floppy disks... and that's a lot of floppies to shuffle.

The Sider offers expandability. Its hard disk drive is partitionable, allowing you to allocate up to four operating systems on the same disk. And you can daisy-chain any two Sider products for a maximum of 40-megabytes of storage.

No Matter How You Slice It... It's a Sweet Deal.

You may ask yourself how First Class Peripherals can offer a 10-megabyte drive for only **\$499**. The answer is simple. This second anniversary price is possible through innovative technology, high capacity on-shore manufacturing and factory direct sales methods. By selling through direct mail, dealer and distribution expenses are avoided, so you pay only for the product and its components... nothing more.

In addition to its great price, the Sider also comes with Siderware—installation and support utilities, host adapter card, all necessary cables and a reassuring 15 day money-back guarantee. Simply order the Sider and use it for 15 days. If you're not completely satisfied, return it for a full refund. If you choose to keep the unit (we're sure you'll love it), you also receive First Class Peripheral's one year limited warranty.

So Make Your Apple Perfect and Order a Sider Today!

To receive your 10-megabyte Sider for only **\$499**, your 20-megabyte Sider II for **\$799** or your B-Sider tape drive for **\$695**, simply order using the coupon below, or for faster service order by phone and charge to your VISA, MasterCard or American Express. **Call Toll Free: 1-800-538-1307, Extension 23.**

CIRCLE 111 ON READER SERVICE CARD



- Yes,** please send me the items indicated:
- 10-Megabyte Sider @ **\$499**
 - 20-Megabyte Sider II @ **\$799**
 - B-Sider (tape drive) @ **\$695**

Please add \$15.00 for shipping and handling. Residents of CA and Nevada please add appropriate sales tax. Allow 4 to 6 weeks for delivery. Offer ends Dec. 31, 1986. Apple and ProDOS are trademarks of Apple Computer, Inc. CPM is a trademark of Digital Research, Inc.

I prefer to pay by:

Check or money order enclosed (payable to First Class Peripherals)

VISA MasterCard American Express

Card # _____ Exp. Date: _____

Signature: _____

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Telephone: (_____) _____



Mail to: **First Class Peripherals,**
3579 Highway 50 East,
Carson City, NV 89701
A

UPGRADING

How current Apple II-series owners can step up

Moving up to the IIGS is a logical next step for owners of current Apple-II-series computers: You get a souped-up, Macintosh-like computer that still works with most of your current software and peripherals. If you own an Apple IIe, it's pretty obvious how you can upgrade to a IIGS—by purchasing an upgrade kit from Apple that gives your old IIe new innards. But that's only one approach to upgrading. Even if you have a IIc or a II Plus, there is still an upgrade path for you. You can sell (or set aside) your old CPU, buy a IIGS system unit, and use it with your old software and peripherals.

Here we examine the whys and wherefores of purchasing the official Apple upgrade kit and describe what you can and can't take along with you no matter which upgrade path you take and no matter which Apple II you're starting with.

The Apple IIGS upgrade kit, scheduled for release later this year, will give the almost two million IIe users the opportunity to transform their computers into IIGS equivalents for only \$499. The upgrade is not available to II, II Plus, or IIc owners, however, despite frequent rumors to the contrary. It simply won't work with these computers because of lack of space inside the computer (IIc) or incompatible keyboards (II and II Plus).

The upgrade is only half the price of a real IIGS (the IIGS system unit, keyboard, and mouse cost \$999). And, if you purchased a IIe from an authorized Apple dealer between July 15 and September 14, 1986, you can get a \$100 rebate for an upgrade.

But is it really a good buy? Will you still be able to use all your old peripheral cards and software? Should you keep your IIe and ignore the IIGS? Or is this the time to sell your IIe, II Plus, or IIc system unit and graduate to a genuine IIGS? These are some of the questions I hope you'll be able to answer after reading this article.

Details of the Upgrade

The IIGS upgrade kit consists of three items: a IIGS motherboard, a metal base pan, and a manual that describes the differences between a IIGS and a IIe. The upgrade does not include a IIGS keyboard, power supply, or case—you must salvage these items from your IIe. The upgrade also does not include the IIGS mouse or a disk drive.

The kit's motherboard is identical to the IIGS motherboard except that it has two additional connectors: one for the IIe keyboard and one for the optional IIe keypad. A new base pan (which includes the back panel) is needed because the IIe base pan does not have openings for the IIGS's built-in port connectors.

According to Apple, the upgrade kit must be installed by an authorized Apple dealer, but the \$499 price does not include installation charges. Installation doesn't take long, however, so these charges should be low—some dealers may even do it free. Unfortunately, you are not allowed to keep your IIe motherboard; dealers must ship these back to Apple.

Installation is relatively simple and involves the following steps:

- disconnect the power supply, key-

board, and speaker cables from the IIe motherboard

- remove the base pan from the plastic casing of the IIe and save the speaker

- insert the IIGS motherboard and the new base pan

- reconnect the power supply, keyboard, and speaker cables.

The computer you end up with is functionally no different from a real IIGS—it just has a different keyboard and a different case. Thus, you will be able to take advantage of all the IIGS-specific software that will begin to appear in 1987, notably graphics and sound applications. One caveat: Most of this new software will probably require a mouse and 3.5-inch disk drives, but these are not part of the upgrade kit. You might need to budget a few hundred dollars more for these items.

Hardware Compatibility

A major factor in deciding whether to buy the IIGS upgrade is whether you can protect your existing investment in peripheral hardware. In other words, will all those nifty interface cards you've grown to know and love still work on the Apple IIGS?

Keep in mind that the IIGS has several built-in I/O ports, so you won't even need some of your old cards in the first place. That's nice because you can conceivably recoup part of the upgrade price by selling your redundant peripherals to II Plus users or to IIe users who aren't upgrading.

Built into the IIGS are two serial interfaces, a mouse interface, analog RGB and composite video ports, and a SmartPort controller for 3.5-inch

TO THE IIGS

to the power of the IIGS

and 5¼-inch disk drives. The GS also has an internal battery-operated clock, a music/speech synthesizer, and 80-column-display circuitry. It seems pointless, therefore, to use cards that simply duplicate these functions.

You may want to continue using an interface card instead of the corresponding port, however, if the firmware on the card lets you issue useful commands that the IIGS does not. For example, some printer-interface cards, such as the Serial Grappler and Alphabits, contain advanced screen-printing utilities. And most clock cards give you the time and date in a variety of formats if you use a few simple Applesoft commands, unlike the IIGS clock.

You may also want to use a card instead of a port to avoid the expense of (or the hassle of making) a new cable for a printer or modem you already use. It's quite astounding, but it seems that every time Apple releases a new computer, it dreams up a new I/O connector. The serial connectors on the IIGS are 8-pin circular connectors, not the ones used on the IIc or on any peripheral card I've seen for the IIe or II Plus. These connectors are used on the Macintosh Plus, however.

Most (but not all) Apple II peripheral cards that plug into an I/O slot (not the IIe auxiliary connector) can work on the IIGS. The cards that definitely cannot work are multi-function cards that use "phantom" slot techniques (where an I/O de-



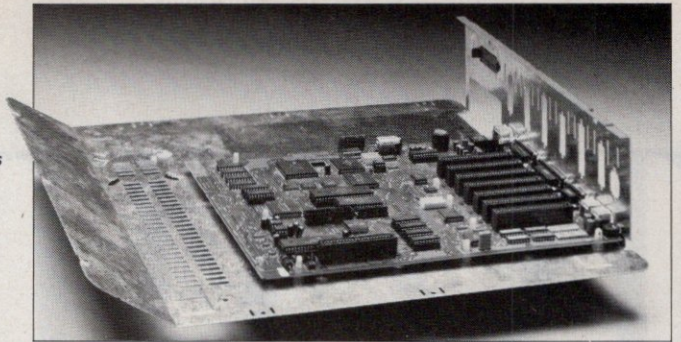
vice appears to be in a slot different from the slot in which the card is inserted), such as the Street Business-Card, AST Multi-I/O, and the Prometheus Versacard. These types of cards simply can't cope with the 16-megabyte address range of the 65816 microprocessor of the IIGS. Multifunction cards that don't use phantom slots, notably the RC Systems Slotbuster, can work.

Generally speaking, single-function cards work fine on the IIGS—the list includes serial and parallel printer-interface cards, internal-modem cards, disk-drive controllers, and memory cards compatible with the Apple II Memory Expansion Card (such as the Applied Engineering RamFactor and the AST Sprint-Disk). There are exceptions, so you should ask the manufacturer of any given card whether it will work, before you upgrade.

Apple recommends using a fan if you install more than two expansion cards in the IIGS, to avoid heat-related damage to components. Apple sells an internal IIGS System Fan, but it won't fit inside an upgraded IIE case—use something such as the Kensington System Saver instead.

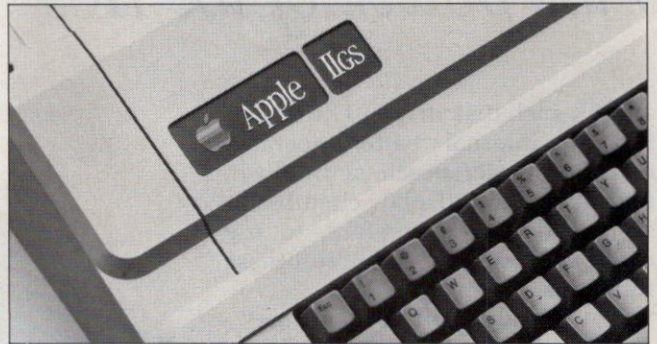
Two important exceptions relate to drive controllers. The interface card for the Apple ProFile hard-disk drive doesn't work properly on the IIGS—in fact, if you tried to use it, you could lose data. Apple has published a simple hardware fix to solve this problem, however. Older versions of Central Point Software's Universal Disk Controller won't

INSIDE:
The \$499 Apple IIE-to-IIGS upgrade kit includes a metal base pan that has the new back panel and a IIGS motherboard. The kit's motherboard is identical to the IIGS motherboard except that the kit has the connectors for the IIE keyboard and IIE keypad.



WHAT THE UPGRADE GIVES YOU

OUTSIDE:
You will get an Apple IIGS logo to stick on your IIE, and a manual that describes the differences between a IIGS and a IIE.



work either, but, again, Central Point will make you a simple fix for a small charge. Eight-bit accelerator cards don't work on the IIGS at all, which causes no problems, because the IIGS already operates up to 2.8 times faster than does a standard IIE. (Note: Applied Engineering is working on a 16-bit accelerator designed to increase the speed of the IIGS.)

Any card designed for the auxiliary connector on the IIE definitely cannot work on the IIGS, because the

IIGS has no auxiliary connector. So you can say good-bye to 80-column/memory cards such as MultiRAM and RamWorks. Many people also buy RGB video adapters for these cards that drive digital RGB color monitors. Unfortunately, the IIGS generates analog RGB signals, so you can't connect a digital monitor to the RGB port of the IIGS. (See "The IIGS Shows Its Colors," in this issue.) So say goodbye to your digital RGB monitor, too.

BUT HOW MUCH WILL IT REALLY COST YOU? FOUR SCENARIOS

No matter which old Apple you own, there's a way to carry over some of your previous investment (in terms of peripherals and software) to a IIGS. If you own a IIE, you can upgrade by swapping out the motherboard. Or, with the II Plus, IIE, or IIC, you can set aside or sell your old system and plug in a new IIGS box in its place—amid your old disk drives, modems, printers, and such.

But, (and this is a formidable *but*), if you want to step up to the GS, chances are you'll also want to buy the peripherals that allow you to take advantage of the fanciest features of this system. To use GS-specif-

ic software, you'll need 3.5-inch disk drives, and to appreciate all those beautiful graphics, you'll probably want an analog RGB monitor. Here's a snapshot look at four sample situations—and their approximate costs—in which an Apple owner upgrades or sells an old system in order to move up to the GS.

SCENARIO #1

Approximate cost: \$500

John is an Apple IIE owner who takes the simplest route: He buys the upgrade kit from Apple and continues to use the printer, modem, 5¼-inch disk drives, software, and composite monitor he already has.

Software Compatibility

Apple has made a concerted effort to make the IIGS compatible with existing IIe software. As a result, almost all Apple IIe software works with it without modification, including such standards as AppleWorks, Apple Writer, MouseWrite, The Print Shop, and Pinpoint.

A few programs cannot work on the IIGS at all, however. The biggest culprits are communications programs that bypass the serial-port firmware and communicate directly with the port's hardware registers. Many such programs understand only the 6551 chip of the Super Serial Card, but the IIGS uses the Intel 8530 chip. (This is the same chip the Macintosh uses; Apple used it to permit the IIGS to connect easily to AppleTalk networks.) Point-to-Point was designed to work with the IIGS. Others, such as ASCII Express and CommWorks, were upgraded after the announcement of the IIGS last September. Contact the publisher of your software for upgrading information if you have an old version.

Some software may work on the IIGS but only at normal speed (1 MHz). This category includes any software that relies on precise timing loops, primarily music software and some games. You can use the IIGS Control Panel desk accessory to switch from the fast speed (the IIGS default) to normal speed.

Programs that use the cassette port on the IIe won't work on the IIGS because the IIGS has no cassette port. Few users will lose sleep over

this restriction because programs that require such a port are rare.

Apple has distributed a software compatibility chart to dealers, but I wouldn't rely on it too much. It's just too difficult to keep accurate track of so many versions of so many programs. If you really want to be sure your program works, sit down in a dealer's showroom and try your software on a IIGS. You should also con-

*All major publishers
are taking prompt
steps to make
their programs work
on the IIGS if
they don't already.*

tact the software publisher to verify compatibility and inquire about special IIGS versions. All major publishers are taking prompt steps to make their programs work on the IIGS if they don't already.

For some users, an attractive alternative to buying the IIGS upgrade kit is to buy a real IIGS and keep the old Apple II or sell it. The extra cost for IIe owners is only \$500, but it's even less if you consider that you have to pay for the upgrade kit, installation, a mouse, and a numeric keypad to get the equivalent of a \$999 IIGS. And just think how happy the kids will be when you give them your spare computer or how happy you

will be if you can sell the old Apple for more than the cost of an upgrade kit! But remember, the longer you wait, the harder it will be to sell your old system, so move quickly. Just ask people still using the II Plus whether they wish they had moved up to the IIe four years ago.

If you take this route, the only extras you really need to have before firing up the IIGS are a video monitor and a disk drive (preferably a 3.5-inch drive). You can purchase composite black-and-white monitors for less than \$100 (or you can splurge and spend \$499 on Apple's RGB monitor); Apple's 3.5-inch disk drive will cost you \$399, but you can probably find other drives for less. External peripherals you might already have—such as modems and serial printers (for example, the ImageWriter)—work with both old Apple II-series computers and the IIGS. All you have to do is invest in another set of cables. If you have a parallel printer, you'll have to buy a parallel-interface card for the IIGS.

Decision Time

I'm convinced that if you own an 8-bit Apple II and you're not using a lot of oddball software or hardware that won't work on the IIGS, you should move up to a IIGS, either by purchasing the IIe upgrade or buying the IIGS itself. It's just too good a deal to turn down. +

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

However, if he later wants to use the more powerful GS software, he'll need to spend another \$500 or so to buy a 3.5-inch drive and a mouse.

SCENARIO #2

Approximate cost: \$650

David has an Apple IIe with 128K of memory, two 5¼-inch disk drives, a composite monitor, hard-disk drive, printer, multifunction card, and modem. For \$750, he sells the system with its additional memory, one of the drives with the controller card (he keeps one to run his old software on the GS), and the multifunction card (since it won't work on the new system). The rest of the peripherals

he keeps to use with the GS, and he also buys a 3.5-inch drive so that he can take advantage of the new software. The suggested price for the IIGS (which includes a mouse) plus disk drive is \$1398, so with the amount David receives for his old system, his net out-of-pocket expense is \$648.

SCENARIO #3

Approximate cost: \$900

Elizabeth owns an Apple IIc with a composite monitor, second disk drive, printer, and modem. She sells the system unit with its built-in drive for \$500 and keeps all her other peripherals to use with the GS. Be-

sides buying the IIGS system, she also buys a 3.5-inch drive, for \$1398. Subtracting the \$500 she gets from selling her IIc, her total outlay is \$898.

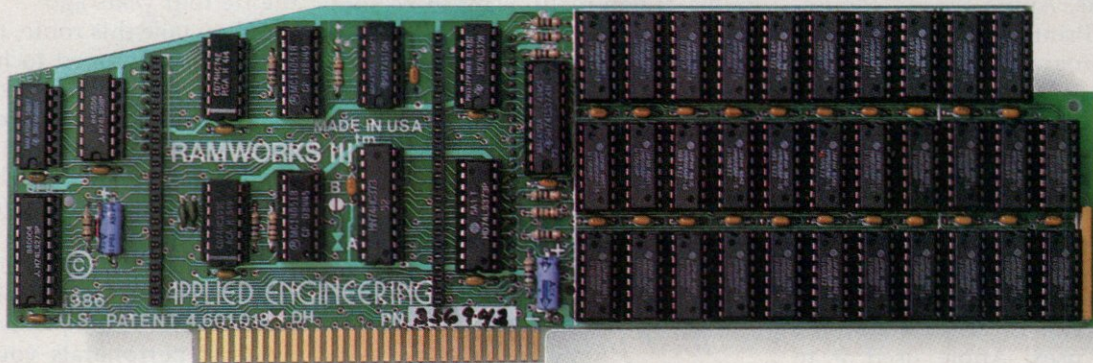
SCENARIO #4

Approximate cost: \$1150

Ron has an Apple II Plus with two 5¼-inch drives, printer, modem, monochrome monitor, hard-disk drive, accelerator board, and multifunction card. He sells the system unit, one drive, the monitor, and enhancement cards for \$750 and then buys a GS with 3.5-inch drive and RGB monitor for the suggested price of \$1897—his net cost is \$1147.

RamWorks® III

Patented Performance from the Recognized Leader



With battery backed RAM port, RGB port, increased memory capacity, full software compatibility and more compact design, RamWorks III is a generation ahead.

RamWorks III is the newest 3rd generation RAM card for the Apple IIe. It incorporates all of the technology and improvements that years of experience and over a hundred thousand sales have given us. By selling more memory cards than anyone else and listening to our customers, we were able to design a memory card that has the ultimate in performance, quality, compatibility and ease of use. A design so advanced it's patented. We call it RamWorks III, you'll call it awesome!

The AppleWorks Amplifier.

While RamWorks III is recognized by all memory intensive programs, NO other expansion card comes close to offering the multitude of enhancements to AppleWorks that RamWorks III does. Naturally, you'd expect RamWorks III to expand the available desktop, after all Applied Engineering was a year ahead of everyone else *including Apple* in offering more than 55K, and we still provide the largest AppleWorks desktops available. But a larger desktop is just part of the story. Look at all the AppleWorks enhancements that even Apple's own card does not provide and *only* RamWorks III does. With a 256K or larger RamWorks III, *all* of AppleWorks (including printer routines) will automatically load itself into RAM dramatically increasing speed by eliminating the time required to access the program disk drive. Switch from word processing to spreadsheet to database at the speed of light with no wear on disk drives.

Only RamWorks eliminates AppleWorks' internal memory limits, increasing the maximum number of records available from 1,350 to over 25,000. *Only* RamWorks increases the number of lines permitted in the word processing mode from 2,250 to over 15,000. And *only* RamWorks offers a built-in printer buffer, so you won't have to wait for your printer to stop before returning to AppleWorks. RamWorks even expands the clipboard. And auto segments large files so they can be saved on two or more disks. You can even have Pinpoint or MacroWorks and your favorite spelling checker in RAM for instant response.

RamWorks, *nothing* comes close to enhancing AppleWorks so much.

The Most Friendly, Most Compatible Card Available.

Using RamWorks III couldn't be easier because it's compatible with more off-the-shelf software than any other RAM card. Popular programs like AppleWorks, Pinpoint, Catalyst, MouseDesk, HowardSoft, FlashCalc, Pro-File, Managing Your Money, SuperCalc 3a, and MagiCalc to name a few (and *all* hardware add on's like ProFile and Sider hard disks). RamWorks is even compatible with software written for Apple cards. But unlike other cards, RamWorks plugs into the IIe auxiliary slot providing our super sharp 80 column text (U.S. Patent #4601081) in a completely integrated system while leaving expansion slots 1 through 7 available for other peripheral cards.

RamWorks III is compatible with all

Apple IIe's, enhanced, unenhanced, American or European versions.

Highest Memory Expansion.

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

It Even Corrects Mistakes.

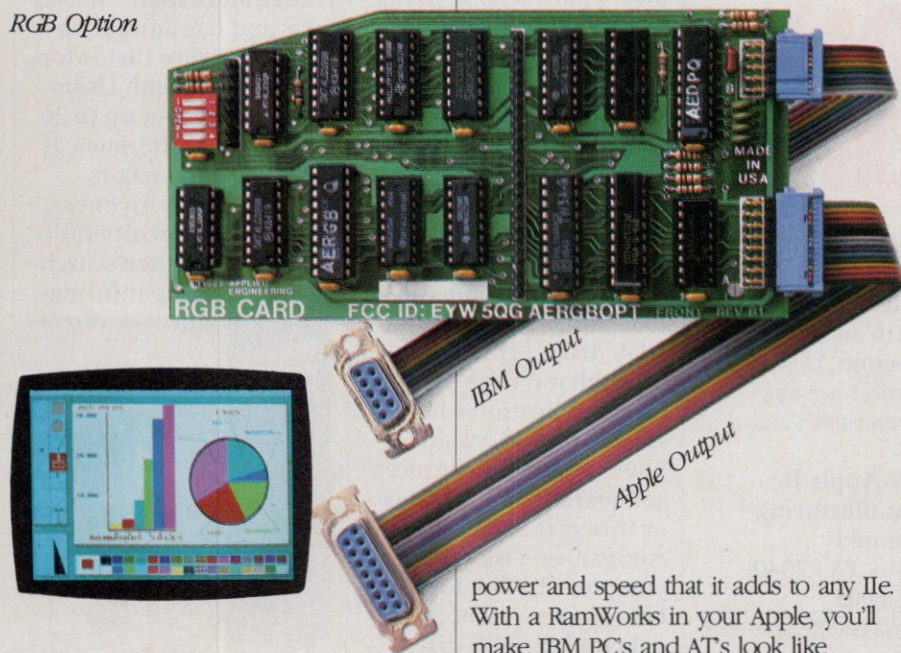
If you've got some other RAM card that's not being recognized by your programs, and you want RamWorks III, you're in luck. Because all you have to do is plug the memory chips from your current card into the expansion sockets on RamWorks to recapture most of your investment!

The Ultimate in RGB Color.

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

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

RGB Option



ference and remember you can order the RGB option with your RamWorks or add it on at a later date.

True 65C816 16 Bit Power.

RamWorks III has a built-in 65C816 CPU port for direct connection to our optional 65C816 card. The only one capable of linearly addressing more than 1 meg of memory for power applications like running the Lotus 1-2-3™ compatible program, VIP Professional. Our 65C816 card does not use another slot but replaces the 65C02 yet maintains full 8 bit compatibility.

Endorsed by the Experts.

A+ magazine said "Applied Engineering's RamWorks is a boon to those who must use large files with AppleWorks...I like the product so much that I am buying one for my own system." inCider magazine said "RamWorks is the most



Steve Wozniak, the creator of Apple Computer

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

powerful auxiliary slot memory card available for your Iie, and I rate it four stars..For my money, Applied Engineering's RamWorks is king of the hill."

Apple experts everywhere are impressed by RamWorks's expandability, versatility, ease of use, and the sheer

- Built-in super sharp 80 column display, (U.S. Patent #4601081)
- Expandable to 1 MEG on main card
- Expandable to 16 meg with expander cards, with NO slot 1 interference
- Can use 64K or 256K RAMs
- Powerful linear addressing 16 bit coprocessor port
- Automatic AppleWorks expansion up to 3017K desktop
- Accelerates AppleWorks
- Built-in AppleWorks printer buffer
- The only large RAM card that's 100% compatible with all Iie software
- RamDrive™ the ultimate disk emulation software included free
- Memory is easily partitioned allowing many programs in memory at once
- Compatible, RGB option featuring ultra high resolution color graphics and multiple text colors, with cables for both Apple and IBM type monitors
- Built-in self diagnostics software
- Lowest power consumption (U.S. Patent #4601081)
- Takes only one slot (auxiliary) even when fully expanded
- Socketed and user upgradeable
- Software industry standard
- Advanced Computer Aided Design
- Used by Apple Computer, Steve Wozniak and virtually all software companies
- Displays date and time on the AppleWorks screen with any PRO-DOS compatible clock
- Much, much more!

RamWorks III with 64K	\$179
RamWorks III with 256K	\$219
RamWorks III with 512K	\$269
RamWorks III with 1 MEG	\$369
RamWorks III with 1.5 MEG	\$539
RamWorks III with 2 to 16 MEG	CALL
65C816 16 Bit Card	\$159
RGB Option	\$129
Optional Software:	
Pinpoint with RAM	
Enhancement Software	\$79
VIP Professional	\$219

power and speed that it adds to any Iie. With a RamWorks in your Apple, you'll make IBM PC's and AT's look like slowpokes.

Quality and Support of the Industry Leader

RamWorks III is from Applied Engineering the largest, most well supported manufacturer of Apple peripherals and the inventor of large RAM cards for the Apple. With our 5 year no hassle warranty and outstanding technical support, you're assured of the most trouble free product you can buy.

It's Got It All

- 15 day money back guarantee
- 5 year hassle free warranty

RamWorks III. The industry standard for memory expansion of the Apple Iie. ORDER YOUR RamWorks III TODAY. See your dealer or call (214) 241-6060, 9 a.m. to 11 p.m., 7 days, or send check or money order to Applied Engineering.

MasterCard, Visa and C.O.D. welcome. Texas residents add 5½% sales tax. Add \$10.00 if outside U.S.A.

AE Applied Engineering™
P.O. Box 798, Carrollton, TX 75006
(214) 241-6060

NEW PRODUCTS

A
compendium of
interesting
products for
the Apple II
family

PRODUCT SPOTLIGHT

ATTENTION IIc NUMBER CRUNCHERS

Designed for use with any spreadsheet or database program, the Apple IIc Numeric Keypad provides the numbers 1-10; a minus (-) key; and enter/plus (+) key; right-, left-, and down-arrow keys; and a tab key. Two versions of the keypad are available—a direct-

connect version for permanent use and a removable version that comes with an adapter for disconnection. (List Price: direct-connect version, \$99.95; removable version, \$119.95)

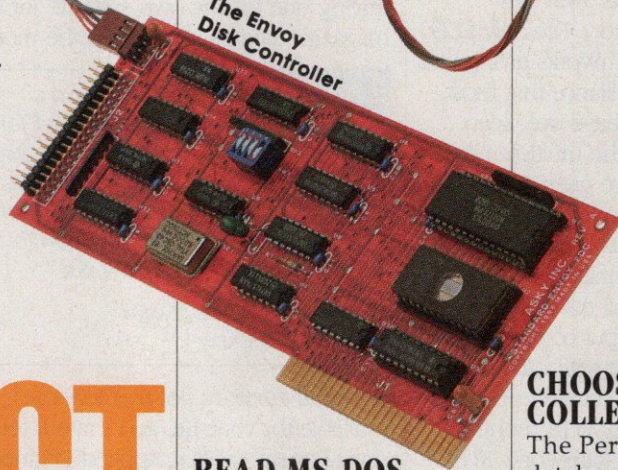
Requires: Apple IIc
C&M Manufacturing
2400 Avenue I
Huntsville, TX 77340
(409) 291-6005

CIRCLE READER SERVICE NO. 505

The Apple IIc Numeric Keypad



The Envoy
Disk Controller



READ MS-DOS DISKETTES

It takes a special kind of diplomacy to get Apple II systems to read MS-DOS files. That's why ASKY, a San Jose, California, firm has brought out the Envoy board, a disk controller that plugs into your Apple (any Apple II—except the Apple IIc—running ProDOS or DOS 3.3) and connects it with an MS-DOS drive. Thus connected, your Apple can read and write to MS-DOS disks. (This doesn't mean that it runs MS-DOS applications, however—for that, you'll have to wait for coprocessor boards coming out later this year from other companies—we'll keep you posted.) The Envoy board gives you access to data on MS-DOS diskettes, and the company is working on data conversion utilities that will work with programs such as AppleWorks and Lotus 1-2-3. (List Price: \$180)

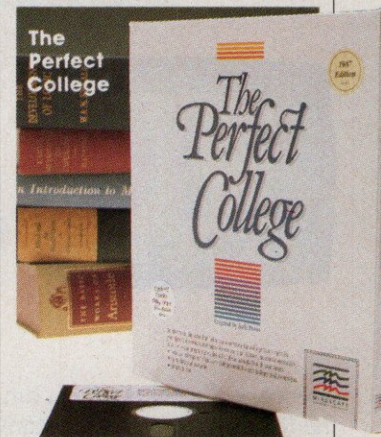
Requires: Apple II Plus, IIe, or IIGS; ProDOS or DOS 3.3

ASKY, Inc.
4320 Stevens Creek Blvd.
Suite 287
San Jose, CA 95129
(408) 247-5742

CIRCLE READER SERVICE NO. 506

CHOOSE THE RIGHT COLLEGE

The Perfect College is a database containing information about more than 1650 accredited four-year U.S. colleges and universities. It includes more than 440,000 facts and has annual updates to ensure that information is current. Users can choose from up to 26 selection criteria, such as cost, location, majors, overall competitiveness, and student/faculty ratio. The program then searches and sorts the informa-



tion and produces a list of schools that match the chosen criteria. (List Price: \$19.95; free with Mindscape's The Perfect Score)

Requires: Apple IIe or IIc
Mindscape, Inc.
3444 Dundee Road
Northbrook, IL 60062
(312) 480-7667

CIRCLE READER SERVICE NO. 507

Roland's S-10
Keyboard Sampler



TALK TO YOUR APPLE

Covox's Voice Master systems now include a speech-editing program that lets you edit the amplitudes of digitized speech. Voice Master produces digitized speech and music output and can recognize groups of words and phrases.

Also available is the Speech Construction Set, a full-featured speech editor that includes the amplitude editor as a subset. The set features advanced editing commands and lets you cut and paste voice patterns to create high-quality, natural-sounding speech for use in your own programs. No extra hardware is required for playback.

For the Apple II Plus and IIe, Covox has also released the Sound Master

card, which provides enhanced speech quality and music capabilities. The card includes software that adds new BASIC commands and provides independent tone and noise channels and programmable envelope shapes. (List Price: *Voice Master*, \$89.95; *Speech Construction Set*, \$49.95; *Sound Master*, \$39.95)

Requires: Apple II Plus or IIe, 64K RAM, Voice Master
Covox, Inc.
675-D Conger Street
Eugene, OR 97402
(503) 342-1271

CIRCLE READER SERVICE NO. 508

The Voice Master speech and music program from Covox



TYPE!

Type! provides instruction in touch-typing for both novices and skilled typists, providing exercises containing real-world sentences and text. The program uses diagnostic drills to analyze users' performance and recommends the best exercises for improving specific weaknesses. It also displays detailed graphs of users' performance, recommends customized exercises to increase speed and accuracy, saves daily results, and prints progress reports. In addition, the program contains Type-Athlon!, an arcade-style game that features different levels of exercises and diagnostics. (List Price: \$44.95)

Requires: Apple II Plus, IIe, or IIc; 64K RAM
Brøderbund Software,
Inc.

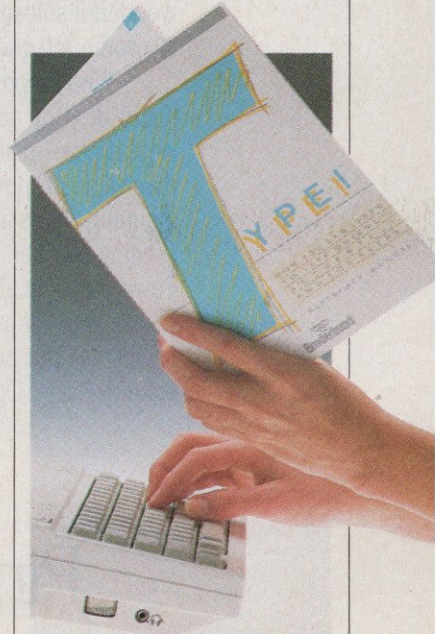
17 Paul Drive
San Rafael, CA 94903-
2101

(415) 479-1700

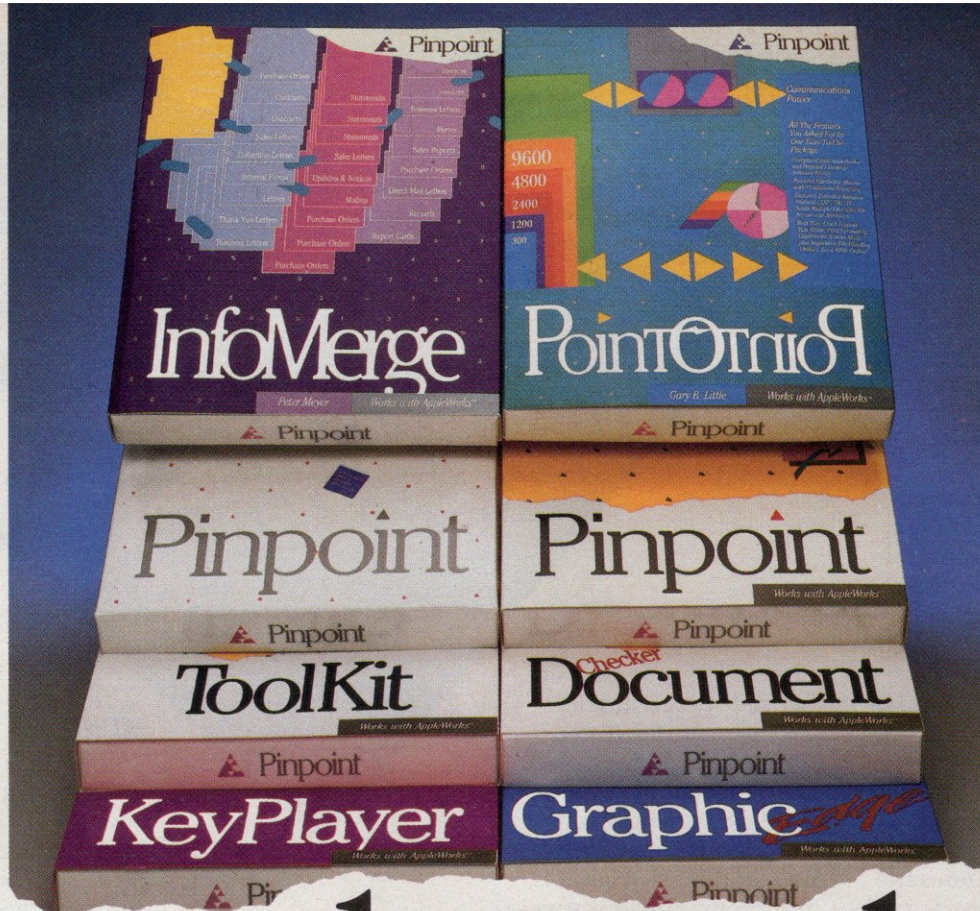
CIRCLE READER SERVICE NO. 509

MUSICAL MARVELS

Roland has introduced two new digital sampling keyboards, the S-50 and S-10, that work with Apple II-series computers equipped with a MIDI interface. Both of these keyboards work with digitized sound samples that sound like real instruments. Both also let you record and edit your own sounds for playback. The S-50 has 512K RAM, a built-in, 3.5-inch disk drive, an on-board 32-character display, and a variety of output jacks.



Type! from Brøderbund



AppleWorks™

Power Tools

Transform AppleWorks from a simply wonderful software program, into an awesome integrated workplace.

With Pinpoint's PowerTools, you can add handy desktop accessories, timesaving macro keys, tireless mail merging, advanced database management, powerful telecommunications, stunning charts and graphs, or a professional spelling checker. Over one dozen AppleWorks Power Tools in all.

What keeps Pinpoint Publishing ahead is what we put behind every software package. Open-architecture

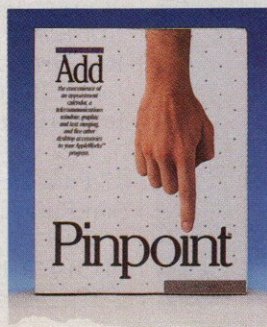
design with great growth potential built in.

But more than just great software, we also offer superb Technical Support including automatic software upgrades and our Points of Interest newsletter.

You can pick-up Pinpoint's Power Tools from dealers who carry Apple software. For the name of the dealer nearest you, or to request our Product Information Packet, you can call our 24 hour Toll Free number.

800-633-2252 Ext. 620. Give us a try and you'll

quickly see the care that goes into everything we do.



Pinpoint Publishing
P.O. Box 13323
Oakland, CA 94661-0323
(415) 654-3050

CIRCLE 239 ON READER SERVICE CARD

Users can assign the keyboard to Dual or Split modes and can play 16 different sounds simultaneously.

The S-10 features the same sound-generation design as does the S-50 but in an eight-voice, four-octave configuration. The S-10 keyboard also offers Dual and Split modes, but only allows you to access four samples simultaneously.

Also available are professionally sampled sounds from Roland's Sound Bank program. All purchasers of an S-50 or S-10 receive a membership card entitling them to free sounds. Owners also receive a free quarterly magazine that contains lists of new sound offerings.

Although either keyboard can be used as a stand-alone device for playing live music, you can greatly expand the capabilities of the keyboards by using a MIDI-equipped Apple II-series computer as a sequencer to store, edit, and play back compositions. (List Price: S-50, \$2,995; S-10, \$1,495; MIF-APL MIDI interface board, \$150; MPU-401 MIDI controller box, \$275; MUSE sequencing software, \$150)

Requires: Apple IIe or IIgs; MIDI interface RolandCorp US
7200 Dominion Circle
Los Angeles, CA 90040
(213) 685-5141

CIRCLE READER SERVICE NO. 510



MORE PICTURES FOR PRINT SHOP

Epyx has introduced the first two chapters of the Graphics Scrapbook, a series of specialized graphics disks compatible with The Print Shop and PrintMaster. Each disk contains more than 100 images. Chapter I: Sports provides an assortment of sports graphics including football, basketball, hockey, bowling, gymnastics, swimming, martial arts, aerobics, and more. It also contains art for trophies and mascots for use in fliers, posters, newsletters, and invitations. Chapter II: Off the Wall features zany, funny, offbeat, and weird graphics—flamingos and punk teddy bears, high-tech and no-tech, bizarre animals, body parts, jesters, and international symbols. (List Price: \$39.95 each)

Requires: Apple II Plus, IIe, or IIc
Epyx, Inc.
600 Galveston Drive
P.O. Box 8020
Redwood City, CA 94063
(415) 366-0606

CIRCLE READER SERVICE NO. 511

PROTECT YOUR APPLE

The PS Series is a custom, flexibly designed physical security system.

Cool Stack Sentry II offers locking, cooling, easy tilt-action access, and efficient storage and organization in one compact unit for Apple II-series computers.

Printer Pal, which secures a printer to its stand, comes in three standard models with different dimensions to suit most popular printers.

The Cavalier Series is a dual-plate locking system that secures equipment, using existing pre-



The PS Series security system

punched holes or using special adapter plates, which come in three standard sizes. In this series, CAV IIc secures the Apple IIc computer, monitor, external disk, and power supply. (List Price: Cool Stack Sentry II, \$194; Printer Pal, \$34; CAV IIc, \$115)

Requires: Apple II Plus, IIe, IIc, III, or IIgs
Secom General Corp.
26111 Evergreen
Suite 300
Southfield, MI 48076
(313) 354-3073

CIRCLE READER SERVICE NO. 512

PRODUCT SPOTLIGHT

GRAPHICS TOOL KIT

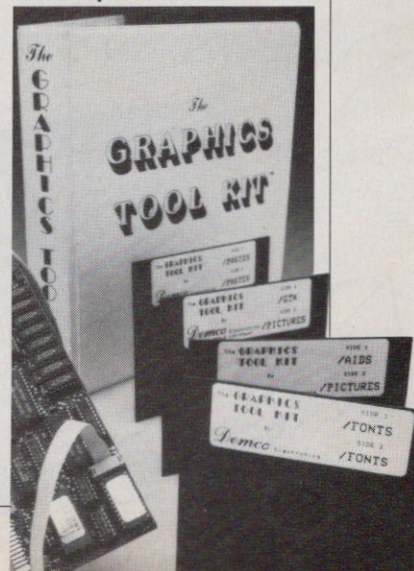
The Graphics Tool Kit consists of a board that stores complete drawings in memory and a graphics-design software package. The hardware displays the complete width and half the height of an 8½ × 11-inch drawing on any one of eight 640 × 384-pixel high-resolution screens. The board also contains an Apple-compatible mouse port. Features of the software package include automatic windowing and the ability to work on two 8½ × 11-inch pages simultaneously. It also contains fonts, sample pictures, and clip art. (List Price: \$395)

Requires: Apple II Plus, IIe, or IIgs

Demco Electronics
10516 Grevillea Avenue
Inglewood, CA 90304
(213) 677-0801

CIRCLE READER SERVICE NO. 513

The Graphics Tool Kit



ENCYCLOPEDIA

100%

WPM

INTRODUCING TYPE!™

Now you can learn to type quickly, accurately and for keeps. Learning to type is neither a game nor a drag, even though the leading learn-to-type programs treat it that way.

That is to say, the leading learn-to-type programs until now. Because TYPE! is the first product to take full advantage of extensive research on how people learn to type, and combine that with the full potential of your computer.

The result? A learn-to-type program that is equally effective for business professionals and students, beginners and advanced typists.

Among other things, TYPE! combines advanced diagnostics and continuous monitoring, then customizes drills to your individual errors so that now you can learn to type quickly, accurately and for keeps.

And just because we're as serious as you are about learning to type doesn't mean we can't include a game. So we did.



Brøderbund®

You'll swear you got a new computer.

TYPE! is available for Apple II and IBM personal computers. Coming soon for Commodore 64/128. Look for it at your favorite Brøderbund Software dealer or call Brøderbund at (415) 479-1185. © Brøderbund Software, Inc., 17 Paul Drive, San Rafael, California 94903-2101 Apple, IBM and Commodore are registered trademarks of Apple Computer, Inc., International Business Machines Corp. and Commodore Electronics, Ltd., respectively.

APPLE:

THE FIRST TEN YEARS

Technology

has been one driving force

in Apple's history,

the people who inspired,

innovated, or tamed

the corporation have been

another.

In January, Apple Computer, Inc., celebrated its tenth birthday and Apple co-founder Steve Wozniak reflected on the ten years in the pages of A+. In that issue, we also traced the history of Apple's computers and code names. In this month's second of two parts honoring Apple's first decade, we look at the people who made Apple so successful and present a ten-year timeline, and an Apple executive gives us a glimpse at the next ten years.

Technology has been one driving force in Apple's history; people have been another. The chaos generated by the dozens of revisions to basic Apple products probably would have put most firms out of business. The reason Apple hasn't succumbed to what personal-computer pioneer Adam Osborne likes to call hypergrowth, however, has to do with people. The two Steves, of course, have been appropriately labeled by the press as being the renegades, the creators of the Apple chaos. Both of them were always pushing at the very things that made the company successful. Steve Jobs, for instance, disrupted the company with his pirate's flag over the Macintosh building, basically pooh-pooing the Lisa at the same time that he, as CEO, was touting its technical elegance to the world. Woz, meanwhile, kept saying that the Apple II could be better, even as the company tried to shift resources first to the III, then to the Lisa, then to the Macintosh. Both Steves had their followers, and both made a lot of noise in support of their causes.

So how did the company survive? After all, with product infighting going on at the level it was at Apple, many companies would have performed about as well as a sailboat with no one at the tiller.

In the beginning it was people such as Mike Scott and Mike Markkula who stabilized Apple. Scott, who was Apple's president in the early days, was the only man who could yell loud enough to be heard

over the noise the two Steves generated; Markkula, who has been chairman and president and is now Apple's vice chairman, was the quiet organizer. Both were good at attending to details, but others were instrumental as well.

The attitude inside Apple was typical of that of most Silicon Valley start-ups: If you think you can do it, give it a try. People were encouraged to do their best work. Chris Espinosa, at an age at which many people struggle to write book reports, helped turn out manuals that were understandable and fun. Randy Wigginton took software routines that Woz wrote, spruced them up, and added nifty details. Fred Hoar did a good job of explaining to the press what Apple was up to and defusing the controversial things that either of the two Steves might say in too-candid situations. And in the middle of it all, a few new geniuses were sprouting, simply because they got the opportunity to try.

Jef Raskin, for instance, wrote the original specifications of the machine that eventually became the Macintosh. If you talk to Raskin today, he'll tell you about "information appliances," and perhaps that's what the original Mac was supposed to be. No one can agree where he lost control of his concept, but even a short talk with Raskin will convince you that many of the underlying ideas behind the Macintosh were Raskin's and were amplified by Job's eventual opinionated leadership of the group.

The Lisa software, in which the Macintosh's has its roots, clearly shows the leadership of John Couch, a teddy bear of a man who, when excited by something, could get even the most blasé person enthused. With Couch coaching the Lisa software team, it kept improving its early ideas until they became Apple's and ceased being mere imitations of the Xerox Star software, from which many of the underlying concepts

(mice, windows, bit-mapped graphics) originated. Couch was so enthused about LisaProject, for example, that he insisted on the use of the early versions of this program to perform the project-management tasks for LisaProject! Yes, recursion works inside of computer companies as well as inside computer programs.

Some of the Lisa personnel made it into the Macintosh camp. Andy Hertzfeld, for example, who had been a Pascal programmer involved with both Apple Pascal and LisaPascal, became one of the key software programmers for the Macintosh.

In the Macintosh group, Jobs was the final authority, and, according to almost everyone who was there, he pushed his charges to their limits. He tested people by asking why they did things the way they did, just to make sure they had thought everything through. He told people they had created "junk" (actually, he used a stronger four-letter word) and that he knew that they could do better. Yet he still pretty much let people try to solve things the way they wanted to solve them. Jobs was interested only in the end result, not so much in how you got to it.

Most of these people are now out of Apple's day-to-day picture. Scott is gone. Markkula has moved into a background role. Hertzfeld is gone. Woz has left several times only to return again. After a power struggle with Sculley, Jobs left in September 1985 to start Next, Inc. Couch has moved to Southern California. In fact, it seems like everywhere you look within Apple, the key players who inspired, innovated, or tamed the original corporate animal just don't work there anymore.

In their place are new people, people such as John Sculley, Jean-Louis Gassée, Guy Kawasaki, and others. Sculley, after quietly organizing Apple for two years, has proven to be a direct replacement for both Markkula and Scott. Many subtle changes in the Apple hierarchy are the result of Sculley's methodical recruiting and rewarding, but Sculley can handle dramatic shifts as well. He brought the II and Macintosh groups together last year to create "one Apple," and after Apple's first quarterly financial loss, Sculley laid off 1200 workers. No one could doubt who was in charge, especially after Jobs left in a huff

Apple's basic
philosophy

has remained
intact,

despite the
apparent

migration of
key people.

several months after losing control of the Mac group.

Gassée and Kawasaki are the new renegades in the Apple structure, pushing hardware and software, respectively. Gassée, like Jobs, seems to be driving his people hard, yet he still gives them the freedom to try it "their way" first. Kawasaki is more in the tradition of Woz, motivating by simply being eager and excited about every possibility—"no" is not an answer Kawasaki wants to hear.

Thus Apple's basic philosophy has remained intact, despite the apparent migration of key people from the company. Apple still balances excitement ("let's give it a try") in the ranks with a quiet determination to avoid chaos.

Yet, in some ways the original cast of characters is not gone. Woz is back as a cheerleader for the IIGS and even says that he's "staying up nights programming on the machine." Jobs invested in a company that produced a state-of-the-art Macintosh word-processing program and seems only to want to out-Apple

Apple with his Next computer. Hertzfeld is still writing software and allowing Apple first crack at it, with the option to publish it himself if he thinks Apple doesn't do a good enough job.

To be sure, Apple is not quite the same company it once was, but one look at the firm shows you that it is continuing to do the same thing it has done over and over in its history: make its existing products better. The Macintosh, already released in five different versions, seems destined to come out in at least two others in the near future (the so-called open-Mac and flat-Mac versions). Indeed, if history repeats itself, Apple will freeze the basic Macintosh hardware and core software into a single chip or set of chips for the next round, with additional chips adding new functions to the basic product.

The ImageWriter and LaserWriter printers have already gone through two revisions apiece, and it appears that both of them will go through at least one more. The 20-megabyte hard-disk drive has seen two iterations in a year. The mouse has had at least three distinct versions.

So, in examining Apple's first ten years, we see the seeds for a successful second decade. No doubt there will be an Apple IV some day, and when it proves to be not quite what the marketplace needs, it will become the Apple IV Plus, or IV Enhanced, or 4.5, or some other name—the same basic machine with a new set of features. And when the base Apple IV machine is figured out, its design will be frozen in stone (actually silicon), and the basic features will remain the same, as Apple adds new and clever enhancements to keep the product up to date. Because that's the way the Apple bounces: up a little higher each time. +

Thom Hogan has owned five Apples in the last ten years and will probably own future Apples as well. Best known for his book The CP/M User Guide (which accompanies the Microsoft SoftCard), he has also served as editor of InfoWorld and Business Software and as director of software at Osborne Computer. These days you can find him sitting beside the pool, busily writing with his laptop computer, which he wishes were an Apple. He lives in Cupertino, California.

EVERY TIME I TRIED TO PRINT A SPREADSHEET IT RAN RIGHT OFF THE

"Then I got new Sideways for the Apple II"

Now, you too can keep wide spreadsheets from meeting an untimely end at the edge of the printer paper. Use new Sideways® for the Apple II.™

Sideways turns your text on its side as it prints. So no matter how many columns you add to your spreadsheet, they'll all come back out in a single, continuous printout.

For top quality printouts without staples, glue or tape, Sideways has always been the way to go. And our latest version has even wider appeal.

Sideways works wonders with AppleWorks

Broadly speaking, new Sideways is the perfect printing companion to the world's most widely used Apple II spreadsheet program. That's because it looks, acts and feels like a natural extension of AppleWorks™ itself.

Sideways reads AppleWorks spreadsheet files directly. It even displays your spreadsheet right on the screen, and lets you use familiar AppleWorks-style menus and Open-Apple commands

to mark off a range and print. It's fast, easy, and looks great.

Give a new twist to all your printouts

With new Sideways, the printing possibilities are nearly endless. Choose from six different type sizes — from tiny to extra-large. Select single or double density printing. Adjust margins, page size, line spacing and character spacing any way you like.

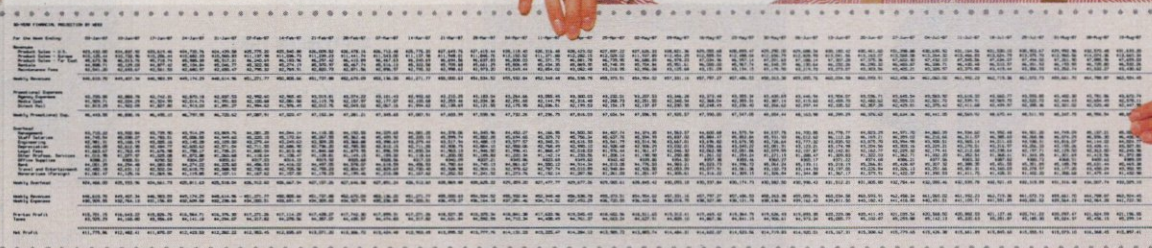
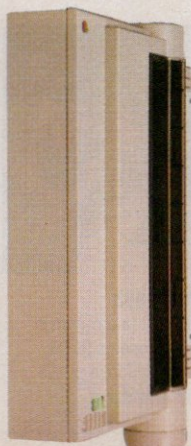
And it works with every spreadsheet and word processor we can think of, whether it runs with ProDOS® or DOS 3.3. Just flip open the manual to find step by step instructions for using Sideways with an extensive number of popular programs.

Order Sideways today!

Go see new Sideways for the Apple II at a software dealer near you. Or to make it even easier on yourself, just stretch out on your sofa and call us toll-free. It's just \$69.95 with your check, Visa or MasterCard.



To order call 1-800-822-3865.
(1-617-497-6339 in MA)



© 1986 Funk Software, Inc., 222 Third Street, Cambridge, MA 02142 • 617-497-6339
Sideways is a registered trademark of Funk Software.

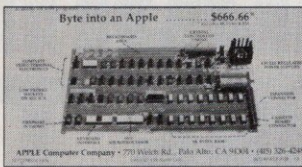
CIRCLE 154 ON READER SERVICE CARD

HISTORY

BACK IN TIME

Apple's ten-year

1976



JULY 1976

Jobs and Woz deliver first Apple I computers to computer stores

1977

JANUARY 1977
Apple incorporates

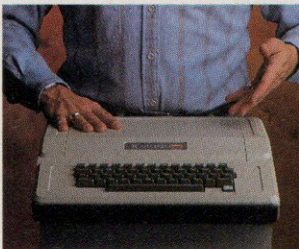


APRIL 1977

Apple II introduced at the first West Coast Computer Faire

MAY 1977

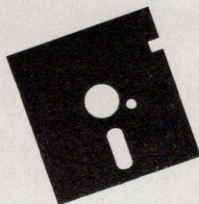
First Apple II boards ship



JUNE 1977

First Apple II systems ship

1978



JUNE 1978

Introduction of Disk II

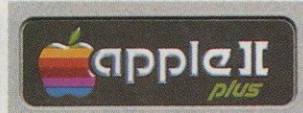
SEPTEMBER 1978

Apple sells 7600 computers in fiscal 1978

1979

JUNE 1979

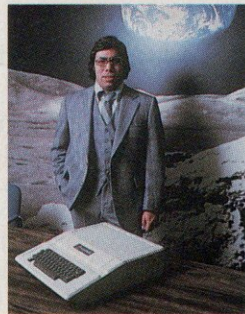
Introduction of Apple II Plus



SEPTEMBER 1979

Apple sells 35,100 computers in fiscal 1979

Macintosh project formally begins



OCTOBER 1979

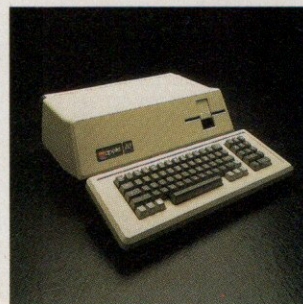
Woz receives Grace Murray Hopper Award for his work in personal computing

MONTH	BUDGET	1979	REC.	TOTAL
JANUARY	2500.00	2500.00	30000.00	
INCOME				
SALES	2500.00	2500.00	4000.00	
RENT	110.00	110.00	500.00	
UTILS	100.00	100.00	1200.00	
TRAVEL	100.00	100.00	1000.00	
ENTERTAIN	100.00	100.00	1200.00	
PHONE	100.00	100.00	1200.00	
CAR	300.00	300.00	3000.00	
EXPENSES				
SALARIES	2460.00	2470.00	20775.00	
RENT	40.00	30.00	1000.00	
UTILS	30.00	30.00	1000.00	

OCTOBER 1979

VisiCalc released

1980



MAY 1980

Introduction of the Apple III

MAY 1980

Apple rents Disneyland for a night during the National Computer Conference

SEPTEMBER 1980

Apple sells 78,100 computers in fiscal 1980

13	6%	Andros	Antlvc	19	33	8%	8 1/2	8 1/4 + 1/4
12 1/2	3%	Animed	Inc	105	4	3%	4	+ 1/4
20 1/4	17	Anitec	I	5.30	9	2746	17 1/4	16 1/2 16 1/4 ...
15 1/4	6%	ApogeeEn	s.12	1.5	13	475	8 1/2	7 1/2 8 1/4 ...
20 1/4	9 1/4	Apollo	Comptr	85	1214	12 1/4	11 1/4	11 1/4 ...
33 1/4	15%	Apple	Bank	97	24 1/2	24	24 1/4 + 1/4	
39 1/4	18%	Apple	Comptr	15	13236	35%	34%	35 1/4 + 1/4
55	27%	Applied	Biosyst	39	559	32 1/4	31 1/2	31 1/2 - 1/4
6 1/2	2 1/2	Applied	Date	1	3 1/4	3 1/4	3 1/4 - 1/4	
16 1/4	8	Applied	Matl s	103	276	10 1/4	9 1/4	10 1/4 + 1/2
14 1/4	8 1/4	Applied	Solar	5	11 1/4	11 1/4	11 1/4	
5 1/4	1 1/4	Arabian	Shld	9	2 1/2	2	2 1/2	
24 1/2	14%	Arbor	Drugs	19	901	18 1/4	18 1/4	18 1/2 + 1/4

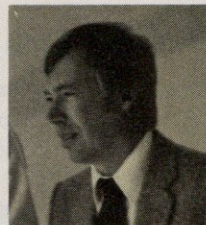
DECEMBER 1980

Apple's initial public stock offering

1981

FEBRUARY 1981

"Black Wednesday": 40 employees are laid off
Woz, injured in plane crash, begins a leave of absence



MARCH 1981

Apple reorganizes. Markkula becomes president and chief executive, replacing Mike Scott, who becomes vice chairman. Jobs becomes chairman of the board.
First million-dollar shipping day

JULY 1981

Mike Scott leaves Apple

AUGUST 1981

IBM introduces its Personal Computer

SEPTEMBER 1981

Apple sells nearly 180,000 computers in fiscal 1981

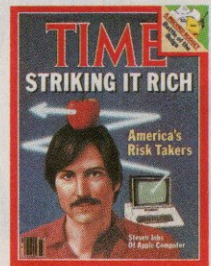
NOVEMBER 1981

Introduction of ProFile, a five-megabyte hard-disk drive for the Apple III

DECEMBER 1981

Apple III reintroduced after solution of technical problems

1982



FEBRUARY 1982

Jobs appears on the cover of Time magazine

MARCH 1982

Apple announces it will take legal action against Asian clone makers

MAY 1982

Apple sues Franklin Computer Corporation for patent and copyright infringement

SEPTEMBER 1982

Woz holds first US Festival
"For competitive reasons," Apple stops announcing to the public how many systems it sells per year

1983



JANUARY 1983

Lisa and Apple IIe announced



MAY 1983

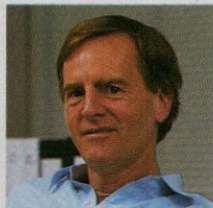
"Kids Can't Wait" (a program in which Apple donates 9000 computers to California public schools) begins

© 1982 TIME, INC. ALL RIGHTS RESERVED.

history has been an eventful one. Here are some highlights:

MAY 1983

John Sculley joins Apple as president and chief executive; Markkula becomes vice chairman



Apple makes its debut on the Fortune 500 list

Woz sponsors second (and final) US Festival



JUNE 1983

Millionth Apple II produced
Introduction of ProDOS

JULY 1983

Woz returns to Apple

SEPTEMBER 1983

Osborne Computer Corporation files for bankruptcy

DECEMBER 1983

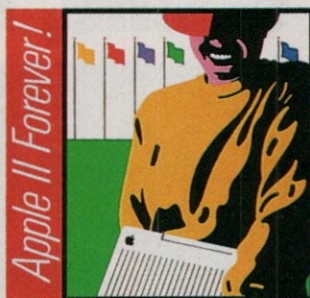
Introduction of ImageWriter and Apple III Plus

1 9 8 4



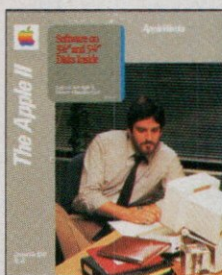
JANUARY 1984

Introduction of the Macintosh; the Lisa becomes the Lisa 2
Apple and Franklin settle out of court



APRIL 1984

Introduction of the Apple IIc



Introduction of AppleWorks
Apple III discontinued

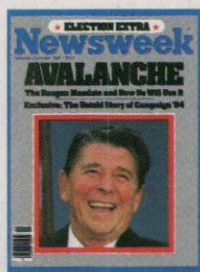
MAY 1984

Alan Kay, key researcher on Xerox Star (the Mac's predecessor), becomes an Apple Fellow



SEPTEMBER 1984

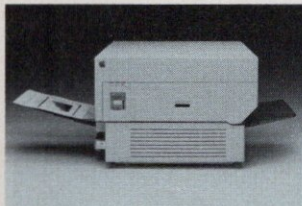
Apple passes the \$1 billion mark in its fiscal year
Fat Mac (512K) introduced



NOVEMBER 1984

Apple buys all ad pages in election issue of Newsweek
Two millionth Apple II sold

1 9 8 5



JANUARY 1985

Introduction of LaserWriter and AppleTalk, components of the soon-to-be-abandoned Macintosh Office concept

The Lisa becomes the Macintosh XL

FEBRUARY 1985

Woz leaves to start a new company, CL9

Woz and Jobs receive National Technology Medal from President Reagan

MARCH 1985

Introduction of enhanced Apple IIe



Sculley asks employees to take a week of vacation and announces that manufacturing plants will close for one week

APRIL 1985

Macintosh XL (née Lisa) dropped from product line



MAY 1985

Apple reorganizes and brings Apple II and Macintosh product groups together—Jobs ousted from day-to-day management

JUNE 1985

Apple lays off 1200 employees and records a loss of \$40 million, its first and only quarterly loss as a public company

SEPTEMBER 1985

Jobs resigns as chairman to start a new company, Next Inc.—Several Apple employees resign from Apple to join him

Apple sues Jobs, alleging that he breached his duties as chairman and misappropriated proprietary information



Introduction of several add-on products for the Apple II line, such as the UniDisk 3.5, Memory Expansion Card, and Catalyst, as well as a 20-megabyte hard disk for the Macintosh

OCTOBER 1985

Apple terminates its business in South Africa

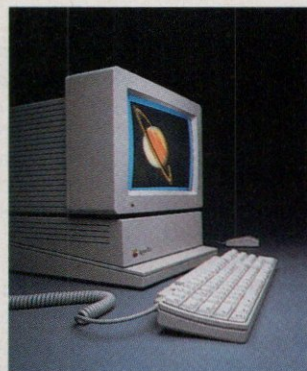
1 9 8 6

JANUARY 1986

Introduction of the Mac Plus
Sculley becomes chairman
Apple and Jobs reach out-of-court settlement

FEBRUARY 1986

Jobs sells all but one share of his Apple stock, making Markkula the largest shareholder



SEPTEMBER 1986

Introduction of the IIGs

**"Frankly,
online computing
costs were
real ugly..."**



\$10.00+ per hour

Most online information networks can zap your computing budget faster than you can say "lightning." Not so with GENie, the General Electric Network for Information Exchange. As part of the world's largest commercially available teleprocessing network of General Electric Information Services Company, GENie lets you experiment with all of the fun and excitement that online computing has to offer.

**Evenings, weekends, holidays.
Just \$5 per hour.**

With GENie, you can make friends, set up travel reservations, get the news, be entertained, even shop for a fraction of what other information services charge.

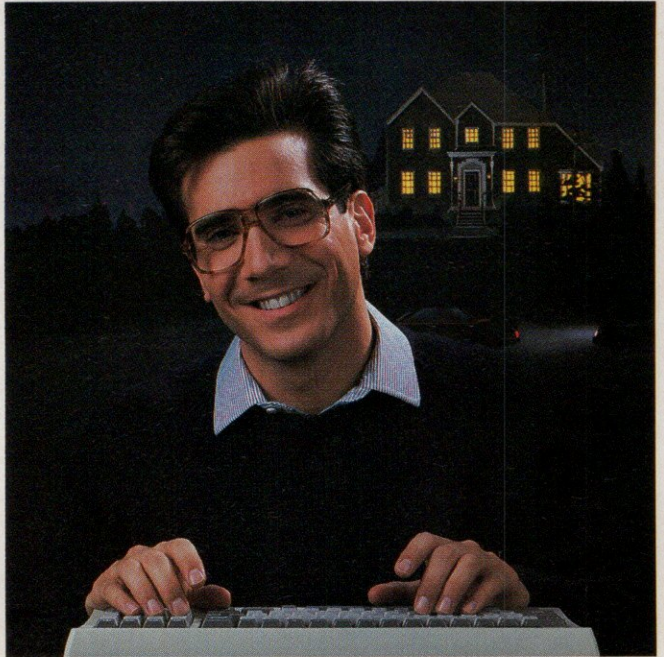
And you get a lot for your money.

With GENie's Apple II† **RoundTable™ Special Interest Group** you can discuss the latest in Apple products and accessories; download thousands of public domain software programs, and participate in exciting and informative online conferences. And, **UPLOADS ARE FREE** on GENie!

There's more!

Meet friends old and new with GENie's **LiveWire™ CB Simulator** or exchange messages with GENie's **electronic mail** service. Schedule a trip with **American Airlines travel service**. Fun and learning for the whole family with **Grolier's electronic encyclopedia**. Play classic and **multiplayer games**. Track stock market

**"With GENie™
I found
friends
online, for less!"**



\$5 per hour

Only \$18 to register! Save up to 60%!

Check out the chart. Compare the savings for yourself. You'll find GENie delivers all of your favorite services for an incomparable price, at incomparable savings.

quotes, check market indicators and maintain an automatically updated personal portfolio online with GENie's **Financial Services**. All this and there's more to come. New services are being added each and every month!

Compare & Save*	Services						Pricing			
	Travel & Shopping	SIGs/User Groups	CB & Mail	Financial Services	News	Games	Registration Fee	Monthly Minimum	Non-prime time rates	
									300 baud	1200 baud
The Source	X	X	X	X	X	X	\$49.95	\$10.00	\$8.40	\$10.80
CompuServe	X	X	X	X	X	X	\$39.95	none	\$6.00	\$12.50
GENie†	X	X	X	X	X	X	\$18.00	none	\$5.00	\$5.00

*Basic rates and services shown in effect 11/86. †Non-prime time applies Mon.-Fri., 6pm-8am local time, all day Sat., Sun., and nat'l holidays. Subject to service availability. Additional charges apply for 2400 baud and financial services.

With services and savings like these, now you can discover the friendliness of online computing without the high costs that can turn you into a downright monster. Get a happy ending going with GENie. Sign up today!

Sign up from your keyboard today.

4 Easy Steps:

1. Have your Visa, MasterCard or checking account number ready.
2. Set your modem for local echo (half duplex)—300 or 1200 baud.
3. Dial **1-800-638-8369**. When connected, enter HHH
4. At the U# = prompt enter **XJM11896, GENie** then RETURN.

Need help or more information? No modem yet? We can help. In U.S. or Canada call **1-800-638-9636**.

† Apple and Apple II are registered trademarks of Apple Computer, Inc.

GENie™
Stay online longer, for less.



INFORMATION SERVICES

General Electric Information Services Company, USA

GENie rates and services subject to change. Uploads are free during non-prime hours at 300 or 1200 baud. Some services offered on GENie may include additional charges. FRANKENSTEIN™ ©1931, renewed 1959 Universal Pictures Company, Inc. All rights reserved. Licensed by Merchandising Corporation of America, Inc.

THE NEXT DECADE:

AN INSIDER'S VIEW

Ask a fish
to describe
water. That's
one of my
problems in
discussing the
future of
the personal-
computer
industry.

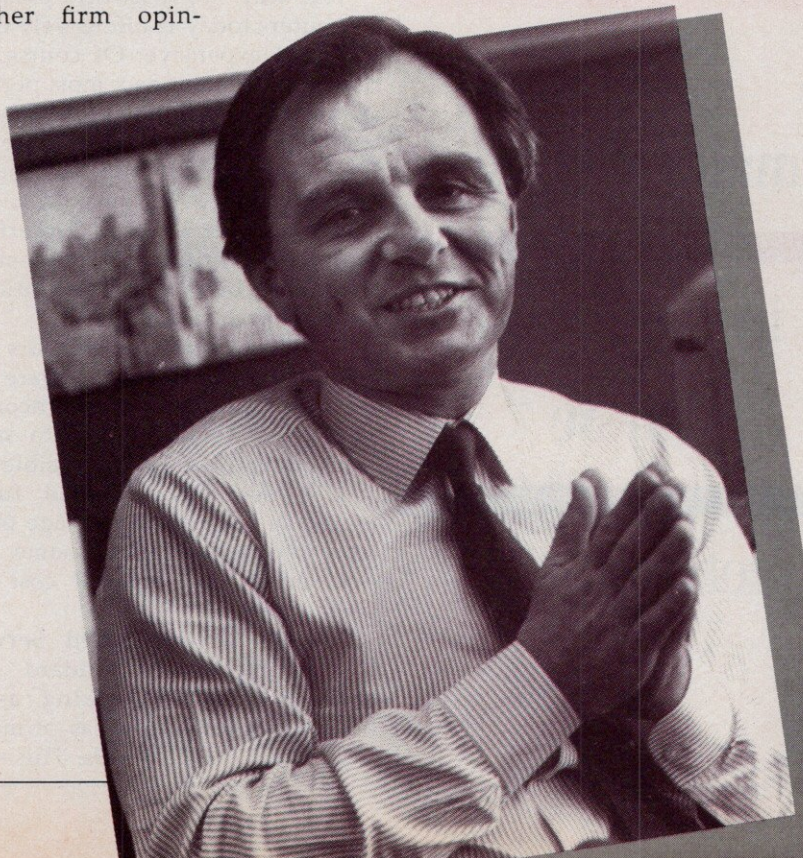
In May 1985, Jean-Louis Gassée arrived at Apple Computer's Cupertino, California, headquarters from Apple France, where he had been general manager. His arrival was just before the tumultuous reorganization that stripped Steve Jobs of his managerial duties and led to plant closures and massive layoffs. Following these upheavals, Gassée found himself in charge of the newly combined Macintosh and Apple II groups. As Apple's vice president of product development, he's responsible for peering into the future and guiding the direction of Apple technology. Here Gassée offers his thoughts on the next ten years. Although he discusses personal computers in general, we can bet that some of these visions will show up in Apple own products.

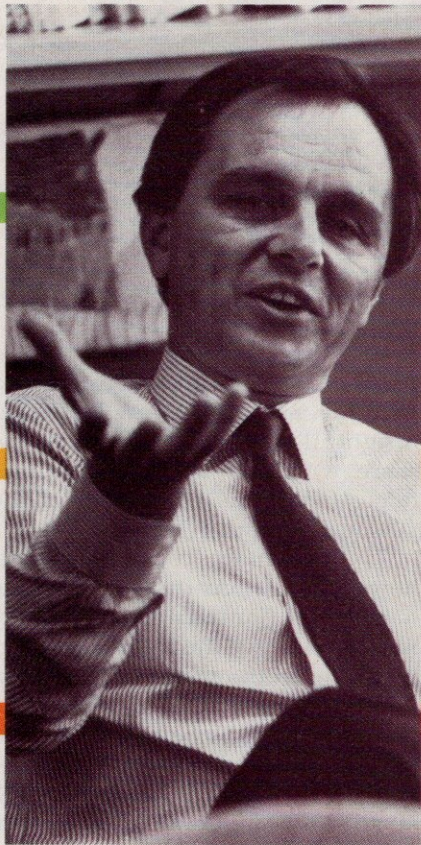
Ask a fish to describe water. That's one of my problems in discussing the future of the personal-computer industry. The other problem is that I remember the rather firm opin-

ions I held in the past, many of which have changed over time.

At the risk of presenting an excessively Applecentric perspective and with the memories of my less-than-insightful pronouncements, let me share with you my thoughts and hopes for the next ten years of the personal-computer industry.

The foremost consideration is how fast the industry will continue to progress. Contrary to a commonly held belief, I see the industry changing faster in the next ten years than it did in the past decade. More technology is ready, or being readied, for adaptation to personal-computer systems than ever in the past. Look at silicon, output devices, system software, storage devices, and networking, and consider the experience we have—scars and all—and you will share





The
major change
in the 'how'
will be
networking.

my conviction that we are at the knee, not the shoulder, of the S-curve.

The automobile industry provides a parallel: Our cars have seen more technical improvements in the past ten years than they did in the previous decade—in braking systems, suspensions, engines, electronics, and overall reliability.

In the coming years, we will continue to see improvements in the speed of processors, capacity of RAMs and magnetic storage, and quality of display devices. It is, therefore, tempting to stick a "more of the same" label on our future. In a misleading way, that is correct. Personal computers are and will remain simulation engines. Personal computers are and will continue to be intellectual power tools, tools to help us think, organize, communicate, learn, and play. What will change is the "how" more than the "what."

Aided by all of the improvements in silicon, magnetic, optical, and system-software technology, the major change in the "how" will be networking, and it will probably usher in the second age of personal computing.

The way we network personal computers today is offensively complex and expensive. Of course, we can, in theory, connect most personal computers to most sources of electronic information. Each time we want to tap into another source, however, the wires, protocols, data structures, and user interfaces change—a forbidding proposition for anyone but the most technically inclined and affluent users.

The next two or three years will bring hardware and software devices designed to bury the inconsistencies in networks and to make access as convenient as possible.

However well executed future networks are, the camouflage of inconsistencies will place some burden on us, in terms of cost and performance.

The ISDN (Integrated Services Digital Network) standard will probably make networking, as we know it now, "sound" as primitive as LPs compared to CDs. This stan-

dard will make possible a combined voice and data line in your office or home with about 20 times the throughput we enjoy with today's 2400-bps modems. Imagine that this data link is as standard as the RJ-11 (telephone jack) plug is today.

Imagine how the user interfaces will be influenced by the ability to quickly redraw a screen rather than wait for each character's placement on the screen. A two-minute program download will take less than five seconds.

Don't hold your breath for faster and newer applications enabled by the ISDN standard, though. We will need many years for the installation of this data-freeway system, but it will be worth the wait.

Besides better roads to sources of information, we will have another access to large volumes of stored knowledge: standard media, whether read-only, in the case of CD-ROMs, or read/write or write once read many (WORM), in the case of magnetic optical devices.

What will change personal computing is the way we will navigate these seas of data, either local or remote. The next ten years will see an evolution in the way we interact with large quantities of data.

Real people don't use SQL, a language for querying mainframe databases. What we want is personal-computing tools that help answer questions we did not know how to ask or that we should ask. What we want—and what we'll get—is a set of navigational tools that follow more closely our natural free-association thought processes. The way we use hand movements and graphics to supplement keyboard input and text is a good start. Bill Atkinson, the author of MacPaint, will soon offer us a



brilliant example.

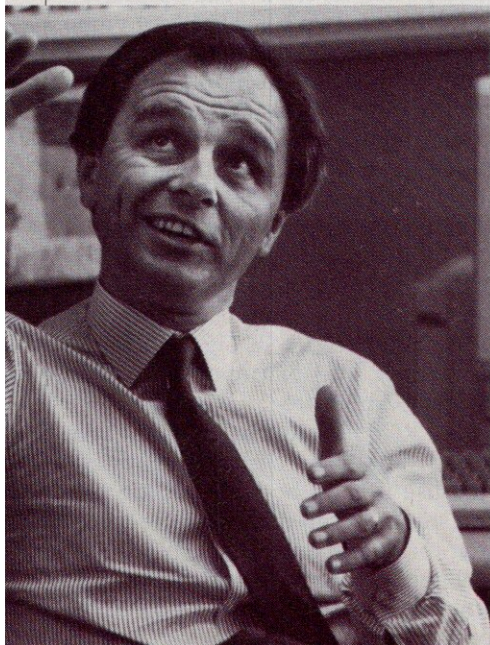
The next ten years will see advances in user interfaces giving us the power to naturally utilize huge libraries rather than fighting with the "front ends" of remote on-line database providers such as Nexis or Dialog. Some of these advances will come from the work on expert systems. Ten years from now, our personal computers will have enough speed, memory, and system software to host "agents" silently collecting and preparing data for us as we work or sleep.

As I think of the shape of things to come, I can't help but mention that, in 1997, and probably much before, we will notice the absence of these machines in the same way we now notice the absence of a telephone.

Some of our computers will be much more compact than they are today. We will carry them around, we will write on them—not type—and they will keep in touch with the rest of the world through a cellular modem or an infrared link with the nearest telephone plug. I can't wait.

I remember the first computer store in Paris, I remember my first copies of *Creative Computing*, and the Altair kit ads, and the Haiku generators.

The journey will continue to be rewarding. *Jean-Louis Gassée*



Your Writing, Calculating And Filing Just Got Easier.

The good news is that TRIO gives you the three most important software applications: an easy-to-use word processor, a powerful spreadsheet and a highly flexible data base. The even better news is you can buy TRIO for less than a third of the cost of Appleworks. Plus you get more features: like a very slick mail merge, a form letter maker, the ability to undo mistakes, printer macros and more. Of course, like Appleworks, you'll be able to write dazzlingly fast, project profits, organize lists, and more. TRIO is the most powerful integrated software package you can buy for the money. Apple //c and //e with 128K, \$79.95 (suggested retail price).



SOFTSYNC

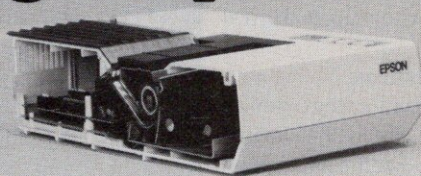
162 Madison Ave., New York, N.Y. 10016 (212) 685-2080.

CIRCLE 171 ON READER SERVICE CARD

Attention all FX80, FX100, JX, RX, & MX owners: You already own half of a great printer

Now
Only
\$79.95

Dealer
inquiries
welcome.



Now for \$79.95 you can own the rest. You see, today's new dot matrix printers offer a lot more.

Like an NLQ mode that makes their letters print almost as sharp as a daisy wheel. And font switching at the touch of a button in over 160 styles. But now, a Dots-Perfect

upgrade kit will make your printer work like the new models in minutes— at a fraction of their cost.


And FX, JX and MX models will print the IBM character set, too.

So, call now and use your Visa, MasterCard, or AmerEx. Don't replace your printer, upgrade it!

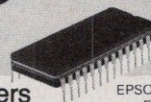
1-800-368-7737
In California: 1-800-831-9772

 Sample of
letter with
Dots-Perfect

Dots-Perfect™
Dresselhaus

Sample of
letter without
Dots-Perfect 

837 E. Alosta Ave., Glendora, CA 91740 Tel: (818) 914-5831
An upgrade kit for EPSON FX, JX, RX, & MX printers



EPSON is a trademark of
EPSON America, Inc.

CIRCLE 339 ON READER SERVICE CARD

*A look at color
displays for the IIgs*

THE IIgs SHOWS ITS Colors

New technology often brings new questions and new choices. This maxim is certainly true of choosing a display device to use with the Apple IIgs, but the Apple IIgs also limits certain choices about RGB video display. You can use the IIgs with a variety of display devices: a television set, a monochrome or color composite monitor, or an analog RGB monitor, but you can't use it with a digital RGB monitor (sometimes referred to as TTL RGB).

Let's look at how these different devices work and examine why Apple chose analog rather than digital RGB for the IIgs.

Monitors vs. Televisions

There are two broad categories of display devices for the IIgs—monitors and televisions. Each has a video display (or picture) tube. A monitor, which is especially designed for use with a computer, connects directly with a cable to one of the two video ports on the IIgs. A television receiver requires an additional device called an RF (radio frequency) modulator to convert the video signal from the IIgs into a radio wave that can be received by the television's antenna.

Using a television to display video output is generally cheaper than using a comparable monitor. Most of us have at least one television set—usually a color set—in our homes. But the display on a television using an RF modulator is always poorer than the display on a good computer

monitor. With the IIgs, another drawback is that you must use a special cable to connect the modulator to the computer. I had to get a cable custom-made for about \$20 to try out this configuration.

Some television sets today come with a direct monitor connection. You can connect your IIgs directly to this type of set without using an RF modulator and without the deterioration in picture quality that results from using one.

*You may
think that digital
RGB video
surpasses analog RGB.
In fact, just
the opposite is true.*

How the Video Display Is Created

The front of any display screen is coated with phosphors, materials that emit light when struck with a beam of electrons. If all phosphors emit the same color of light—typically white, green, or amber—the display screen is a monochrome screen. A color screen has three types of phosphors—one that emits

a red color, one that emits a green color, and one that emits a blue color (see figure 1). The combination of these three colors produces other colors—for example, red, green, and blue together produce white; red and blue produce purple; and red and green produce yellow (see figure 2). These combinations provide the various screen colors.

A color picture tube has three electron guns, one designed to hit each of the three sets of phosphors. The guns emit electrons at slightly different angles so that each one hits only the phosphors it is meant to hit (see figure 3).

Composite vs. RGB Video Signals

There are two basic types of video signals—composite and RGB. A composite signal contains information about the red, green, and blue colors combined with information about the relative brightness of each color. This signal can be used by either a monochrome or color composite monitor and, if modulated, by either a color or black-and-white television. The composite signal is also called an NTSC signal after its developer, the National Television System Committee.

An RGB monitor receives the red, green, and blue signals separately. Because it does not need to decode the signal, it can receive more information per second.

Bandwidth, a measure of the amount of information that can be passed to the monitor each second, is

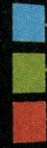


Figure 1: A color screen has three types of phosphors, one that emits red, one that emits green, and one that emits blue.

an important factor in picture quality. The higher the bandwidth, the more information the screen can contain.

Most color composite monitors have a bandwidth between 4 and 5 MHz, which is wide enough to display only 40-column text sharply. These monitors also have a somewhat fuzzy display when showing images from software using the IIGS's super-high-resolution graphics modes (see figure 4).

In most cases monochrome monitors have a sufficiently large bandwidth, more than 9 MHz, to display sharply 80-column text and super-high-resolution graphics. RGB bandwidth is always larger than 15 MHz. But comparing RGB with composite on this basis alone isn't that useful because they're really two different types of signals.

Digital vs. Analog RGB

The RGB signal on the IIGS is analog, but the typical signal on an RGB card on the Apple IIe or Apple IIc and on the IBM Color Graphics Adapter and Extended Graphics Adapter is digital.

Because digital sound, such as that produced by compact discs, is of higher quality than is analog sound, such as that produced by records, you may think that digital RGB video surpasses analog RGB. In fact, just the opposite is true.

A digital RGB monitor can display only a limited number of colors, based on its number of input lines. Many digital monitors, including the Apple Color Monitor 100 made for the Apple IIe and IIc, have a sin-

Figure 2: Different combinations of the three colors illustrated in figure 1 provide all the various screen colors.

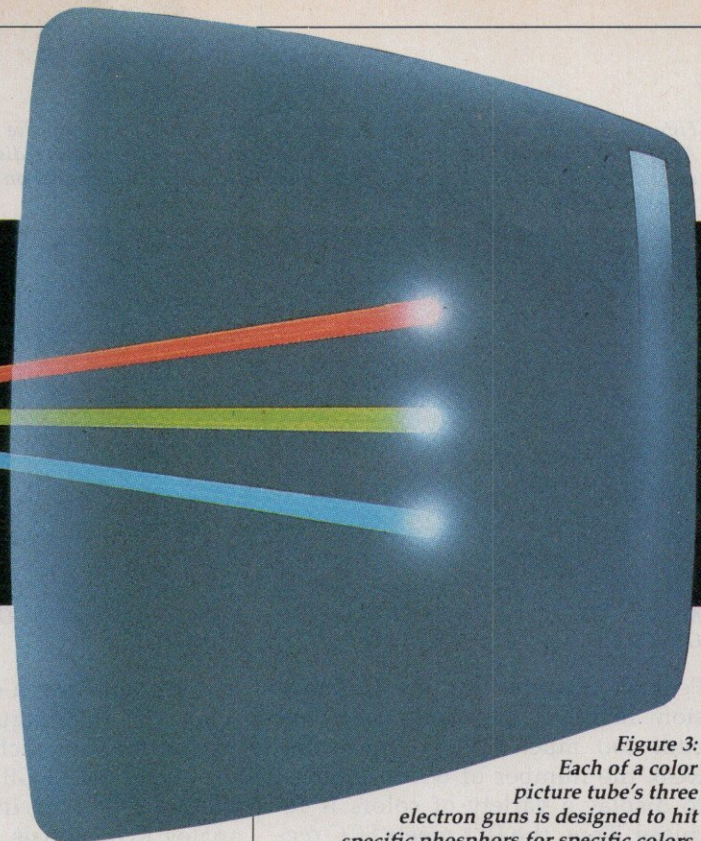
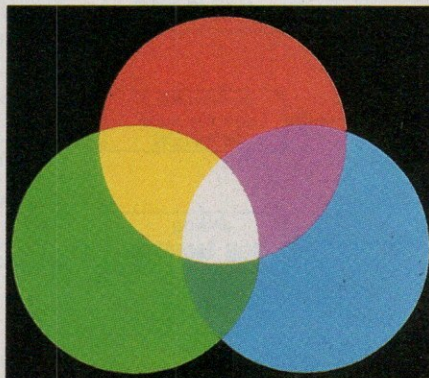


Figure 3: Each of a color picture tube's three electron guns is designed to hit specific phosphors for specific colors.

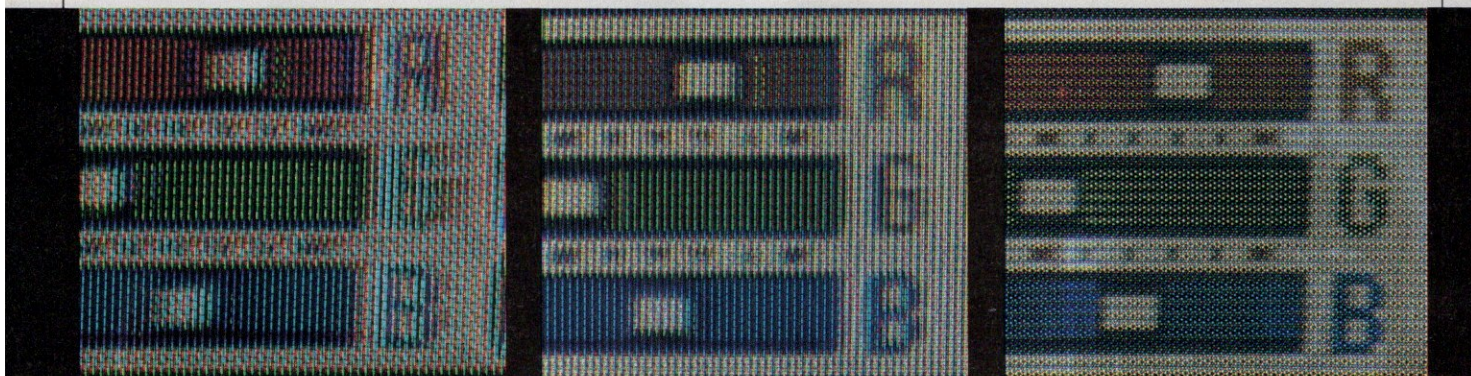
gle line for each color and a line for brightness. These four lines are digital—that is, they are either on or off. Four digital lines can send 16 different values to the monitor, corresponding to 16 different colors. A digital RGB monitor with 6 lines (2 for each color) can display 64 (2⁶) different colors.

The color output of the Apple IIGS has 16 different shades each of red, green, and blue, resulting in 4096 (16³) different colors. A digital RGB monitor would need 12 lines (4 for each of the 3 colors) to receive this color information. By contrast, the AppleColor RGB Monitor (analog) needs only 3 lines for the color information—one each for red, green, and blue. The signal on each color line is not on or off as on a digital monitor but is a varying voltage corresponding to the intensity of the color displayed.

Apple is not the only manufacturer to use analog RGB in its top-of-the-line color products. IBM uses analog RGB in the Professional Graphics Controller (which lists for nearly \$3000), as does Commodore in the Amiga and Atari in the ST.

There is another reason for using analog instead of digital RGB. Every wire carrying a voltage that comes out of a computer emits some radio-frequency interference (RFI). The

Figure 4: The difference between the display quality on a TV, composite monitor, and RGB monitor is dramatic. We photographed the same Apple IIGS Super Hi-Res (320 H by 200 V dots) graphic image on each display terminal. The modulated composite signal on a TV shows the most deterioration and poorest display quality, the composite signal on a monitor is dramatically better, and the RGB monitor offers the best display quality graphics.



MODULATED COMPOSITE SIGNAL ON COLOR TV

COMPOSITE SIGNAL ON COLOR MONITOR

ANALOG RGB SIGNAL ON RGB MONITOR

Federal Communications Commission requires that computers not emit too much RFI. With analog RGB, the number of wires required to display a variety of colors is reduced. Thus, the IIGS meets FCC regulations with less hassle.

Available Analog RGB Monitors

Besides Apple, several companies, including Commodore (Amiga), Conrac, Hitachi, Mitsubishi, NEC, Panasonic, Sanyo, and Toshiba, offer analog RGB monitors. (Apple's monitor is made by Mitsubishi.) Some monitors accept both analog and digital RGB signals, either through different cable connectors or by having a toggle switch. You should be sure that the monitor you select for your IIGS accepts analog RGB. If you select a non-Apple RGB monitor,

you must also get a cable to connect it to your IIGS. Figure 5 shows the connections for each of the pins on the Apple IIGS RGB port. Note that the IIGS RGB port, in addition to the analog RGB signals, also contains

- an NTSC color composite-video signal
- a power supply of +12 and -5 volts
- a sound signal

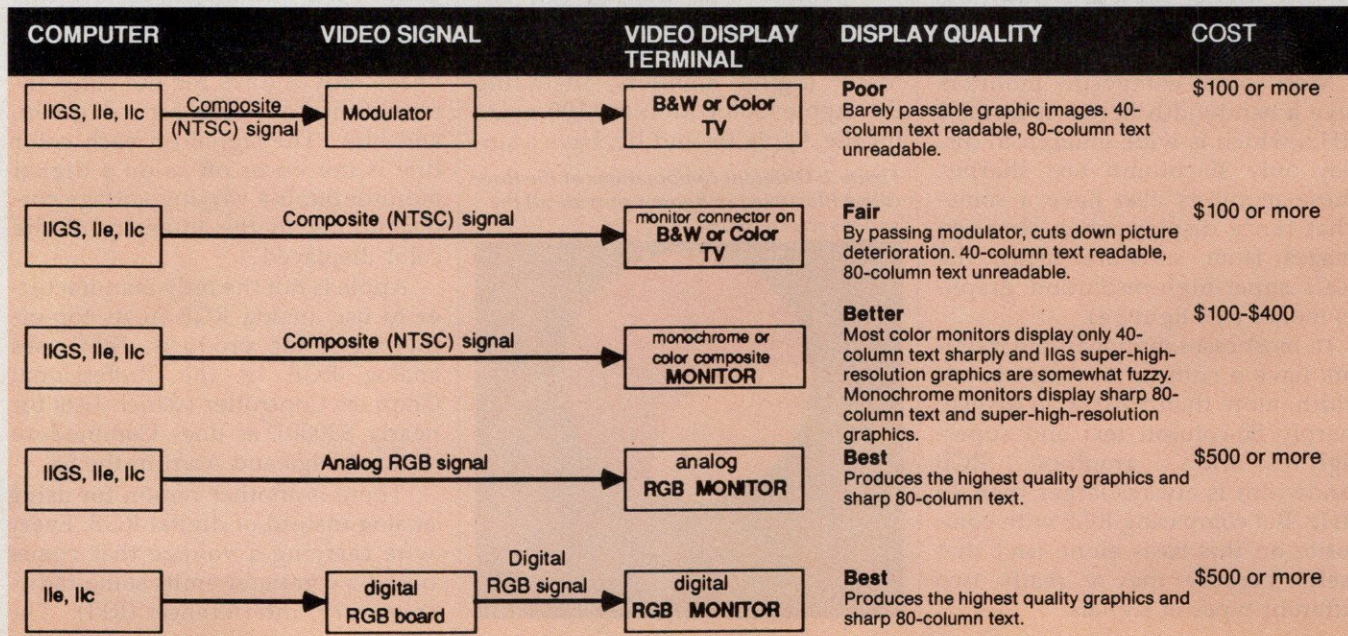
The NTSC signal and the power supply provide the signals used by the RF modulator, should you choose to use one. (If you attempt to construct your own cables, make certain you make the proper wire connections, because improperly connected power-supply lines can damage your monitor.) The sound signal is not used on the AppleColor RGB monitor but can feed sound to a

monitor with a built-in speaker and volume control.

The Apple IIGS provides not only an enhanced graphics display but also enhanced methods of showing these graphics. For many of us, the display of a television or a monochrome or color composite monitor will simply not be good enough.

In the past, Apple II owners had to plan for a double cost when considering RGB—the monitor and an RGB adapter card—but the Apple IIGS provides built-in RGB output. By doing so it has reduced the decision of choosing to use RGB to one of choosing from monitor types.

The choice for display, then, comes down to the familiar one of price versus features and quality. An RF modulator on an existing televi-



LASER 128

"THE LASER 128 IS A FINE MACHINE BY ANY STANDARD...
A TERRIFIC DEAL FOR A TERRIFIC MACHINE"

—Electronic Learning

Whether you're trying to familiarize children at the grade school level with computer use, or teaching junior high school students programming, the Laser 128 is your best bet. With its Apple // compatibility, you can use virtually all the educational software available, including popular titles from **MECC, DLM, Davidson, Learning Company**, and many more!

Peripherals, too

The Laser 128 runs with the best hardware, too. With its optional two-slot Expansion Box, the Laser 128 is the only Apple-compatible that gives you the portability of the //c and the expandability of the //e. The Laser even has its own line of peripherals and works with virtually any monitor (color or black and white) and printer (serial or parallel).



Service worth smiling about

When you purchase a Laser 128 from Central Point Software, you'll get the fastest turnaround possible if your Laser ever needs service. Our complete in-house repair center stocks all repair parts and the average turnaround time is under 48 hours!

We wrote the book

When it comes to people who know the Laser 128 inside and out, you won't find anyone more knowledgeable than Central Point Software. We wrote the Apple-compatible ROM that is the heart of the Laser 128 and have worked with dozens of software publishers to make sure that the Laser 128 will run all their software titles.

The Laser can cut it

The Apple //e compatible computer that brings you the best of all worlds: compatible, portable, and expandable, but priced like a Commodore 128! No wonder *A+ magazine* calls the Laser 128 the "clear winner" of Apple compatibles and *inCider Magazine* adds: "The Laser 128 is a remarkably compatible, competent performer. The Apple market isn't known for hardware bargains, but it has one now."

CIRCLE 107 ON READER SERVICE CARD

LASER 128: ONLY \$395!

The Laser 128 looks good! Please send the following items:

- Laser 128 Computer**—\$395 & \$20 s/h
- Laser 2-slot Expansion Box**—\$79.95 & \$6 s/h
- Laser 5 1/4" 2nd Disk Drive**—\$150 & 10 s/h
- 3.5 800K Drive & Controller Card**—\$285 & \$10 s/h
- AST Sprint Disk™ 1 meg RAM board with 256K installed (fully compatible with Appleworks™)**—\$95 & \$10 s/h

And ship them to me at this street address ASAP:

Name _____

Address _____

Daytime phone # (____) _____

To Order By Mail:

Simply send in this order form with a cashier's check. (Personal/business checks are ok, too, just take 15 working days to clear.) Or provide your Visa/MC

and expiration date _____

issuing bank _____

To Order By Phone: Just call us!

503/244-5782

8-5 (West Coast time), M-F, with your



in hand!

Central Point
Software
INCORPORATED

9700 SW Capitol Hwy., #100
Portland, OR 97219

PRINT-QUICK™



5 essential printer support utilities in one easy-to-use product

QUICK-SETUP: Easily control ALL printer features including International Characters, Page Length, Skip-Over-Perf, Left Margin, and Horizontal Tabs. Download and select supplied Customer Character Sets. Save frequently used setups to EXECable Setup Files.

QUICK-TYPER: A full featured one-line-at-a-time text editor that can imbed print feature commands *within* a line. Text may be sent right to the printer or to a standard text file. Wonderful for labels and quick memos! Unique Preview Line feature makes learning the fanciest printing techniques easy!

QUICK-DUMPER: Simply the best and the easiest-to-use Hi-Res screen printer around! Use the Quick'N'Easy Mode for one button screen printing or go into Total Control to select your own print parameters. Print all or just part of the Hi-Res screen with super easy keyboard, joystick or mouse cropping. Quick-Dumper always tells you the size of your picture before you print it!

QUICK-FONT: The finest Downloadable Character Set Designer/Editor available! Four character sets included on the disk. Use the special graphics character set with Quick-Typer or your favorite word processor to create custom business forms.

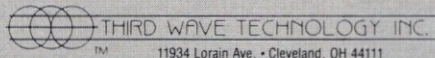
TEXT FILE UTILITIES: Print text files or display them on the screen with all hidden command characters revealed!

OVER 30 DETAILED HELP SCREENS and a QUICK REFERENCE CARD allow immediate use of PRINT-QUICK supporting the fine 150 page three-ring bound Owner's Manual.

PRINT-QUICK SUPPORTS: The Sider Hard Disk Drive (and other DOS 3.3 volume oriented hard disks), Apple compatible 80 column cards and RAM cards, Apple compatible clock cards, the Apple Mouse, and the Mockingboard.

PRINT-QUICK RUNS on the entire Apple II Family.

PRINT-QUICK supports printers made by Apple Computer, Citizens, C. Itoh, Epson, Okidata, NEC, Star Micronics and their compatibles.



PRINT-QUICK, QUICK-SETUP, QUICK-FONT, QUICK-TYPER, QUICK-DUMPER and THIRD WAVE TECHNOLOGY are trademarks of Third Wave Technology Inc. Apple is a reg. TM of Apple Computer, Inc. Mockingboard is a reg. TM of Sweet Micro Systems, Inc. Sider is a reg. TM of First Class Peripherals.

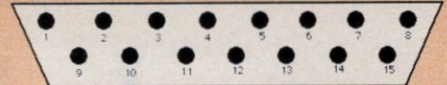
Ask your local dealer for PRINT-QUICK. Feel free to call us at (216) 671-8991 at any time to find out more about PRINT-QUICK (or call 1-800-233-WAVE and place an order! MC & VISA accepted).



only **\$49.95**

Add \$2.00 shipping & handling
FONT DISK I (15 additional fonts) \$19.95

CIRCLE 145 ON READER SERVICE CARD



- 1- Ground: Ground reference and supply
- 2- Red: Red analog video signal
- 3- Comp: Composite synch signal
- 4- No connection
- 5- Green: Green analog video signal
- 6- Ground: Ground reference and supply
- 7- No connection
- 8- +12V: +12-volt power supply
- 9- Blue: Blue analog video signal
- 10- No connection
- 11- Sound: Analog sound output
- 12- NTSC/PAL: Composite video (NTSC in United States)
- 13- Ground: Ground reference and supply
- 14- No connection
- 15- No connection

Figure 5: The pin connections on the Apple IIGs RGB port.

sion produces a barely passable but low-cost image, but you also need a monochrome monitor for usable 80-column text.

A color composite monitor produces a somewhat better display. An Apple composite monitor can sense when it is receiving monochrome text and switches circuits to a larger bandwidth monochrome receiver. It displays usable 80-column text. Other color composite monitors lack this feature and oblige you to use a monochrome monitor for usable 80-column text. (The Apple composite monitor also has a button that allows you to convert it temporarily into a monochrome monitor.)

An analog RGB monitor offers the convenience of a single unit for both color and 80-column text—with highest quality graphics and text. But the price is usually more than the combined cost of a monochrome and a color composite monitor. The diagram on the previous page gives general prices for different types of monitors available for Apple computers and compares their display quality. +

Michael Fischer is author of The Apple IIGs Technical Reference and 65816/65802 Assembly Language Programming (both from Osborne/McGraw-Hill) and coauthor of the Apple II Expansion Guide (Tab Books). He is an attorney, author, columnist, and programmer. He has owned and used Apples for nearly ten years.

FURTHER READING

Wideman, Graham. "Computer Video Signals," chapter 14 in *Computer Connection Mysteries Solved*. Howard W. Sams & Co., 1986.

BACKUP

ESSENTIAL DATA DUPLICATOR

Back up your copy-protected disks with **Essential Data Duplicator 4 PLUS**. ■

EDD 4 PLUS is new technology, not just "another" copy program. The **EDD 4 PLUS** program uses a specially designed hardware card which works with your disk drives to back up disks by accurately copying the bits of data from each track. Don't be fooled. . .

no other copy-program/system for Apples can do this! ■ In addition to backing up disks, **EDD 4 PLUS** includes several useful utilities such as examining disk drives, certifying disks, displaying drive speed rpm's, plus more!

■ **EDD 4 PLUS** runs on Apple II, II Plus (including most compatibles), and IIe, and is priced at \$129.95 (duodisk/uni-disk 5.25 owners must add \$15 for a special cable adapter). Add \$5.00 (\$8.00 foreign) ship / handling

when ordering direct. ■ A standard **EDD 4** version which doesn't include any hardware is available, and can be used on Apple IIc and III (using emulations mode) and is priced at \$79.95. Add \$3.00 (\$6.00 foreign) ship/handling when ordering direct. ■ If you own an earlier version, send us your **EDD** disk and deduct \$50 from your order. ■ Ask for **EDD 4 PLUS** at your local computer store, or order direct. Mastercard and Visa accepted. All orders must be prepaid. ■ In addition, registered owners may purchase **EDD's** printed 6502 SOURCE CODE listing for educational purposes.

UTILICO MICROWARE

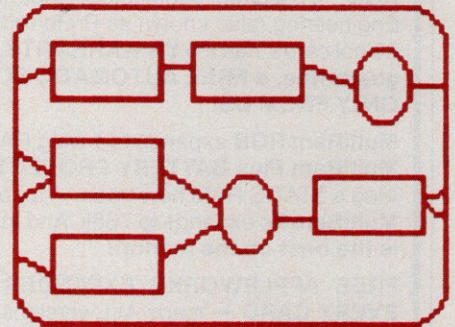
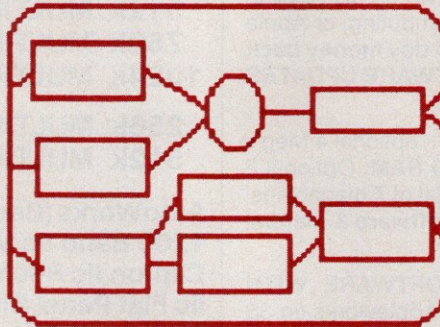
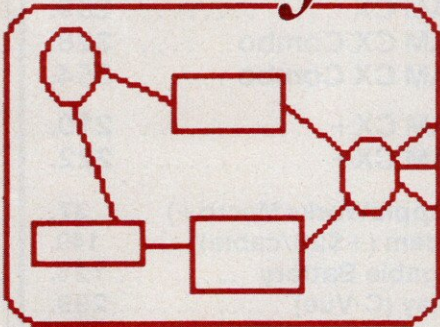
3377 SOLANO AVE., SUITE 352
NAPA, CA 94558 / (707) 257-2420

WARNING: EDD is sold for making archival copies only.

CIRCLE 190 ON READER SERVICE CARD

Everybody's Planner suits small-business needs.

PROJECT MANAGEMENT



Has anyone asked you to whip together a refrigerator factory in the Amazon jungle lately? Have you felt a pressing desire to build your own floating island and get away from it all? Ambitious projects—and small ones—tend to go better with careful advance planning. Such planning may be something you relegate to scribbling on a napkin while you sip your morning coffee, and perhaps the to-do items in your business life require no more planning than paper-and-pencil notes.

On the other hand, you can avail yourself of project-management software, which can help you in several ways. Besides making complicated projects approachable, such software can help communicate your plan to other people. Putting anything onto a computer printout formalizes it to a certain degree. Your organization and commitment to a plan appear more convincing when you've anchored them to a detailed project schedule and flowchart. Finally, don't forget the bottom line: Effective project management can mean finishing on time and/or at less cost.

Project-management software is used much less widely than are spreadsheet, word-processing, and database programs, possibly because project management is a science couched in its own jargon. It doesn't have to be, though, and the principles are not that hard to grasp.

Abracadata of Eugene, Oregon, has introduced Everybody's Planner, a project-scheduling program for the Apple II series that bills itself as "the planning tool for the rest of us." The package rings of a home-usage program, showing such examples of project planning as installing a pool. Don't be fooled, though; Everybody's Planner has capabilities appropriate for the use of most small- and medium-size businesses.

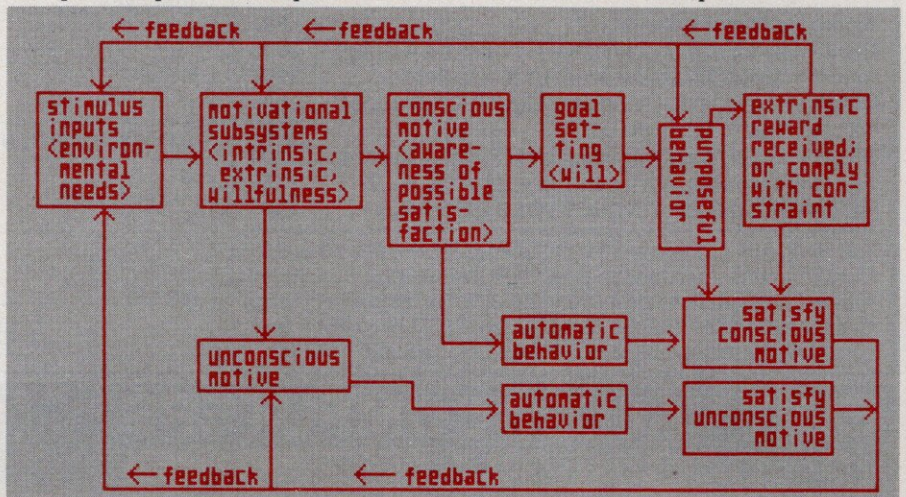
Optional, but helpful, in using Everybody's Planner are a mouse, digitizing pad, joystick, or paddles. Using keyboard control alone is adequate, however. A monochrome screen is the best choice for keeping eyestrain down; Abracadata half-

heartedly endorses using a color monitor with Everybody's Planner, but it results in difficult-to-read screens.

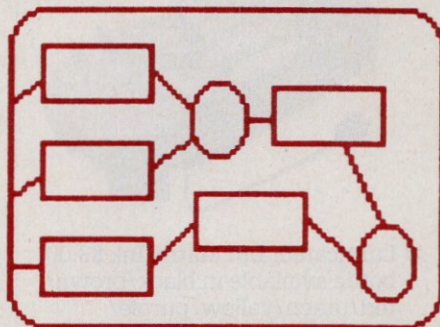
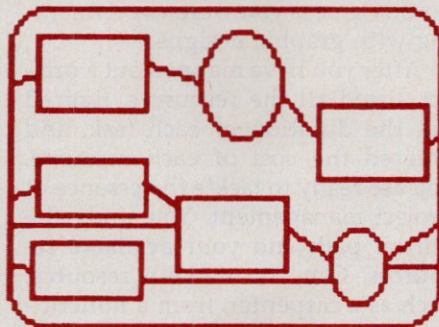
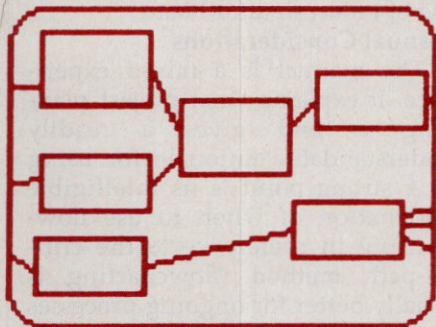
Getting Organized

Projects consist of tasks; milestones (events such as start, end, and important stages along the way); and the resources necessary to fulfill each task. Project-planning software usually includes critical-path management (CPM), Gantt charts, and a capability known as resource allocation. CPM is a method of shortening a project to its minimum duration by figuring out which tasks are on the "critical path," which ones cannot be stretched out without delaying the entire project. Gantt charts are

Figure 1: Abracadata's "Organismic Theory of Motivation" flowchart shows "feedback" concept as a response that loops back and influences the source first responded to.



FOR ALMOST ANYBODY



simply bar charts that show all the tasks and make it easier to see the relationship between the critical-path tasks and elapsed dates.

By assigning more resources (money, people, vehicles, tools, and the like) to the critical path, you can reduce the duration and/or overall cost of a project. That's where resource allocation comes in, to keep track of your available resources and help you use them to best advantage. Everybody's Planner handles CPM, Gantt charts, and resource allocation. In addition, it lets you design flowcharts on the screen, print them out, and "activate" them—i.e., present them in a semianimated fashion, with each successive event painted on-screen as you issue the command.

The program also features a well-rounded selection of report types. Besides the graphic reports (showing critical-path and Gantt charts), it has several expense-oriented reports that can be highly specific. For instance, you can request an analysis of the daily work schedules and cost of Worker #3 and Carpenter #5 on a particular project.

A project calendar can cover any time span up to five years long between the years 1985 and 2014. It allows for nonworking days and lets you set up a template for the work week.

The program lets you track up to 216 separate resources and as many

as 24 milestones. The maximum duration of a single task is 999 days, which should accommodate projects of almost any size. The maximum daily cost of a single resource is \$32,767, but even for massive offshore oil-drilling projects, you can consider each dollar as representing a thousand. Up to four resources can be involved in any single task. The hitches are that a project can include only 54 tasks and that all project calendars are figured in days. Many small-business projects, such as relocating a firm from one office to another, have far more than 54 tasks, so this limitation is not inconsequential. The only way around it is to break projects down into subprojects or parallel projects, which is not always feasible. The day-only framework of the calendar is suitable for

most projects, but if you require a breakdown of tasks and milestones by hour, minute, week, or month, Everybody's Planner may not work for you.

You can choose from three typestyles for text: normal, bold, and "little." Up to 70 little characters fit on a screen line, so they are handy for labeling inside chart shapes.

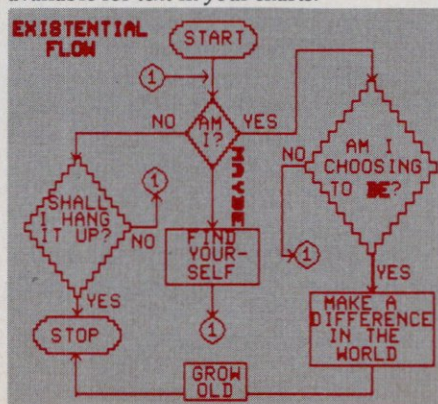
Getting Your Feet Wet

The best way to get started with Everybody's Planner is to carefully follow the manual, reading through it once first, since the instructions are a bit choppy and the keystroke requirements are not always clear.

With Everybody's Planner, you start a project plan by defining a "calendar." You assign a start date and define the work week; the most common scheme is to "turn off" Saturday and Sunday. Then you paint a shape on the screen to represent the milestone START. Next you place all the project tasks on the screen, give them unique names, and assign the resources necessary for accomplishing each task. Before assigning dates, you must also define an END milestone. You can toggle the dates on to check durations or off to study the task/milestone flow.

You can edit tasks and milestones until you have the flow just right. The project "map" moves from left to right, with tasks connected by straight lines. Each task cannot begin until after completion of the

Figure 2: Abracadata's "Existential Flow" chart shows two of the three typestyles available for text in your charts.



MAC INKER™

Re-ink Any Fabric Ribbon
Automatically for less
than 5 cents.

Dedicated Image-
writer 1 and 2
(MAC INKER IM)

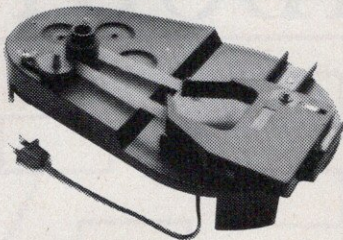
\$42.00
shipping \$3.00

Universal Cartridge
MAC INKER

\$68.50

Universal Spool
MAC INKER

\$66.95



- Lubricated, Dot Matrix Ink \$3.00, bottle available in black/brown/red/green/yellow/purple/orange/gold and silver.
- Over 50,000 MAC INKER(s) in the field.
- Over 7500 printers supported.

MERCURY MODEM

Really 100% Hayes* Compatible.

- 300/1200 baud.
- audio monitor/front panel lights.
- 18 months warranty.



Shipping \$4.00

\$205.00

*Hayes is a trademark of Hayes Microproducts.

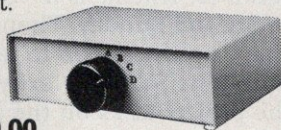
DATA SWITCHES (any type)

MACINTOSH MULTIPORT

SWITCH (9 pin). Connect up to 4 peripherals to your printer or modem port.

\$50.00

MAC-to-SWITCH
cable \$10.00.



shipping \$3.00

Order Toll Free.

Call or write for free brochure.

1-800-547-3303

In Oregon 503-626-2291 (24 hour line)

We are and always will be your

Computer Friends®

14250 N.W. Science Park Drive
Portland, Oregon 97229 Telex 4949559
Dealer inquiries welcome.

connected task to its left.

A project can take as many as six screens. You can insert new screens in the middle of a project and move tasks from one screen to another. You enter labels and resources directly inside task or milestone shapes and can easily edit them. If your label is too long, you can resize the task shape to accommodate it.

I found that Everybody's Planner let me overlap two task or milestone shapes (but no more than two), although I'm not sure why you would do this unless you were experimenting with graphic designs.

After you have mapped out a project, listed all the resources, figured out the duration of each task, and entered the cost of each resource, you are ready to tackle the essence of project management. You study the critical path and your available resources. Can you move a resource, such as a carpenter, from a noncritical task to a critical one? After all, letting a noncritical task slip for a couple of days may not delay the overall project, while speeding up a critical task can mean you'll meet the project deadline.

If you have an idea of the cost of finishing the project one day, week, or month late, you can decide how much to spend for extra resources—more workers, carpenters, trucks, etc.—to complete the work on time or even early.

You can also study the "slack time" of any resource. If you find that certain workers will be idle for a couple of weeks, you might consider hiring temporaries rather than full-time workers or trying to change the sequence of tasks to keep

a steady activity level. At this point, your project management becomes an intriguing "what if?" game, much like using a spreadsheet to tinker with numbers in search of the best results.

Everybody's Planner does its work about as rapidly as you can expect on the Apple IIe. The longer and more complex the project, the greater the delays in loading and drawing screens. Overall, the program's speed is acceptable, but it would definitely benefit from the use of an accelerator board.

Manual Considerations

The manual is a mixed experience. It explains what project planning is and gives a readily understandable rationale for using it. A strong point is its intelligible explanation of when to use flowcharting in preference to the critical-path method (flowcharting is usually better for ongoing processes such as those of a factory assembly line, and CPM is good for projects that must begin and end on specific dates.) The index is adequate. The documentation includes a Quick Command reference card with a list of common data-processing flowchart symbols.

Although the manual is easy to understand, it suffers from a lack of step-by-step examples to help you through the learning stages. Several of the flowchart examples deal with situations for which you would never use a flowchart—deciding whether your life has purpose or not, for instance (see figures 1 and 2).

Everybody's Planner is not hard to learn to use, but the documentation could do more to teach efficient

TIPS AND HINTS

For the best possible hard-copy output, I recommend rotating your charts to get multiscreen projects in a sequence and then reducing the printed results on a photocopier to improve the resolution. The program asks you for a magnification factor; in most cases, what works out best is an x factor of 3 and a y factor of 4, with your indentation set at 15 pixels.

Of the numerous printers the program works with, an ImageWriter II probably produces the most satisfactory presentation-quality results. Unfortunately, it cannot print the

flowcharts in color, although future enhancements may let it do so.

In case you're wondering what Everybody's Planner calls Gantt charts, it refers to them as Task Charts (see figure 3).

When you make your backup copies for everyday use, don't use the "flippy" (both sides of double-sided diskettes) method. To save yourself from a burdensome amount of disk swapping, fill up four single-sided diskettes and always keep a formatted blank data diskette handy for when your data overflows the current diskette.

“Amazing as it may sound, VIP Technologies has managed to copy 1-2-3, add a Mac interface, and transport the whole thing to the Apple II.”

Editor's Choice Award
in Cider Magazine

Apple® II owners—rejoice. There's finally a spreadsheet that treats your Apple like a serious computer.

It's called VIP Professional®, and it establishes once and for all the Apple II's place in the business world.

VIP Professional not only incorporates familiar Lotus® 1-2-3® functions, but it's compatible with all Lotus 1-2-3 compatible files. This alone makes it a new spreadsheet standard for Apple users.

But we didn't stop there. VIP Professional's mouse interface and pull-down menus give it the best of Excel® too. And its massive database and text processing capabilities outshine even AppleWorks®.

The result is the most powerful business tool ever available to Apple users. Mini and supermini versions are already in use worldwide. Now VIP Professional is available for the Apple IIe, IIc and IIgs.

Better than 1-2-3.

Because VIP Professional is designed to work exactly like 1-2-3, those familiar with the program will be instantly productive. And novices can take advantage of existing 1-2-3 tutorials and productivity aids, as well as our user-friendly dialog boxes.

VIP Professional also incorporates a mouse interface that allows easy, Macintosh®-like interaction with your Apple (or use the keyboard if you prefer).

Now you can instantly choose functions from pull-down menus and enter data with the click of a button. Icons and scroll bars help you organize information.

You'll also enjoy superior color graphics. In Cider Magazine said, "Graphics is one area where VIP really outshines Lotus, as the on-screen

pictures are much better on the Apple than on the IBM®."

And VIP Professional offers more raw spreadsheet power: A large 8,192 row by 256 column sheet and additional data query fields. Plus, VIP Professional is the *only* mouse-driven spreadsheet that features pull-down menus *and* addresses over 4 megabytes of memory on IIe or IIc and 8 megabytes on IIgs.

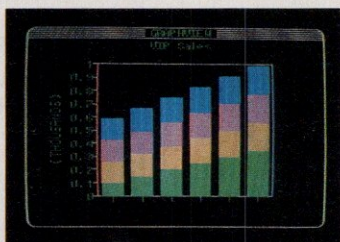
Better than AppleWorks.

Like AppleWorks, VIP Professional integrates a spreadsheet, database and text processing. But VIP Professional's spreadsheet and database are far more powerful—and VIP also offers colorful graphics and a mouse interface.

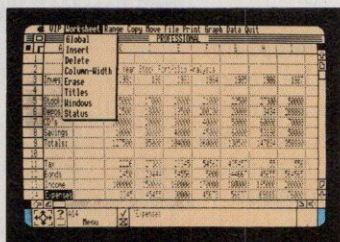
VIP Professional reads all AppleWorks' files and is supported by templates and macros to speed common functions.

Better than Excel.

In giving Excel a mouse interface, Microsoft® stripped it of many of 1-2-3's qualities—including calculation speed and spreadsheet memory. Only VIP Professional gives you more speed and power than 1-2-3 with the ease-of-use of Excel. All at a much better price.



Superior color graphics for dynamic charts and graphs.



Pull-down menus make using VIP Professional easy.

"When you get tired of playing around with the others and want to get serious, VIP Professional is something worth looking into. There are few serious business products for any microcomputer that I would give a higher recommendation to than VIP Professional."

1986 Editor's Choice Award
AmigaWorld, November-December 1986

"If power spreadsheeting is what you've got in mind, this is the package for you."

in Cider Magazine

Special offer!

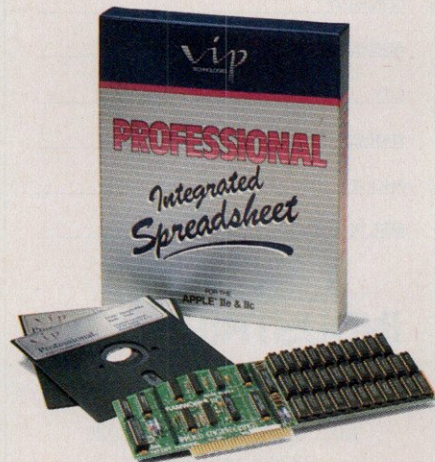
VIP Professional requires at least 256K of auxiliary RAM to operate. It works with a range of Applied Engineering memory and accelerator boards, including all RamWorks and Z-RAM boards (256K required), all GS-RAM boards (512K required), and TransWarp boards.

Apple System	VIP software (with purchase of board)	VIP software only
IIe, IIc	\$199	\$219 (reg. \$249)
IIgs	\$249	\$269 (reg. \$299)

Applied Engineering offers special prices on VIP Professional software and even better prices when purchased with Applied Engineering boards.

To order or for more information, see your dealer or call Applied Engineering, 9 a.m. to 11 p.m., 7 days at (214) 241-6060. MasterCard, VISA and C.O.D. welcome. Applied Engineering, P.O. Box 798, Carrollton, TX 75006.

AE Applied Engineering
The Apple enhancement experts.



LEGEND™ RAM CARDS

MEMORY EXPANSION for the IIgs, IIe, IIc, II+, Franklin, Laser

- Free patch runs with all AppleWorks™ versions.
- Expand Desktop to 1 meg.
- Free software updates.
- 256K to 1 meg memory.
- Free DOS & PRODOS ramdrives.
- Full service & support.
- II/II+ Owners: Run AppleWorks™ with expanded Desktop.

S'Card™ for the II, II+, IIe, IIgs, III, Franklin, Laser

- Maximum flexibility, proven durability.
- Slot independent.
- 1024K AppleWorks™ on II/II+, IIe IIgs, Franklin (That's right! Run AppleWorks™ with 1024K on your II/II+!).

E'Card™ for the IIe

- 80 column display • RGB
- 16 levels of Gray Video
- Use Mouse with AppleWorks™

C'Card™ for the IIc

- Easy installation • 1152K IIc
- Up to 1024K AppleWorks™ Desktop
- Use Mouse with AppleWorks™

Send me info on: My computer is:

S'Card (II/II+, IIe, IIgs, Franklin, Laser) IIe II/II+

C'Card (IIc) IIc IIgs

E'Card (IIe) Franklin

Laser

NAME _____

COMPANY _____

ADDRESS _____

CITY _____

STATE/ZIP _____

PHONE _____

BEST TIME TO CALL _____

**LEGEND
INDUSTRIES, LTD.**

800-5-LEGEND
OR (313) 674-0953
MIC, VISA, COD WELCOME
2220 Scott Lake Rd.
Pontiac, MI 48054

Legend S', E' & C' Cards are trademarks of Legend Industries, Ltd., Apple & AppleWorks are trademarks of Apple Computer, Inc.

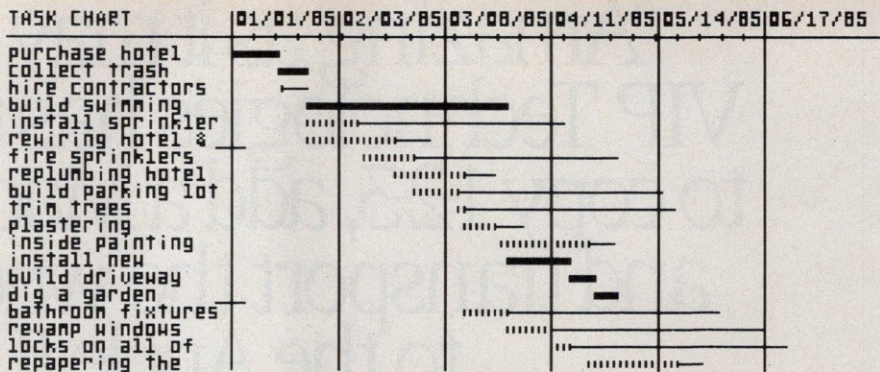


Figure 3: A task (Gantt) chart. The thick bars represent the critical path.

usage by describing shortcuts and common missteps. The diskette-based tutorials are superficial and noninteractive, and the screen menus are not always adequately informative. I had to spend an embarrassing amount of time to deduce that the way to leave the menu bar and get back to drawing a chart was to choose the Add Shape option. Another confusing menu is the one for entering task costs; it turns out to be where you input your costs per resource.

The program is adept at preventing you from entering invalid data and at catching nonsensical input. Everybody's Planner will not let you attach any dates to tasks and milestones until you've painted an END milestone on-screen.

The only glaring problem I encountered was when I configured Everybody's Planner for the right printer but the wrong interface card. When I issued the Print command, the program crashed and gave me a screenful of hexadecimal characters.

Although Abracadata's telephone support is not toll-free, the receptionist answers the phone promptly and quickly finds the person you need to talk to. The support personnel are competent and courteous.

Balance Sheet

The strengths of Everybody's Planner are its price, its ease of use, the wide selection of report types, the ease with which it lets you edit projects, the variety of peripherals and interfaces with which it works, and the courteous telephone support from the manufacturer. Its weaknesses are the number of tasks it allows in a project, the restriction of the calendar to days only, its need for frequent diskette changes, and its tendency to crash when you configure it for the wrong printer or interface.

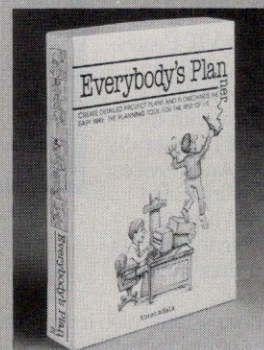
Although the program's price is

quite reasonable, not many household projects, short of renovating a home or preparing it for sale, would justify the purchase of this product. In general, businesses require project scheduling, and home situations do not.

For businesses with an appropriate computer system, Everybody's Planner is an affordable project-management tool. Even if you just want an easy way to draw flowcharts and print them out, this program is probably worth the expenditure. If you can work within its task and calendar limitations, Everybody's Planner is an excellent choice for your project-planning and flowcharting tasks. +

Ives Brant has evaluated new products for ComputerLand Corporation and Pac-Tel InfoSystems. He is product-review editor at a leading microcomputer trade publication.

PRODUCT INFORMATION



Everybody's Planner

Abracadata
P.O. Box 2352
Eugene, OR 97402
(503) 342-3030

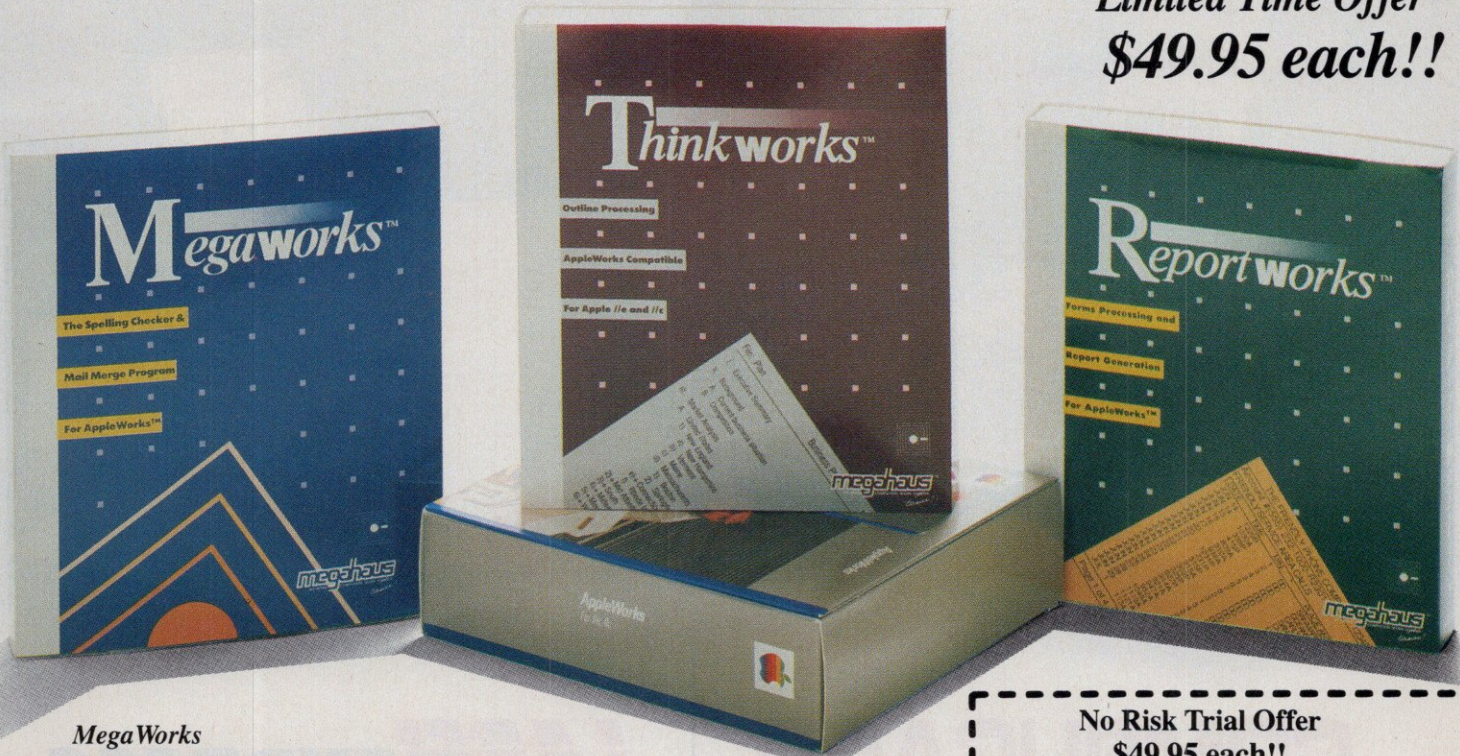
List Price: \$99.95

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

CIRCLE 359 ON READER SERVICE CARD

The Complete Works With AppleWorks™

Limited Time Offer*
\$49.95 each!!



MegaWorks

Adds to AppleWorks two additional word processing functions: Spell Checking and Mail Merging. This allows you to generate error free documents and form letters simply and easily. A great time saver!

- 40,000 word dictionary, you can add 10,000 more words.
- Reformats the corrected/merged document to maintain pagination and word wrap.
- Incorporates information into form letters as often as you like.
- Information can be merged from one AppleWorks document to another.

ReportWorks

A powerful Report Generator that enables you to design and create enhanced summaries, forms, lists, statements, plus a wide variety of reports. Business users will really appreciate the power and versatility of this program!

- Includes information from up to 8 different database and/or spread sheet files.
- Sorts on 3 fields to increase flexibility.
- Creates a wide variety of reports in a multitude of formats.
- Displays a "What-you-see-is-what-you-get" preview of the report.

ThinkWorks

Easy to use Outline Generator that is designed to work with AppleWorks. A terrific writing tool. It makes organizing thoughts fast and easy!

- Labels and indents each entry automatically.
- A "move" command makes it easy to move entries to different levels or under different topics.
- Automatically renumbers the entire outline after a change has been made.
- Can also be used as a stand alone.

No Risk Trial Offer

\$49.95 each!!

30 Day Money-Back Guarantee!

1-800-345-8112

In PA call 1-800-662-2444

Visa and Master Card only

YES! Please Rush Me:

MegaWorks \$49.95 ea. _____

ReportWorks \$49.95 ea. _____

ThinkWorks \$49.95 ea. _____

Shipping & Handling \$4.00

(CA Residents Add 6% Tax)

Total

Check Enclosed

Visa MC

Card #: _____ Exp. Date: _____

Signature: _____

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Daytime Phone #: (____) _____

*Offer Expires March 31, 1987

megahauss

(619) 450-1230

Attn: Dept. A-249
5703 Oberlin Drive/San Diego, CA 92121

ReportWorks and ThinkWorks requires an Enhanced 128K Apple IIe or Apple IIc. MegaWorks requires a 128K Apple IIe or IIc. Two disk drives are strongly recommended.

CIRCLE 259 ON READER SERVICE CARD

Rolodex® Software

Desktop management systems from the company that started it all.

Trademark
Software



COMPUCARD BY ROLODEX™

COMPUTERIZED CARD FILING SYSTEM

With Compucard by Rolodex, card sets can be created, updated, edited and duplicated fast and easy to improve office productivity and organization as card filing is simplified.

Compucard Software Program and Documentation Manual are available for IBM®/PC (CSM-I) or Apple® IIe (CSM-A) at \$49.95. They are also available complete with VIP24C Special file and 500 Rolodex Brand Continuous Form Cards, 2 1/4 x 4" at \$68.50 (CC500-I for IBM and CC500-A for Apple). Compucard features include: Free-form card format with up to 450 characters per 2 1/4 x 4" card Rapid printing Full-screen editing commands Date stamping for each entry Dual indexing Flexible select code system.

LABEL EXPRESS BY ROLODEX™

Label and List Management Software

Label Express makes it easy to create labels, locate and update mailing lists, address envelopes, print name badges or Rolodex Brand Continuous Form Cards. Label Express by Rolodex. It keeps you in touch with people.

Label Express software is available for IBM/PC (LSM-I) and Apple IIe (LSM-A) computers, at \$49.95 each. Its powerful features include: **Creating your own label formats, up to 180 characters on five lines.** Full-screen editing with popular, word processing commands Immediate indexing for each new entry Extensive and time-saving search features Full combine/merge capability Customized printing up to 999 copies.

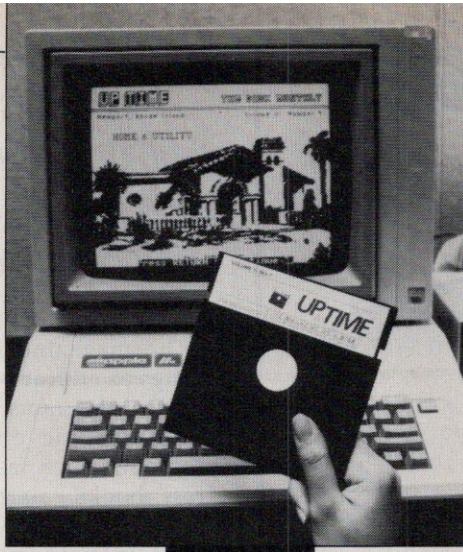
ROLODEX CORPORATION

245 Secaucus Road, Secaucus, N.J. 07094

An **Insico** Company

CIRCLE 182 ON READER SERVICE CARD

IBM/PC is a registered trademark of International Business Machines Corporation; Apple IIe is a registered trademark of Apple Computer, Inc.



Quick Take

BY RUSEL DEMARIA

UPTIME

Computers are innovative devices, and their uses are legion. So when someone tells you about a computer magazine on a disk, you probably don't even bat an eyelash—but don't you wonder what such a product would be like?

UPTIME is just such a publication. Each issue has a cover, an inside cover for credits, a table of contents, an editorial, letters from users, product reviews, news items—and advertisements. And each disk has one thing more: working programs (ten of them). Each issue fills both sides of a single disk with information.

What sets a disk-based magazine apart from a paper-based magazine? Perhaps one of the operative words is *animation*. Another is *interaction*.

On a computer disk, things can move, programs can run, sound effects can punctuate, and readers can interact.

The Flip Side

The flip side is that the limitations of disk space are apparent in UPTIME. The reviews and editorials are short, and there are few news items. Few, if any, of the programs would sell on their own; they tend to be simple and one-dimensional. On the other hand, the programs cost only a little more than 50¢ each (at

\$5.50 per issue), so if you like them, they are a bargain.

What is good news for some people might be bad news for others. For instance, some of the issues I've seen contain a cute method of moving through the magazine. You se-

lect the number of the item you want to view, and a small picture of a gun tumbles down the screen, accompanied by sound effects. The gun comes to a stop before your choice and shoots a bullet at it, highlighting the selection before the program runs.

As cute as this razzle-dazzle is—and it is funny—it takes time. It takes more time than it does to simply turn a few pages. If you don't mind the wait, then it won't bother you. After the fifth or sixth time you've watched the gun come tumbling down, however, it begins to lose its novelty, and you're just waiting for the next screen.

As critical as I am of the gun catalog, it is just that kind of feature that makes UPTIME fun. The imaginations of the people who contribute to the magazine make it live, the extra little touches make it special.

Another of UPTIME's assets is its toll-free telephone number. The UPTIME staff welcomes contact with readers. People are encouraged to submit programs (the magazine pays nominal amounts for materials it uses, and you get the satisfaction of knowing that thousands of people are seeing your program). Each issue also has a survey that you can fill out and send back. In many ways, UPTIME is more an evolving and responding creation than most paper magazines are.

Some of UPTIME's programs are pretty amusing. For instance, one of the issues offered *Woman's Work*. The program has you enter how many hours per week a housewife spends filling various roles (maid, psychologist, cook, nurse, tutor, and the like). You then assign hourly pay rates for each task to conform with the pay scale in your area, after which the program treats you to the total cost of "woman's work." It is pretty sobering. For instance, my wife performs tasks worth more than \$600 a week (more than \$30,000 a year) without pay! Good thing she doesn't have time to read computer magazines (just kidding, honey).

Among the other programs, you'll usually find a smattering of generally simple but amusing and somewhat challenging arcade-style games. They lack the graphic wizardry and complex interaction of commercial games but can keep you

A disk-based magazine for Apple II-users that adds animation and inexpensive programs to your reading pleasure.

DO YOU
WANT TO PLAY
A GAME?

Find out what entertainment packages are hot, new and guaranteed to stimulate your mind and tickle your funny bone every month in *That's Entertainment*.

The editors of **A+** review all the new releases and let you know if it's the right game for you!

UPTIME is more an evolving and responding creation than most paper magazines are.

coming back to better your score.

The magazine includes such offerings as educational programs and quizzes, programs that display interesting graphic effects, and utility programs such as calculators, address books, alarm clocks, calorie counters, and calendars. These programs vary in quality and usefulness, but they are generally functional. If you want, you can transfer any of them from the *UPTIME* disk to another disk.

UPTIME also offers its subscribers special prices on commercial software. *UPTIME's* guarantee reads: "If not completely satisfied with any item, please return it and we will either refund the full purchase price or replace the item."

A sense of the unexpected comes with a disk-based magazine, probably because of the versatility of computers and their advantages over paper media. On the other hand, I like the feel of a paper magazine, the photographs, the portability, and the greater depth of coverage.

I think there is a place for both kinds of products, however. The qualities that make each unique are, in themselves, worthwhile. I expect that the day may come when we will have almost no paper. Some people are predicting such a paperless society, but that day is a long way off and will come only with the advent of more-sophisticated computer technologies. For now, we have paper, but perhaps *UPTIME* is a forerunner of things to come. **+**

Rusel DeMaria is a free-lance computer consultant and columnist for The Maui News. He lives in Hawaii.

PRODUCT INFORMATION

UPTIME

174 Bellevue Avenue
Newport, RI 02840
(800) 437-0033

List Price: \$5.50 per issue

Requires: Apple II Plus, IIe, IIc, or IIGS

CIRCLE 360 ON READER SERVICE CARD

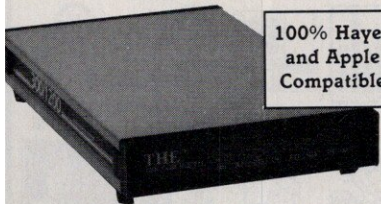
The #1 Source for Apple IIe/IIc

PC NETWORK

**BUY HARDWARE AND SOFTWARE AT WHOLESALE + 8%
AND GET 14 TO 30 DAY SOFTWARE RENTALS..**

**CALL FOR
EXCITING PRICES
ON APPLE IIe/IIc**

MODEMS



100% Hayes
and Apple
Compatible

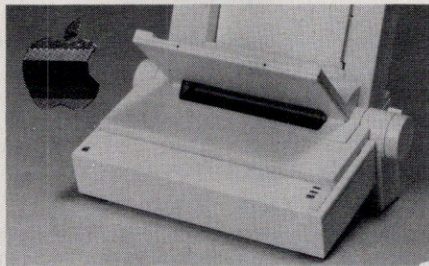
THE™ 1200 COM

1200 BPS External Modem w/auto answer,
dial, re-dial and built-in speaker.

\$119.00*

Anchor Lightning 2400	\$309.00*
Hayes Smartmodem 1200A Internal	282.00*
Hayes Micromodem IIe w/Smartcom	125.00*
Hayes Smartmodem 2400	525.00*
Prometheus Promodem 1200	247.00*
THE™ 2400 COMM External Modem	259.00*
U.S. Robotics Courier 2400 BPS	345.00*

PRINTERS



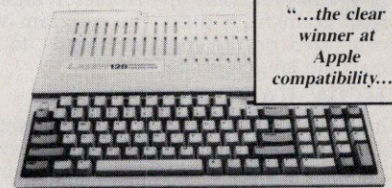
Imagewriter II

10" Carriage 250CPS/80COL 45CPS NLQ
Color Capable

\$419.00*

Apple Imagewriter II Cut Sheet Feeder	\$149.00*
Apple Laserwriter	3,520.00*
Apple 15" Imagewriter for Mac	475.00*
Epson EX-800 300/60CPS 80COL Parallel/Serial	440.00*
Epson EX-1000 300/60CPS 132COL Parallel/Serial	569.00*
Epson FX-85 160/35CPS 10" Parallel	329.00*
Epson FX-286 200/40CPS 15" Parallel	435.00*
Epson LX-86 120/16CPS 8.5" Parallel	205.00*

SYSTEMS



A+
"...the clear
winner at
Apple
compatibility..."

Laser 128

128K RAM, 140K Drive
Apple IIe/IIc Compatible
w/Parallel and Serial Ports

\$355.00*

DISK DRIVES



100%
Apple
IIe and IIc
Compatible

PC Network 140K Drive

IIc or IIe
External **\$95.00***

Apple IIc 140K External Disk Drive	\$205.95*
Apple 20MB SCSI Hard Disk for the IIe or IIc	924.00*
Apple Unidisk 3.5" w/Utilities	319.00*
Apple SCSI Card for the IIe	88.50*

SOFTWARE

GAMES AND EDUCATIONAL SOFTWARE

Bluechip Baron, Millionaire or Tycoon	\$23.66*
Broderbund Bank Street Writer	35.25*
Davidson & Associates Speed Reader II	31.00*
Davidson & Associates Math Blaster	22.00*
Hayden Sargon III	24.75*
Infocom Deadline, Suspended or Seastalker	24.00*
Infocom Enchanter, Planetfall or Cuthroats	20.00*
Infocom Zork II, Zork III, Suspect, Infidel or Sorcerer	22.00*
Infocom Zork I, Witness or Hitchhiker's Guide	20.00*
Infocom Trinity	20.00*
Microprose F-15 Strike Eagle, or Silent Service	18.50*
Mindscape A View to A Kill, The Mist or First Blood Pt. 2	21.00*
Springboard The Newsroom	26.97*
Springboard Certificate Maker	24.75*
Sublogic Flight Simulator II	27.25*

INFOCOM™



\$20.00* each

BUSINESS SOFTWARE

Apple Appletworks	\$165.00*
Borland Turbo Pascal	35.00*
Broderbund Print Shop	24.75*
Central Point Copy II Plus	20.00*
Funk Software Sideways for Pro Dos	35.00*
Meca Managing Your Money	99.00*
Monogram Dollars and Sense	65.00*
Satellite Software Word Perfect	72.00*
Software Publishing PFS: File/Report for Apple II	68.00*
United Software Industries Ascii Express Pro	64.75*

†**RENT BEFORE YOU BUY**—Members are eligible to join the NETWORK's Business and Game Software Rental Libraries and evaluate products for a full 14 days (Regular Membership) or 30 days (VIP Membership) to see if they meet their needs. And the Network's rental charges are far less than other software rental services—Just 20% of the Member Wholesale Price. Rental titles are available in IBM, Apple and Mac Formats.

*All Prices in this Ad are Wholesale. Members Pay 8% Over Wholesale Plus Shipping. All Items are Subject to Availability. Prices Subject to Change Without Notice.

DISKETTES

**Guaranteed
For Life!**

Brand Name Diskettes
Available in Boxes of 10
or in Bulk Packs of 50

5.25" SS/DD

Box of 50 **.44*** ea.

Box of 10 **\$7.95***

CALL TOLL FREE

(800) 621-SAVE

(Orders—Membership and Advice!)
In Illinois Call (312) 280-0002

Your Membership Validation Number **MM27**

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 sales consultants are on duty Mon.-Fri. 8:00 AM to 7:00 PM Sat. 9:00 AM to 5:00 PM CST.

PERSONAL COMPUTER NETWORK

320 West Ohio Street
Chicago, Illinois 60610

Customer Service and Order Status (312) 280-1567

PC NETWORK MEMBERSHIP APPLICATION

YES! Please enroll me as a member in the PC NETWORK™ and send my catalog featuring thousands of computer products, all at just 8% above DEALER WHOLESALE PRICES. I will also receive "THE PRINTOUT", a special quarterly update on merchandise at prices BELOW even those in my wholesale catalog and all the other exclusive, money-saving services available to Members. I am under no obligation to buy anything. My complete satisfaction is guaranteed.

Please (✓) all boxes that apply:

M27

•**Basic Membership** 1 Year \$8 2 Year \$15
With 14 Days Rental
Business Software Rental Library \$25 add'l. per year
Games Software Rental Library \$10 add'l. per year

•**Special V.I.P. Membership** 1 Year \$15 2 Year \$25
With 30 Days Rental
BOTH Business and Game
Software Rental Libraries \$30 add'l. per year

Bill My Credit Card: VISA MasterCard American Express
Account Number:

Exp. Date _____ mon. yr.

Check or Money Order Enclosed for \$_____

Name _____ Apt. No. _____

Address _____ State _____ Zip _____

City _____

Telephone () _____

My Computer(s) is: IBM PC IBM XT IBM AT

Apple II Macintosh Other _____

Signature _____

(Signature required to validate membership)
Copyright © 1986, PC NETWORK, INC.

MONITORS

**Magnavox
Color
14"
RGB
Monitor**



\$250.00*

Amdtek Color 600	\$365.00*
Amdtek Video 300A Composite	120.00*
Amdtek Video 300G Composite	110.00*
Apple Color IIe or IIc Monitor	255.00*
Princeton HX-9" RGB Color Monitor	365.00*
Princeton HX-12 12" RGB Color Monitor	369.00*
Taxan 620-U High Res Color	382.00*

Members Get The Network Advantage...

CATALOG • NEWSLETTERS • 10 DAY RETURNS • BULLETIN BOARD • SOFTWARE RENTAL

(30,000 Items Listed)

(Catalog Price Updates
and Reviews)

(No Questions Asked—If You Don't
Like It, Return It—Hardware Only)

(10,000 Free Programs to Download)

(Over 1,000 Titles in our Library)

CIRCLE 315 ON READER SERVICE CARD

NEW!
COMING
DEC. 1

THE BEAGLE COMPILER

\$74.95 (for any Apple II-64K min.) | by Alan Bird

Machine-Language Speed for Applesoft Programs

Boot THE BEAGLE COMPILER and then run practically any Applesoft BASIC program from disk. The program will be converted on the spot, in seconds, to run at machine language speed.

HOW FAST IS IT?

It depends on your original Applesoft program. 5- to 7-times speed is about average. 10-times speed—and up—is not uncommon.

HOW EASY IS IT TO USE?

Say you've got a normal (slow) Applesoft program on disk named "ABC". Simply type **RUN ABC** and, within seconds, ABC is running at machine language speed!

It's just that easy.

If you want, make changes to your program (using Applesoft) and immediately re-run it at machine language speed.

"Beginning programmers love it. Experts are amazed."

IT'S QUICK!

Compiling takes only a few seconds (more or less—it depends on a program's size).

EFFECTIVE

Most programs compile without alteration. Syntax errors, illegal GOTO's, and so on, are automatically trapped before a program runs.

COMPACT AND CONVENIENT

A compiled program actually occupies less memory than its Applesoft original. You can even save in compiled format so people can't read or change your original Applesoft code.

PRODOS BASED

Compile Applesoft programs from ProDOS floppy disks, hard disks or Unidisk 3.5's.

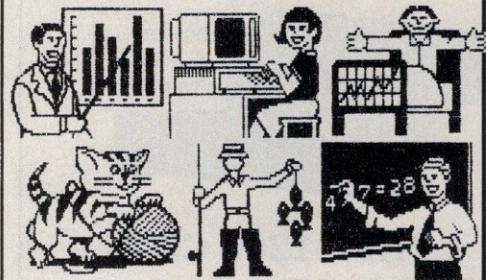
Like all Beagle Bros software since 1980, The Beagle Compiler is not copy-protected.

MINIPIX DISK #2

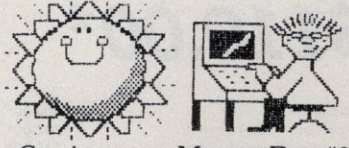
\$29.95 | by Fred & Sara Crone

NEW!

MINIPIX DISK#2 is 200 pictures—ALL NEW and ready to use with THE PRINT SHOP™:



Plus—you'll find 200 more pictures on MINIPIX DISK#1:



Coming soon: MINIPIX DISK#3 and Minipix for THE NEWSROOM.™

BEAGLE SCREENS

\$34.95 (for any Apple IIe, IIc or IIGS) by Fred & Sara Crone, Matt Reimer, Bert Kersey and Rob Renstrom

NEW!

BEAGLE SCREENS will get your message across—anything from "Happy Birthday" to "Hands Off"—in a unique and colorful way. Use our pictures to add a touch of class to your Apple programs or presentations.

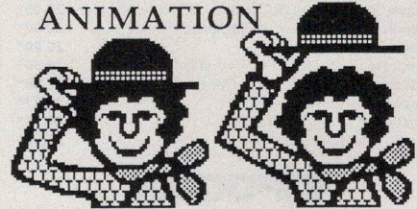
Or just use them to show off your Apple.

You get forty captionable full-screen pictures on disk (samples shown here). Half of the pictures are automatically animated as soon as you put them on the screen.



Choose from a dozen caption typstyles to give your messages variety. Beagle Screens is compatible with Font Mechanic fonts too.

AUTO-ANIMATION



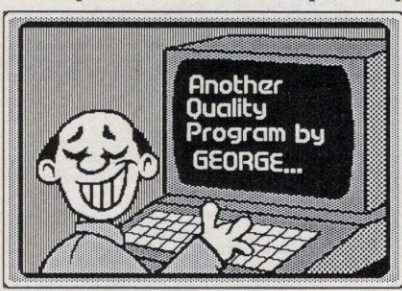
Animation gives your messages extra punch. Twenty Beagle Screen pictures are automatically animated as soon as you load them onto the screen.



Each picture has a blank area (or "balloon") where you can add your own message.

We make it EASY to add your own words and create colorful on-screen "slide shows".

Or print the pictures up as unique signs. (Printing requires a dot matrix printer and any standard printer software like Triple-Dump.)



It's easy—just type the message on the screen, and save the picture on disk.

TRIPLE-DUMP

\$39.95 (for any version of Apple II) by Mark Simonsen & Rob Renstrom

TRIPLE-DUMP combines with your dot-matrix (graphics-capable) printer and any Apple II to print:

- Hi-res graphics
- Double Hi-res graphics
- Lo-res graphics
- Double Lo-res graphics
- 40-column text
- 80-column text

Make "hard copies" of all kinds of images with absolutely no programming knowledge.

Or, if you're a programmer, use Triple-Dump's routines in your Applesoft programs.

Triple-Dump offers picture cropping, rotating and magnifying, plus the ability (on many printers) to adjust the print density.

BANNERS!

Print giant (8"-high letters) text banners on any printer. Great for special occasions!

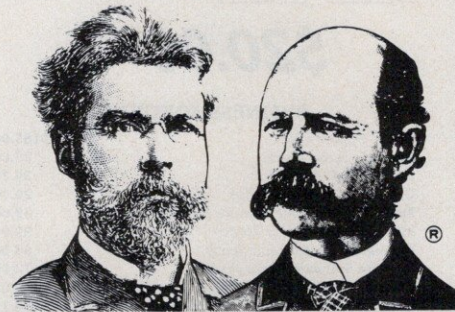
BUY BEAGLE PRODUCTS AT YOUR SOFTWARE STORE.

If your dealer is out of a particular disk, get on his case. Tell him he can have any of our products in his store for you within a couple of days by contacting any major Apple software distributor. Or by phoning Beagle at 619-296-6400.

Or you can order by mail (we ship fast!):

☎ Call Toll Free (orders only—
Mon.-Fri., 9am-4pm Pacific time):
1-800-345-1750 (Calif. 1-800-992-4022).

Visa, MasterCard or COD (or mail a U.S. check).
Add \$2.50 shipping (\$5.00 if overseas)
+\$3 if COD +6% if California.



Beagle Bros MICRO SOFTWARE

BEAGLE BROS, INC.
3990 OLD TOWN AVENUE
SAN DIEGO, CA 92110

FEATURE REPORT

LOOK IT UP!

SHORT REPORT

POWER PRINT

TIP FOLDER

HELP FILE

A+ APPLEWORKS REPORT

This month we bring you a bibliography, a review of a font-downloading program, tips on keyword searching, and answers to readers' questions.

FEATURE REPORT BY CHRISTOPHER VAN BUREN

LOOK IT UP!

The number of AppleWorks books is growing steadily; AppleWorks is proving to be one of the most popular software-book topics ever. With the help of Janet Vratny-Watts at the Apple Computer Library, I've compiled a complete listing of books and reference materials for AppleWorks. Many of the entries include a brief description of the books' contents.

When comparing books of this nature, first decide what kind of information you need. These books fall into five main categories: general users' guides, advanced users' guides, reference guides, tip books, and special-application books. Compare books in the same basic category—there are several books in each. Chances are, if a book doesn't look as though it answers your questions, you're looking in the wrong category.

General users' guides are for learning the basics of AppleWorks and can supplement or replace the *AppleWorks User Manual*. They usually describe the basics of all three AppleWorks modules: word processing, database, and spreadsheet.

When you've mastered the basics, you might run into some problems in AppleWorks. Books in the advanced users' guide category help solve these problems by describing more advanced applications and features of the program. Many of these

books describe how to transfer information between modules, how to set up spreadsheets, and more.

Reference guides are nontutorial guides to commands and functions in AppleWorks—usually organized in some reference style, such as alphabetically or by AppleWorks module.

Tip books contain collections of helpful hints you can apply while using AppleWorks. Many of these books approach tips as solutions to specific problems. A nice collection of tips is handy when you don't know where to turn for answers to perplexing AppleWorks questions.

Books in the special-applications category contain specific applications for the spreadsheet, word-processing, and database modules. Many of them are collections of applications in a specific category, such as business applications. These books tend to be more advanced because they assume you already know how to get around in AppleWorks. Be careful when purchasing application books: some present applications merely to help you learn more about the program; others provide applications intended for use in real situations.

I've placed books in categories for which they are best suited, but as you read over the titles and brief descriptions, you'll see that some

books could belong in more than one category. Many of the books have special applications to help describe features of the program, for example.

GENERAL USERS' GUIDES

AppleWorks & III E-Z Pieces: The Tutorial

Kenneth Green and Rika Van Dam
Dilithium Press, Beaverton, OR
1985
256 pages, \$14.95

This book specifically covers III E-Z Pieces, an Apple III program that was the prototype for AppleWorks, and so is best suited for Apple II users. Data from III E-Z Pieces is compatible with AppleWorks.

AppleWorks Made Easy

Carole B. Matthews
Osborne/McGraw-Hill, Berkeley, CA
1985
224 pages, \$17.95

This tutorial is meant to supplement the *AppleWorks Tutorial Manual* and *AppleWorks Reference Manual*, which come with the AppleWorks program. It's best for users with little or no experience with AppleWorks. It has beginning and intermediate chapters for each AppleWorks module.

AppleWorks: The Program for the Rest of Us

Michael L. Sloan
Scott, Foresman & Company, Glenview, IL 1986
320 pages, \$18.95

This is a beginner-level text, and I think it is about average in comparison to some of the others. It includes the expected chapters on the program modules, plus chapters about cutting and pasting (the AppleWorks Copy command) and connecting files to other programs.

AppleWorks User's Handbook

Richard Rose
Weber Systems, Inc., Cleveland, OH
1985
200 pages, \$12.95

This guide teaches AppleWorks by taking you through the steps of sample applications. The book is small and concise and offers no significant thrills.

AppleWorks with Advanced Applications: Calc, File, Write & Graph

Kenneth Close
William C. Brown Group, Dubuque, IA 1985
208 pages \$13.95, paper; \$24.95, deluxe edition with diskette

This text is useful for novice users but is especially interesting for advanced users who want to learn graphics techniques. A graphics simulator disk (the code is also in appendix B) provides examples of new applications. Most chapters have tutorials.

*If a book doesn't
look as though it
answers your questions,
you're probably looking
in the wrong category.*

Applying AppleWorks

R. W. Tamm
Bristen Press, P.O. Box 336, New Hartford, NY 13413. 1986
179 pages, \$9.95

This appears to be a self-published book made directly from AppleWorks printouts. As such, it doesn't contain the smooth writing style of, say, Rubin's book (see Advanced Users' Guides below), nor the attractive packaging and production of the McGraw-Hill books. Tamm has done his homework and a noteworthy job of self-publishing, though. The book contains scores of diagrams and figures.

The Manual: AppleWorks

Robert E. Williams
Management Information Source, Inc., Portland, OR 1985
178 pages, \$14.95

This is a bad attempt at rewriting the AppleWorks manual in a pseudotutorial style. It contains no illustrations and offers unimpressive writing and packaging.

Minute Manual for AppleWorks

Jim Pirisino

Minuteware, Columbia, MD 1986
150 pages, \$12.95
Not reviewed.

The Power of AppleWorks

Robert E. Williams
Management Information Source, Inc., Portland, OR 1984
240 pages; \$19.95, \$34.95 with diskette

This book is for people who have minimal experience with AppleWorks. Williams intends to take his readers "one keystroke at a time" through the program, which may be too slow for some. The book contains exercises to practice as you learn. It is adequate as a basic introduction to AppleWorks but falls short as a serious learning tool.

Using AppleWorks

Arthur Aron and Elaine Aron
Que Corp., Indianapolis, IN 1985
400 pages, \$16.95

This is a general AppleWorks guide designed for both beginners and advanced users. The first six chapters are introductory and cover the three main modules of AppleWorks, whereas the rest of the book gets more advanced by showing applications.

Working with AppleWorks

John Campbell and Sam R. Redden
Hayden Books (Division of Howard W. Sams), Indianapolis, IN 1985
320 pages, \$16.95

Campbell and Redden's book covers AppleWorks very well, as its seven-page table of contents demonstrates. It contains eight appendices and five large chapters: Introduction, Word Processing, Spreadsheet, Database, and Putting It All Together. I found the writing a little cumbersome at times, but this small defect is offset by the book's attention to detail. This book contains more information than most of the others.

ADVANCED USERS' GUIDES

Advanced AppleWorks

David Bolocan
TAB Books, Blue Ridge Summit, PA 1986
256 pages, \$16.95

Bolocan covers each AppleWorks

EXPOSE YOURSELF... TO THE KACHE PLUS CARD.

Accelerate Your Floppy Drives...To Out Perform Any Hard Disk Drive **PLUS** Gain The Added Features Of Up To 15 Multi-Functions

*The Kache Plus Card...Shocking Speed **PLUS** Expanded Performance-*The Kache Plus Card is a powerful floppy disk adapter board for Apple II systems that operates up to six floppy drives. It offers faster accessing speed than hard disk drive **PLUS** the added features of up to 15 popular expansion boards.

*Faster Accessing Than Hard Disk Drive-*The Kache Plus Card combines an advanced form of RAM, known as cache memory, with the power of a microprocessor to achieve a 2.5 to 1 speed advantage over hard disk accessing. Governed by a Hitachi 64180 microprocessor, the Kache Plus Card becomes an intelligent RAM disk card that...

AUTOMATICALLY fills cache memory with up to 512K of your "most frequently accessed data"

AUTOMATICALLY maintains the data content of cache using the "LUFO" method (Least Used First Out)

AUTOMATICALLY anticipates data requests and transfers needed files to your Apple's CPU electronically

AUTOMATICALLY saves data in RAM disk mode for future transfer to floppy disk

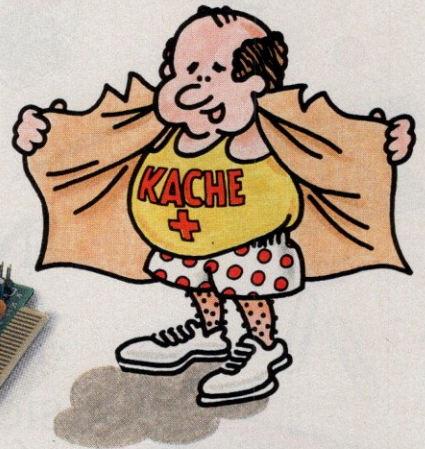
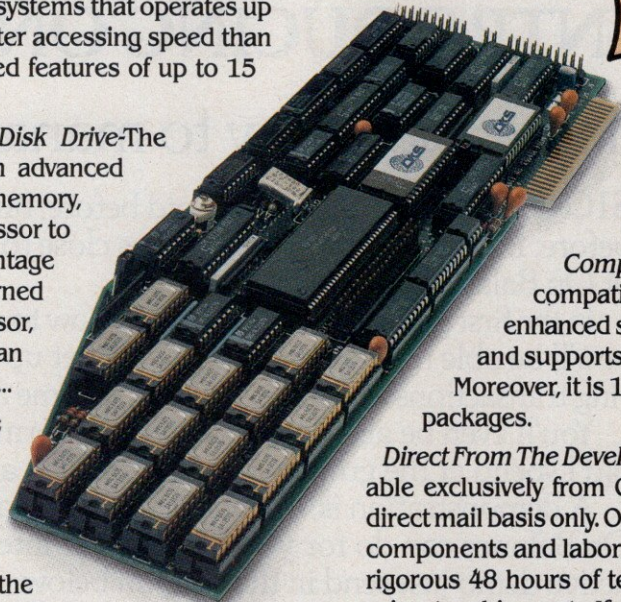
AUTOMATICALLY time and date stamps files written to disk

*Multi-Function Features-*The Kache Plus Card also doubles as a multi-function board with a choice of up to 15 expanded features for your Apple II system. And, by utilizing the benefits of the Kache Plus Card's cache memory and 64180 microprocessor, each feature offers a performance advantage over comparable expansion boards on the market.

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

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

Optional Features: 512K Cache Memory/RAM Disk Upgrade; Expander Module which includes: Concurrent Operation of 6 Floppy Drives, Parallel Printer Interface, 256K/512K Parallel Print Buffer, Super Serial Interface, 3 Line Serial Interface, EEPROM; External Power Supply; Cable Options which include: Duo-Disk Cable, Serial Interface Cable, Parallel Interface Cable; Replacement Battery for Clock/Calendar.



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

*Direct From The Developer-*The Kache Plus Card is available exclusively from Ohio Kache Systems (OKS) on a direct mail basis only. OKS offers a full year warranty on all components and labor as well as a 30 day trial period. A rigorous 48 hours of testing is completed on each unit prior to shipment. If the Kache Plus Card does not perform as we say it will, simply return it to OKS and your money will be fully refunded.

Don't Buy A Hard Disk Drive Or Another Add-On Board... Buy the Kache Plus Card instead. Priced at:

\$395⁰⁰

(Price indicated is for the standard Kache Plus Card. Optional features are available at an additional charge.)

The standard Kache Plus Card costs less than any hard disk drive. It's even priced below the cost of buying separate boards for each of the standard features.

For shocking speed **PLUS** expanded performance...Expose yourself to Ohio Kache Systems, and its latest product! For more information on the new Kache Plus Card call us toll free at...

1-800-338-0050

or write for our free brochure.

Available soon: The Data Kache Card for IBM and IBM compatible systems.



Ohio Kache Systems Corp.
4166 Little York Road
Dayton, Ohio 45414-2566
513-890-3913

© Ohio Kache Systems is a developer of computer enhancement products.

Ohio Kache System, OKS and Kache Plus Card are registered trademarks of Ohio Kache Systems, Inc.
Apple, Apple II+, IIe and IIe enhanced are registered trademarks of Apple Computers, Inc.

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

module separately and concludes with some advanced applications. The book provides a well-rounded look at AppleWorks.

AppleWorks: Boosting Your Business with Integrated Software

Charles Rubin
Microsoft Press, Bellevue, WA 1985
320 pages, \$16.95

Rubin is an excellent writer, and his book proves it: It's easy to read and logically organized. This is a semi-advanced text, designed to show experienced users more about printers, printer setup, various functions, and moving information between the AppleWorks modules. It contains a foreward by Rupert Lissner, author of AppleWorks (the program). This is the first book I

Rubin's is the first book I turn to when I'm short of information about AppleWorks.

turn to when I'm short of information about AppleWorks.

AppleWorks Mastery

Christopher Van Buren
Scott Foresman & Company, Glenview, IL 1987
420 pages

This is my favorite AppleWorks book—just because I like the author (me). My primary goal in this book is to show how you can get AppleWorks to accomplish tasks for which it was never really designed. In doing this, I've tried to compile information that has not appeared elsewhere to supplement the standard tutorials and explanations. Because I'm a firm believer in AppleWorks enhancement programs, much of the book gives details about programs such as MacroWorks, ReportWorks, AutoWorks, and Pinpoint.

Extending AppleWorks

Mary Campbell and David R. Campbell

Osborne/McGraw-Hill, Berkeley, CA 1986
435 pages, \$14.95

This book contains a great deal of information about special uses of AppleWorks. Its chapters are broken into advanced spreadsheet, database, and word-processor applications. It has a complete chapter on AppleWorks add-on products; those add-ons considered most useful by the authors are given several pages. Much of the information is helpful for specific needs, but some of it is impractical. I think the book could have been much shorter. This book is an excellent companion to the *AppleWorks Reference Manual*.

Mastering AppleWorks

Elna Tymes
Sybex Books, Berkeley, CA 1984
201 pages, \$15.95

This book was one of the first on AppleWorks. It has been improved on by those that followed, but it is still quite good. It contains primarily business applications.

REFERENCE GUIDES

AppleWorks Pocket Reference

Christopher Van Buren
The Q-mar group, San Diego, CA 1987
35 pages, \$3.95

Here, again, I must confess my slightly biased opinion, as I wrote the book. I decided that the AppleWorks quick-reference card might not be enough for some users but that a complete book can be too much. This is a pocket-size book that contains brief explanations of all AppleWorks commands and options.

Command Performance: AppleWorks

Charles Rubin
Microsoft Press, Bellevue, WA 1986
414 pages, \$18.95

Like other books in Microsoft's Command Performance series, this one presents information in reference style. It has no table of contents but uses an extensive index and list of entries for cross-reference. It's not a reference to commands and options like the *AppleWorks Reference*

Manual is, though; it's a reference to needs and explanations, including overviews of the modules, information about printing, and explanations of special features.

TIP BOOKS

AppleWorks: Tips & Techniques

Robert Ericson
Sybex Books, Berkeley, CA 1986
373 pages, \$18.95

Ericson's book is well written. He covers important AppleWorks tips in six long chapters: The Desktop, The Word Processor, The Database, The Spreadsheet, Transferring Information, and Printer Information. The text is full of "Tips & Cautions" that explain many potential problems encountered in AppleWorks. Ericson obviously knows spread-

Ericson's book is full of tips that explain many potential problems encountered in AppleWorks.

sheets quite well; many of his best tips relate to spreadsheet functions.

AppleWorks Tips & Traps

Dick Andersen, Janet McBeen, and Janice Gessin
Osborne/McGraw-Hill, Berkeley, CA 1986
291 pages, \$16.95

This is a well-written book with scores of useful tips. The authors often present tips as solutions to "traps" found in AppleWorks, which makes the book useful as a reference when you get stuck in an AppleWorks problem. I enjoyed reading the book and often found myself saying, "I didn't know that!" Although many of the tips in this book are also found in Ericson's *Tips & Techniques* book, you'll find enough new ones to justify having both books.

SPECIAL-APPLICATION BOOKS

AppleWorks Applications

Lauren Flast and Robert Flast

FEATURE REPORT

Osborne/McGraw-Hill, Berkeley, CA 1986
125 pages, \$9.95

This book contains specific applications designed to show solutions to business-related problems—from payroll to property management. Each application includes the formulas or a good explanation, so you can duplicate each example. I consider *AppleWorks Applications* best suited for an advanced education in AppleWorks, though, rather than for obtaining specific applications for your business.

AppleWorks for Educators: A Beginner's Workbook

Linda Rathje
International Council for Computers in Education, Eugene, OR 1986
153 pages, \$15

This is a workbook that the author developed while teaching classes to new AppleWorks users. It teaches

AppleWorks by giving lessons (or activities) and comes with a diskette of working examples. It also contains several case studies involving database applications.

AppleWorks for School Librarians

May Lien Ho
Hi Willow Research & Publishing, Fayetteville, AR 1985
129 pages; \$10, \$20 with diskette

This is a beginners' guide written especially for school librarians. You can purchase it with or without a lesson/template diskette.

Managing with AppleWorks

Ruth K. Witkin
Howard W. Sams, Indianapolis, IN 1985
305 pages, \$17.95

This book is written specifically for business. It is well written, but you have to overlook some of the less-appropriate (but well-presented) examples.

Personal Money Management with AppleWorks

Ruth K. Witkin
Hayden Books (Division of Howard W. Sams), Indianapolis, IN
Price not available

Witkin's second book (forthcoming) will show you how to manage your personal finances with AppleWorks. It has many small chapters dealing with each of the three AppleWorks modules.

Practical AppleWorks Uses

David K. Simerly
Sybex Books, Berkeley, CA 1985
300 pages, \$19.95

This text has many useful application examples and includes some information about connecting AppleWorks to a Macintosh. *Practical AppleWorks Uses* includes specific chapters on integration, the operating system, and working with other programs. +

RAMWORKS®

ACCEPT NO SUBSTITUTES. BECAUSE THERE AREN'T ANY.

There's only one card like RamWorks. Others may say they're RamWorks compatible but they're not! We've got the best hardware design. We supply the best software and we've got the best support from software companies.

If someone tempts you with an imitation, please get both sides of the story. You'll discover why RamWorks offers the best enhancements to AppleWorks and other programs, and at the lowest price.

GUARANTEED!

214-241-6060
9 AM - 11 PM
7 Days a Week



"We Set the Standard"
APPLIED ENGINEERING

SHORT REPORT

BY CHRISTOPHER VAN BUREN

POWER PRINT

When it comes to improving the quality of your printed materials, nothing makes more of a difference than the use of special fonts (also referred to as typefaces). This is what the laser-printer boom is all about—and new breakthroughs in screen graphics almost always include the ability to select alternate fonts. But did you know that dot-matrix printers have been able to print with alternate fonts for years? Epson was the first to popularize graphics using dot-matrix printers, with its Grafrax chip for the MX-80, making it possible to control each dot position on the matrix individually. By positioning dots on a matrix, you can create many special fonts.

Power Print is a font-downloading program from Beagle Bros. of San Diego, California. A font downloader handles all the work involved in programming fonts for graphic dot-matrix printers. Without a font downloader, you would need to know BASIC or some other programming language to program fonts into the printer.

The term *downloader* is used because the program takes all the data needed to generate a font and loads it into the printer's memory. The advantage of downloading is that once the font is in memory, everything that passes through the printer comes out in the downloaded font. The problem with downloading is that turning the printer off erases the download buffer and the font is gone until downloaded another time. Although Power Print is not made specifically for AppleWorks, it does add significant power to AppleWorks printing. The Power Print manual contains a lengthy chapter on using the program with AppleWorks.

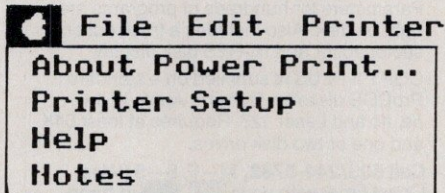


Figure 1: Power Print's Apple menu

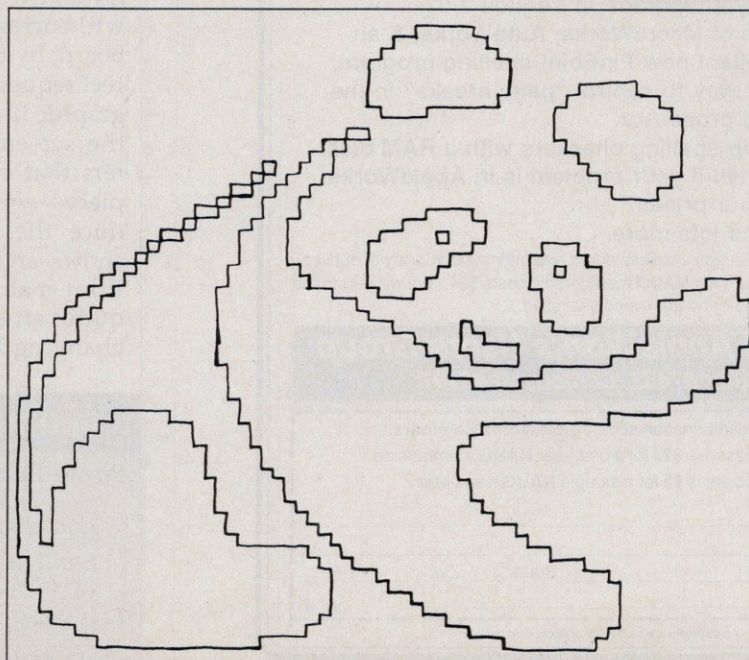
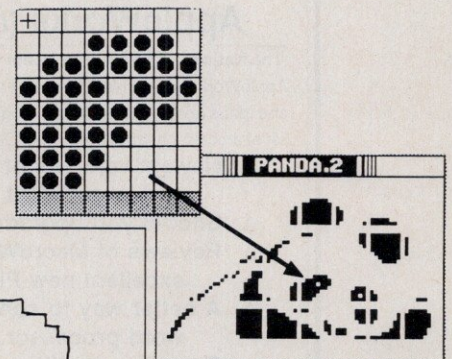
The beauty of this program is its simplicity and straightforward design. It does everything you expect from a font downloader. It works with most dot-matrix printers and most interface cards and comes with several ready-made fonts for each printer. Power Print uses a high-resolution graphics display throughout the program. Menus are pull-down style and easy to use (see figure 1).

To begin, simply boot Power Print and select your printer and interface card from an extensive list on the menu. You can then choose one of the predesigned fonts for your printer and load it, using the Download as Font 1 command. You can use the Print Sample command to get a sample of the font on the printer, and

Figure 2: Using Power Print's font editor, you can arrange dots in a pattern to create your own fonts.

then simply leave the printer on and start AppleWorks. Use AppleWorks normally, and everything you print will appear in the downloaded font. You can also switch between the downloaded font and the printer's built-in font by issuing simple printer commands from the AppleWorks word processor. All regular printer functions, such as boldface and underlining, work just as well with the downloaded font as they do with the built-in font. Between the printer functions, the downloaded font, and the built-in font, you can get a lot of variety in your printouts.

But it's not all so easy. You have to mess with the AppleWorks custom printer setup—even if your printer is one of the AppleWorks built-in printers. This requirement is because AppleWorks doesn't let you change any printer codes for built-in printers, which is necessary when



PANDA INC

Figure 3: The printout of a graphic designed with Power Print

COPY II PLUS

Version 7!
Works on
II GS

THE BEST, MOST COMPLETE ProDOS-DOS UTILITIES.

- Copy files, disks, even entire subdirectories.
- Undelete ProDOS and DOS files.
- Fast 2-pass disk copy on Apple IIe, IIc or Laser 128.
- Tree display for selecting subdirectories—no need to type lengthy "prefixes."
- Alphabetize catalog.
- Convert DOS to ProDOS & vice versa.
- And many more.

BACKUP YOUR PROTECTED SOFTWARE.

With COPY II PLUS' fully automatic bit copier, simply type in the name of the program you want to backup and COPY II PLUS does the rest. (We update COPY II PLUS often to handle new protections; you as a registered owner may update at any time for \$15 plus \$3 s/h.)

Parameters for hundreds of programs are right on disk. Also includes a track editor, sector editor and HI-RES disk display.

COPY II PLUS is supplied on a standard ProDOS diskette. Runs on Apple II, II+, IIe, IIc and Laser 128. Requires at least 64K and one or two disk drives.

Call 503/244-5782, M-F 8-5 (West Coast time) with your   in hand. Or send a check for \$39.95 U.S. plus \$3 s/h, \$8 overseas.

\$39.95

*Central Point
Software*

INCORPORATED

9700 S.W. Capitol Hwy., #100
Portland, OR 97219

*Winner of A+ Readers'
Choice Awards!*

Backup utilities also available for the IBM, Macintosh, Commodore 64/128 and Atari ST.

CIRCLE 184 ON READER SERVICE CARD

WE SUPPORT USERS OF AppleWorks (and III EZ PIECES).

The National AppleWorks Users Group (NAUG) is an association of AppleWorks users. NAUG members share information, hints, suggestions and ideas about AppleWorks through a monthly newsletter. Here is a partial list of articles that appeared in the December issue of the *Forum*:

- △ Newest versions of AppleWorks software add-ons: What features are available?
 - △ Should you upgrade to Version 2.0?
 - △ Reviews of MacroWorks, AutoWorks, & an excellent new PinPoint spelling program.
 - △ A better way to control "page breaks" in the word processor.
 - △ Speed up spelling checkers with a RAM disk.
 - △ How to tell if your problem is in AppleWorks or your printer.
- ...And lots more.

NAUG shares an electronic bulletin board and maintains a library of public domain disks. A one-year NAUG membership costs \$24. We will refund the balance of your dues if you are ever dissatisfied.

National AppleWorks Users Group
Box 87453, Canton, MI 48187

Send information about AppleWorks Seminars.
 Enclosed is \$24 for a one-year NAUG membership.
 Enclosed is \$3 for a sample NAUG newsletter.

Name: _____
Address: _____
City: _____ State: _____ Zip: _____
Phone: _____

AppleWorks is a trademark of Apple Computer, Inc.

CIRCLE 180 ON READER SERVICE CARD

SHORT REPORT

you're using Power Print. The Power Print manual does an excellent job of explaining custom printer setup in AppleWorks and the use of special printer codes, though. (Look for details about printing with AppleWorks in coming issues.)

Power Print has a font editor for

*Power Print's
beauty is its
simplicity and
straightforward design.*

customizing fonts. The editor can display a pattern for each character on the keyboard (an ASCII value) by arranging dots in columns and rows (a matrix). By entering dots into or erasing dots from the patterns, you can create your own fonts (figure 2).

Designing graphics and extra-large fonts is one of Power Print's strengths. To design a logo or graphic image, just plot it out on graph paper using the appropriate matrix size (printers have varying matrix sizes) and then convert it to Power Print by plotting the same points on its matrices. Pieces of the graphic will correspond to keys on the keyboard; by typing the keys in the correct sequence, you can reproduce the graphic in your printouts. Of course, the screen will display the characters that correspond to the graphic pieces—only the printout will produce the actual graphic. Figure 3 shows an example from the Power Print manual. Printing graphics requires an extra printer command for changing line spacing. +

PRODUCT INFORMATION

Power Print

Beagle Bros.
3990 Old Town Avenue
San Diego, CA 92110
(619) 296-6400

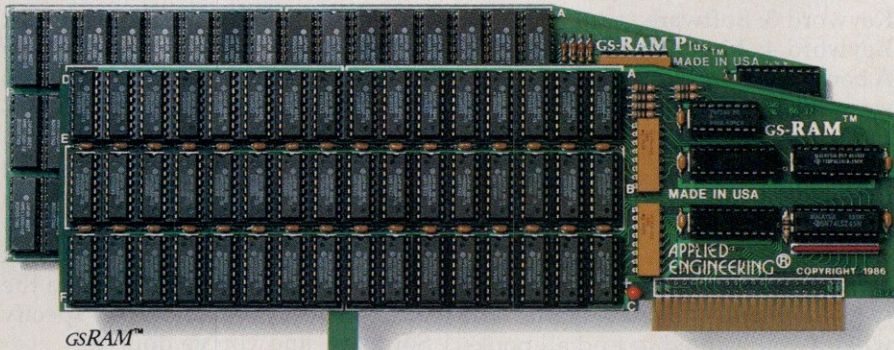
List Price: \$39.95

CIRCLE 570 ON READER SERVICE CARD

Insist on GSRAM™ When You Buy Your IIGS™

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

GSRAM Plus™



GSRAM™

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

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

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

GSRAM for More AppleWorks Power

Only GSRAM and GSRAM Plus eliminates AppleWorks internal memory limits, increasing the maximum number of records available from 6,000 to over 25,000 and only GSRAM and GSRAM Plus increases the number of lines permitted in the word processing mode from 6,000 to over 15,000. And only GSRAM and GSRAM Plus offers a built-in printer buffer so you can continue using AppleWorks while your printer is printing. GSRAM and GSRAM Plus even expand the number of lines in the clipboard from 255 to 2047 and will auto segment large files so they can be saved on two or more disks. You can

even have Pinpoint or Macroworks and your favorite spelling checker in RAM for instant response. GSRAM and GSRAM Plus will even display the time and date right on the AppleWorks screen. Nothing comes close to enhancing AppleWorks so much.

Turn Your IIGs into a Giant

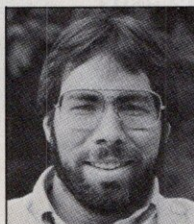
Simply plug GSRAM into the IIGs memory expansion slot and you've got up to 8 megabytes of RAM at your fingertips—all of it instantly and automatically recognized by the IIGs. GSRAM is compatible with all IIGs software, including AppleWorks, as well as BASIC®, ProDos, DOS 3.3, PASCAL®, "C" and CP/M®.

Grow by Bytes or Megabytes

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

GSRAM—for Normal Memory Requirements

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



Steve Wozniak, the creator
of Apple Computer

"I recommend
Applied
Engineering
products
wholeheartedly."

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

GSRAM Plus—for Growing by Leaps and Bounds

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

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

Easy Expansion

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

Quality and Support of the Industry Leader

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

GSRAM with 256K	\$169
GSRAM with 512K	\$219
GSRAM with 1 MEG	\$299
GSRAM with 1.5 MEG	\$379
GSRAM with 2-8 MEG	CALL
GSRAM Plus with 1-8 MEG	CALL

Order today!

See your dealer or call Applied Engineering today, 9 a.m. to 11 p.m. 7 days. Or send check or money order to Applied Engineering. MasterCard, VISA and C.O.D. welcome. Texas residents add 5½% sales tax. Add \$10.00 outside U.S.A.

AE APPLIED ENGINEERING™

The Apple enhancement experts.

(214) 241-6060

P.O. Box 798, Carrollton, TX 75006

CP/M is a registered trademark of Digital Research, Inc.

TIP FOLDER

BY CHRISTOPHER VAN BUREN

KEYWORD SEARCHING

AppleWorks offers two methods for database searching, which can be used separately or together. One method is to use the open-apple/F command, which finds specified information in any record in which it appears—that is, it searches through every category in every record of your database and lists all records containing the data you've specified. The other is to use record-selection rules, which are useful for separating portions of the database according to your search criteria. You can also combine both methods and search only specific records. For example, in a library application, each book or article in the database is given several "key" words that describe the contents of the information. A book about AppleWorks might have these keywords:

Keyword 1: Computers
Keyword 2: Apple

Keyword 3: Software

Keyword 4: AppleWorks

A book about some other Apple software might have these keywords:

Keyword 1: Spreadsheets

Keyword 2: Software

Keyword 3: Apple

Keyword 4: VisiCalc

Using the open-apple/F command, you can find all books with *software* as one of the keywords. But what if you wanted to find all books about Apple software? You would have to use the record-selection rules to select all the records containing one of the desired keywords and then use the open-apple/F command to find the categories containing the other desired keyword. You need to set up the record-selection rules like this:

Keyword 1 equals Apple or Keyword 2 equals Apple or Keyword 3 equals Apple or Keyword 4 equals Apple

To do so, enter the open-apple/R command and select the category Keyword 1. Now select the Equals option and press Return. Finally, enter the word *Apple*. Do this for all four keywords with or between them. Return to your database by pressing Escape, and you'll see only the records that have *Apple* as one of the keywords. Now you can use the open-apple/F command to specify Software, and you've done it!

Another way to handle a keyword search is to combine all keywords into one category:

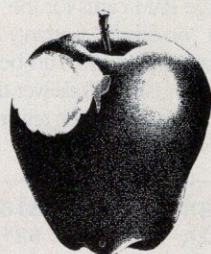
Keywords: Computers Apple

Software AppleWorks

Now use the record-selection rules as follows:

Keyword contains Apple and Keyword contains Software

This method has the advantage of letting you combine more than two keywords in the search.



Take a BITE out of boot-up time

WITH
RAMUP™

and Applied Engineering

20 Times Greater Flexibility • 40 Times Faster

works perfect with Appleworks, Sensible Speller, Sideways, ReportWorks and many other popular programs

SAVE OVER 20%
on Applied Engineering Products!

	256K	512K	1 MEG
Ramworks	\$ 169	209	279
Ramfactor	189	224	299
Ultra I	159	199	NA
Ultra II	209	249	319
Ultra III	259	299	365
Transwarp	219	NA	NA
Battery Back-up	149	NA	NA

We Stock Everything!

20 day money back guarantee . . . 5 year replacement warranty & walk-thru installation . . . Next day air available . . . We ship from our inventory We offer the best support.

RAMUP Software lets you easily put up to 20 of your favorite programs on your RAMCARD at one time. Imagine, flipping from appleworks to Graphworks in 2 seconds. RAMUP controls your RAMCARDS, you enjoy the benefits.

"RAMUP has organized my desk top and substantially reduced my time spent loading programs". — George Hess, CA

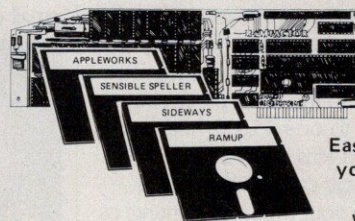
"I love being able to select any program at the touch of a key" — Craig Baetz

ORDER TOLL-FREE
800/443-6697
(except MI)

FREE, FRIENDLY
TECH. SUPPORT
313/885-4215

FREE NEWSLETTER
WITH RAMUP

VISA - MASTERCARD



Easily integrate
your programs
on RAM
with RAMUP

— DEALER INQUIRES INVITED —

\$34.95

QUALITY COMPUTERS • 1365 Berkshire • Grosse Pointe, MI 48230 • 313/885-4270 (Michigan Residents)

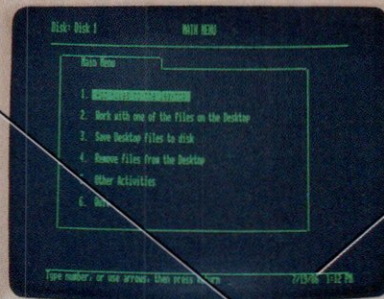
Z-RAM[®] gave the IIc guts. Now comes the glory.

No jumper wires, clips or drive removal—so installation takes only a few minutes and a screwdriver

Optional 65C816 16-bit processor plugs right in with no other component changes

Up to 1 MEG memory (you choose how much) lets you store, load and run programs up to 30 times faster

Printer buffer lets you continue working while printing AppleWorks files



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

Pinpoint's AppleWorks accessories with RAM enhancement software—*together a \$118 value—only \$79 if ordered with Z-RAM Ultra.*

Run CP/M® programs with Z-RAM Ultra's built-in Z-80B microprocessor

Introducing Z-RAM Ultra.

Your Apple IIc is about to become a computer you never dreamed it could be. Because the most exciting chapter in the Z-RAM history of turbo charged IIc's has just been written. It's called Z-RAM Ultra. And it takes IIc expansion into a whole new realm.



"I recommend Applied Engineering products wholeheartedly." (Of course, Steve's IIc has a Z-RAM installed.)

Steve Wozniak, the creator of Apple Computer

Ultra smart. Ultra speedy.

With any Z-RAM Ultra, your AppleWorks word processor capacity will instantly increase from 2,250 lines to over 15,000 and the maximum number of records from 1,350 to over 25,000. Available desktop memory rockets to over 700K with *all* of AppleWorks loaded into RAM. Z-RAM Ultra even expands the clipboard and autosegments large files so they can be saved on two or more disks. Nothing else comes close to enhancing AppleWorks like this!

Z-RAM Ultra will completely load your programs into RAM, then run them up to 30 times faster. And our included RAM disk is compatible with Applesoft, PRO-DOS, DOS 3.3, PASCAL and CP/M.

That's just the beginning.

Memory and speed are only part of the story. Z-RAM Ultra 3 also has a built-in Z-80B microprocessor that allows it to run CP/M programs (the largest body of software in existence)—including WordStar, dBase II, Turbo PASCAL, Microsoft BASIC and more. A PRO-DOS compatible battery backed-up clock not only displays time and date on the AppleWorks screen, but will time and date

stamp any PRO-DOS file. And a printer buffer handles printing of AppleWorks files so you can continue working.

Patented technology and a computer-aided design allow Z-RAM Ultra to run with extremely low power consumption—less than half the power drain of other memory cards. And all the IC chips are in sockets.

Call to order or for more information!

Z-RAM Ultra comes with simple instructions, RAM disk software, Z-80 operating system, CP/M manual, a five-year "hassle-free" warranty, and all the AppleWorks enhancements we're famous for.

If you want to run CP/M software, but don't need more memory, we suggest our Z-80C card, priced at only \$159.

CALL 214-241-6060 TO ORDER TODAY: 9 a.m. to 11 p.m. seven days, or send check or money order to Applied Engineering. MasterCard, Visa and C.O.D. welcome. Texas residents add 5 1/8% sales tax. Add \$10.00 outside U.S.

Prices:

Z-RAM Ultra 3 (With memory, clock and CP/M)		
256K—\$329.00	512K—\$379.00	1 MEG—\$459.00
Z-RAM Ultra 2 (With memory and clock)		
256K—\$269.00	512K—\$319.00	1 MEG—\$399.00
Z-RAM Ultra 1 (Memory only - expandable to 512K)		
256K—\$199.00	512K—\$249.00	
Pinpoint with RAM enhancement software\$79.00	
(List price \$118)		
16-bit 65C816 Upgrade\$99.00	

AE Applied Engineering
The Apple enhancement experts.

P. O. Box 798, Carrollton, TX 75006

(214) 241-6060

IS GETTING THE ANSWER TO SOFTWARE PROBLEMS A BIGGER PROBLEM THAN THE PROBLEM?

Don't stay on hold when there's help online from CompuServe® Software Forums.



The new upgraded version of your software locks up. And every time you reboot, you get stuck in the same place in the program.

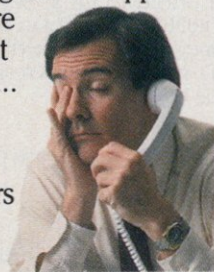
You've chucked the manual, because you've done exactly what it tells you to do six times already. So you call the software company.

Now you spend half a day beating your head against a brick wall of busy signals, ranting at recorded messages, hanging around on hold. And you still don't get the solution to your problem.

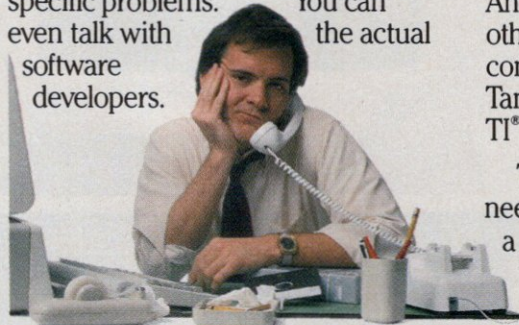
Meanwhile, progress is stopped and your profits are dribbling away. But wait. There's help...

Several prominent, progressive software publishers recognize this problem, and working with CompuServe, have developed a solution—CompuServe Software Forums.

Now you can go online with experts from the companies that produced your software and get

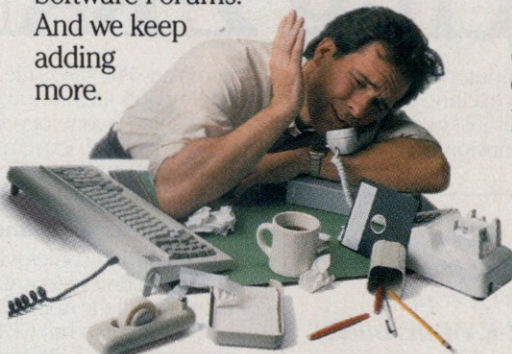


prompt, written answers to your specific problems. You can even talk with the actual software developers.



Aldus®, Ashton-Tate®, Autodesk®, Borland International®, Creative Solutions®, Digital Research®, Living Videotext®, Lotus® Inc., Microsoft®, MicroPro®, Misosys Inc.® and Software Publishing® all have CompuServe Software Forums.

And we keep adding more.



CompuServe's large subscriber base also puts you in touch with thousands of other, often more experienced, users of the same software. You'll find they can give you lots of creative ways to get the most out of your software.

And software forums are the best way to learn about product updates, new product announcements, new ways to expand the uses of your software, and offer free uploads of your own programs.

Our online electronic magazines

frequently publish software reviews. And you can find help for many other software products in our other computer-related forums for IBM®, Tandy®, Atari®, Apple®, Commodore®, TI® and others.

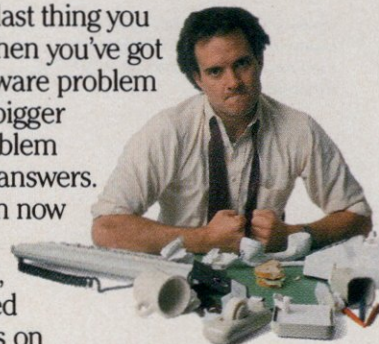
The last thing you need when you've got a software problem is a bigger problem getting answers.

So, from now on, get prompt, informed answers on CompuServe Software Forums.

To buy your CompuServe Subscription Kit, see your nearest computer dealer. Suggested retail price is \$39.95.

To order direct or for more information, call 800-848-8199 (in Ohio, 614-457-0802).

If you're already a CompuServe subscriber, just type GO SOFTWARE at any ! prompt.



CompuServe®

Information Services, P.O. Box 20212
5000 Arlington Centre Blvd., Columbus, OH 43220

An H&R Block Company

QUESTIONS FROM OUR READERS

PRINTING NINE COPIES

Q. How can I print more than nine copies of a document with AppleWorks? I have looked in sources of information available to me but without finding a lead. What is it about printing multiple copies that imposes a limit of nine?

Wayne L. St. John
Carbondale, IL

A. Nothing about multiple-copy printing imposes this limit except the imagination of the programmer. Apparently nobody thought that users would need more than nine copies of any document. A similar decision was made about page numbering: early versions of AppleWorks number only to about 200 pages and then begin at 0 again. This limitation was eliminated in Version 1.3, but the limit of nine copies still exists in Version 2.0. To get around

the limitation, use the open-apple/C command to copy your document and then paste it at the end of itself. This technique gives you two copies of the same document in the file. Use the NP (New Page) printer option in order to place a page break between the copies. Now you will get up to 18 copies of the document when you print the file.

THE CUPERTINO SYNDROME

Q. I own an Apple IIe with a RAM-Works card that contains 1 megabyte of memory. When I use AppleWorks and leave the computer on for more than 15 minutes, the screen freezes. The only way to resume working on the text is to reboot, and I lose all the information I was working on! How do I resolve this problem?

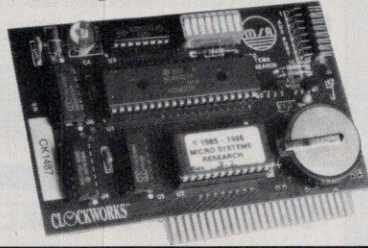
Robbie Jackson
Mount Vernon, NY

A. It sounds as though the RAM is overloading your Apple's power supply. The Apple II power supply has a built-in safety mechanism that shuts down the computer when the power supply is overloaded. Be grateful—if it weren't for this mechanism, your computer could be melting down the side of your desk right now. I suggest you purchase one of Applied Engineering's power supplies for the Apple II; they are made for larger-capacity systems.

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

Christopher Van Buren is editor and publisher of the Q-mar group's AppleWorks Exclusive Reference newsletter. His new book, AppleWorks Mastery, will be published in April by Scott Foresman & Co.

CLOCKWORKS®



The most powerful full feature real time clock EVER designed for the Apple!

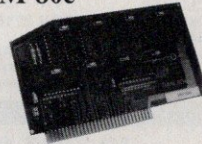
The new ClockWorks card is not just another clock based on the same old IC used in Timemaster HO, ProClock, Versacard, Multi I/O and many others, but rather a new and innovative ground-up design with new technology that gives you all the features you'd expect from a high quality product, all the compatibility you must have and above all, additional capabilities not available with any other clock. Just compare and find out why ClockWorks is the only clock/calendar card you should obtain for your Apple™.

FEATURES	CLOCKWORKS®	TIMEMASTER*	THUNDERCLOCK*
ADDS THE TIME AND DATE TO APPLEWORKS SCREENS AND FILES	YES	YES	NO
SET THE TIME PRECISELY TO ANY EXACT SECOND.	YES	NO	YES
LONG LIFE LITHIUM BATTERY, ALWAYS WORKS, NO RECHARGING IS EVER NEEDED.	YES	NO	NO
INCLUDES A DIGITAL I/O PORT FOR ADVANCED APPLICATIONS.	YES	NO	NO
EXTERNAL SOURCE INTERRUPTING AND FLAGGING.	YES	NO	NO
BUILT-IN TIME SETTING COMMANDS	YES	NO	YES
CLOCK PRICE	\$99.00	\$129.00	\$149.00
BSR REMOTE CONTROL OPTION	\$29.00	\$39.00	\$49.00

ClockWorks has 24 hour & AM/PM modes, software selectable interrupts, time & date stamps, ProDOS, DOS 3.3, and Pascal files, and comes complete with four disk sides full of useful software, including "The Time Machine", a new powerful disk based appointment book/time management system written especially for ClockWorks.

ClockWorks is the registered trademark of Micro Systems Research. Apple, ProClock, Timemaster HO, Multi I/O, Versacard are respective trademarks of Apple Computer, Practical Peripherals, Applied Engineering, AST Research, Prometheus Products.

RAM 80e™



- Extends the Apple IIe to 128K RAM
 - Adds crisp 80 column video display
 - Enhances spreadsheet and wordprocessor viewing
 - Allows double high resolution graphics
 - Acts as high speed disk drive with ProDOS.
- Easily installs in the Aux. slot of the Apple IIe. Comes with full documentation. _____ \$79.

Full height, 5¼" disk drive for the Apple II+, IIe & IIGS. 100% compatible with all software. Completely operational as data or boot drive even with protected software. Plugs into any standard disk controller card. Includes 1 year warranty.

MSR Drive _____ \$129
Controller card _____ \$49

MSR DRIVE™



EXTEND-50™



Reliably extends all 50 signals at internal slots to a 50 pin DIP. One side plugs into an Apple slot, the other plugs into any breadboard/protoboard. Now you can easily wire an interface card circuit without tedious wirewrapping or soldering techniques. A must for every designer.

Only _____ \$34

All expansion cards include full documentation, 5 year warranty, 15 day money back guarantee and are available for immediate delivery.

Now available at your favorite dealer. To order send CHK/MO plus shipping (USA \$2.50 plus \$.50 for each additional unit, Canada \$5.00, Other \$10. VISA, MC, COD welcome).

To order call toll free
1-800-233-5767

For information & GA orders
404-928-9394

MICRO SYSTEMS RESEARCH
4099 Maxanne Drive, Kennesaw, GA 30144

DOUBLE SIDED MAC DRIVE \$249⁹⁵

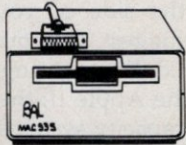
C. ITOH RITEMAN II PRINTER

160 CPS DRAFT, 32 CPS NLQ

- * 80 COLUMN
- * 8K CHARACTER BUFFER
- * DOWNLOADABLE CHARACTERS
- * ITALICS, UNDERLINE, PROPORTIONAL SPACING & MORE!
- * VARIABLE LINE SPACING AND PITCH
- * CENTRONICS PARALLEL INTERFACE
- * SUPPORTS EPSON GRAPHICS
- * FRICTION AND PIN FEEDS

ONLY \$219⁹⁵

DISK DRIVES



DOUBLE SIDED

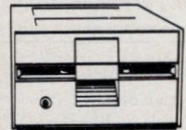
**MAC 535
\$249.95**

- * 3.5" ADD-ON DISK DRIVE
- * 100% MACINTOSH COMPATIBLE
- * DOUBLE SIDED, 800K BYTES STORAGE
- * HIGH RELIABILITY DRIVE HAS AUTO-EJECT
- * FULL 1 YEAR WARRANTY



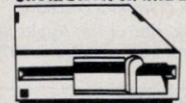
**BAL-500
\$129.95**

- * TEAC MECHANISM-DIRECT DRIVE
- * 100% APPLE COMPATIBLE
- * FULL 1 YEAR WARRANTY



**AP-135
\$129.95**

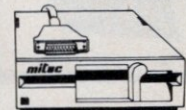
- * FULL HT. SHUGART MECHANISM
- * DIRECT REPLACEMENT FOR APPLE DISK II
- * SIX MONTH WARRANTY



**AP-150
\$99.95**

- * 1/2 HEIGHT, DIRECT DRIVE
- * 100% APPLE COMPATIBLE
- * SIX MONTH WARRANTY

FOR APPLE IIc



**MITAC
AD-3C
\$139.95**

- * 100% APPLE IIc COMPATIBLE, READY TO PLUG IN W/ SHIELDED CABLE & MOLDED 19 PIN CONNECTOR
- * FAST, RELIABLE SLIMLINE DIRECT DRIVE
- * SIX MONTH WARRANTY

DISK DRIVE ACCESSORIES

- DISK CONTROLLER CARD \$49.95
- APPLE IIc ADAPTOR CABLE \$19.95
- ADAPTS STANDARD APPLE DRIVES FOR USE WITH APPLE IIc

PRINTER SWITCH BOXES

2 WAY SWITCH BOX \$39.95

- * PARALLEL OR SERIAL (PLEASE SPECIFY WHICH)
- * SWITCH 2 DEVICES TO 1 COMPUTER OR 1 DEVICE TO 2 COMPUTERS
- * ALL PINS CONNECTED

3 WAY SWITCH BOX \$89.95

- * PARALLEL OR SERIAL (PLEASE SPECIFY WHICH)
- * GOLD CONTACTS, ALL LINES SWITCHED
- * SWITCH 3 DEVICES TO 1 COMPUTER OR 1 DEVICE TO 3 COMPUTERS

PRINTER BUFFERS

64K EXPANDABLE TO 256K

SP120P PARALLEL \$139.95

- * LED INDICATOR SHOWS VOLUME OF DATA IN BUFFER

SP120S RS232 SERIAL \$159.95

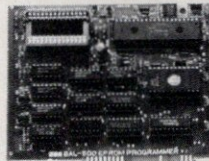
- * 6 SELECTABLE BAUD RATES, FROM 600B TO 19,200B

PARALLEL SWITCH/BUFFER CABLE

- * 6' CENTRONICS MALE TO MALE
- * ALL PINS CONNECTED

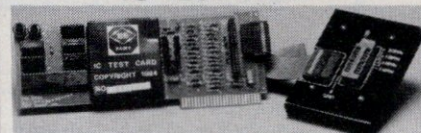
\$14.95

EPROM PROGRAMMER MODEL RP525 \$59.95



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

IC TEST CARD



- * QUICKLY TESTS MANY COMMON ICs
- * DISPLAYS PASS OR FAIL
- * ONE YEAR WARRANTY
- * TESTS: 4000 SERIES CMOS 74HC SERIES CMOS 7400; 74LS, 74L, 74S, SOME PROMS AND RAMS

\$99.95

16K RAM CARD \$39.95

FOR APPLE II+

- * 2 YEAR WARRANTY
- * EXPAND YOUR 48K APPLE TO 64K
- * USE IN PLACE OF APPLE LANGUAGE CARD

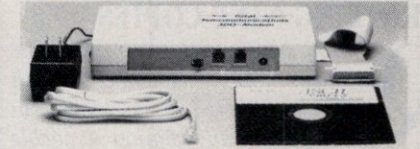
BARE PC CARD AND INSTRUCTIONS \$9.95

300 BAUD MODEM

INCLUDES ASCII PRO-EZ MENU DRIVEN SOFTWARE

- * FCC APPROVED
- * BELL SYSTEM 103 COMPATIBLE
- * AUTO-DIAL
- * DIRECT CONNECT
- * INCLUDES AC ADAPTOR

\$49.95



CABLE FOR APPLE IIc \$14.95

MODEM ADAPTOR CARD \$49.95

FOR APPLE II, II+ & IIe
USE WITH OUR 300B MODEM
FOR A COMPLETE SYSTEM—UNDER \$100!

CASE WITH KEYBOARD

FOR APPLE TYPE MOTHERBOARD

- * USER DEFINED FUNCTION KEYS
- * NUMERIC KEYPAD WITH CURSOR CONTROL
- * CAPS LOCK & AUTO REPEAT

MODEL KB-1000 \$79⁹⁵

KEYBOARD ONLY \$49.95

- * REPLACEMENT FOR APPLE II+
- * CAPS LOCK, AUTO REPEAT
- * ONE KEY ENTRY OF BASIC OR CP/M COMMANDS

MONITOR STAND \$12.95

- TILTS AND SWIVELS TO PROVIDE OPTIMUM VIEWING ANGLE, REDUCES OPERATOR FATIGUE



DISKETTE STORAGE FILE

\$8.95

HOLDS 70
5 1/4" DISKETTES
WITH ROOM
TO SPARE



DS/DD NASHUA DISKETTES

\$9.90

BOX OF 10

69¢^{ea}

BULK QTY 50

JOYSTICK

CR401

\$7.95

WITH
APPLE
ADAPTOR
CABLE



PS-A \$49.95

* +5V @ 5A, +12V @ 2.5A
* -5V @ .5A, -12V @ .5A



Visit our retail store located at 1256 S. Bascom Ave. in San Jose, (408) 947-8881



JDR Microdevices

110 Knowles Drive, Los Gatos, CA 95030

Toll Free 800-538-5000 • (408) 866-6200

FAX (408) 378-8927 • Telex 171-110

NEW ADDRESS!

© COPYRIGHT 1986 JDR MICRODEVICES

THE JDR MICRODEVICES LOGO IS A REGISTERED TRADEMARK OF JDR MICRODEVICES. JDR INSTRUMENTS AND JDR MICRODEVICES ARE TRADEMARKS OF JDR MICRODEVICES.

APPLE IS A TRADEMARK OF APPLE COMPUTER.

PLEASE USE YOUR CUSTOMER NUMBER WHEN ORDERING

TERMS: Minimum order \$10.00. For shipping and handling include \$2.50 for UPS Ground and \$3.50 for UPS Air. Orders over 1 lb. and foreign orders may require additional shipping charges - please contact our sales department for the amount. CA residents must include applicable sales tax. All merchandise is warranted for 90 days unless otherwise stated. Prices are subject to change without notice. We are not responsible for typographical errors. We reserve the right to limit quantities and to substitute manufacturer. All merchandise subject to prior sale.

IS THE IIGS UPGRADE A SCHOOL'S BEST BUY?

It's a question of your students' needs

Last October I participated in an educational-computing conference in California that drew more than 2000 educators. Two questions cropped up frequently:

1. What did I think about the new Apple IIGS?
2. Should schools rush to upgrade their Apple IIe computers?

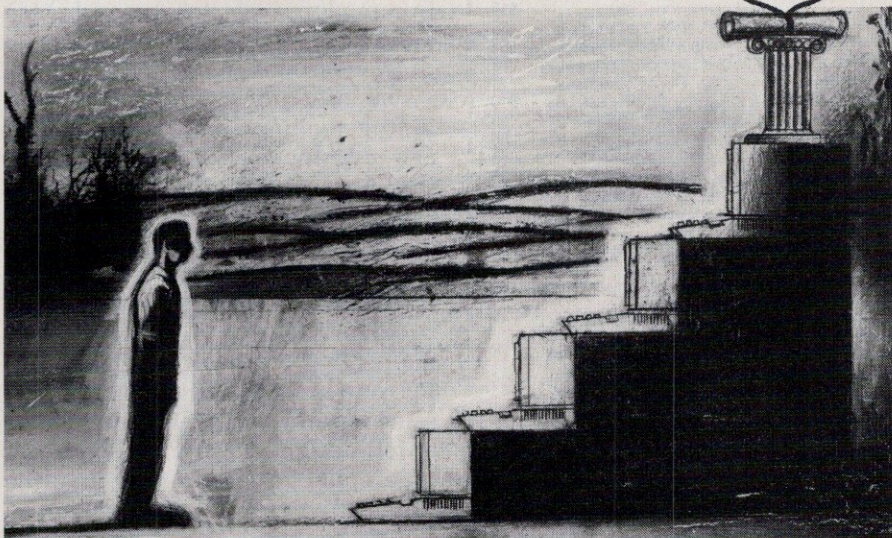
Easy One First

As someone who has long been critical of the original Apple II sound and graphics, I find the IIGS to be a refreshing sign that Apple is willing to provide people with the improvements they deserve.

The lowly Atari 400 (remember it?) ran circles around the old Apple II in the areas of sound and graphics, and the Commodore Amiga provides even richer capabilities in these areas. Quite frankly, some of us were beginning to wonder when Apple was going to wake up to the computers of the 80s.

By providing enhancements in graphics and sound while retaining compatibility with the massive installed base of Apple II programs, Apple seems to have achieved the best of both worlds, and the future of the Apple II line looks secure.

Of course, my personal interests influence my views. My office is littered with music synthesizers and graphics tools, and I spend much of my spare time tinkering with them. As a result, my enthusiasm for the Apple IIGS comes from the freedom this computer gives me to play in the domains that are of greatest interest to me.



What About Education?

As I look at the role of the Apple IIGS in education, I have a hard time separating my personal enthusiasm for this new machine from my perspectives on how computers are functioning in classrooms today and

pieces of educational software exploit those capabilities that distinguish computers from books.

Yes, many new programs do show a willingness to accept the computer as a medium in its own right, but these programs have arrived nearly ten years after the introduction of personal computers.

The challenges facing creators of educational software are challenges of the spirit, not of technology. I doubt that the simple introduction of a new computer into the marketplace can make the quality of educational software take a giant leap forward.

Opening the Toolbox

In addition to new graphics and sound capabilities, the Apple IIGS includes a set of toolbox routines with which software developers can create software with some of the look and feel of Macintosh programs. This toolbox may be the most significant distinguishing feature of the Apple IIGS.

The challenges facing creators of educational software are challenges of the spirit, not of technology.

how they may serve in the future.

I agree with those who argue that educational software needs to take advantage of better graphics and sound tools. If you look at the history of educational software, you may conclude that software developers have not (with few exceptions) fully used the tools at their disposal. Few

Your Best \$5 Deal



Choose From Our Top Selling Disks

Tutorials

000 BASIC prog, mach lang, disassem... \$5

Art

006 18 fonts, make own, Dot Mtx/lmgwtr \$5

023 Make drawings, 23 textures... \$5

Word Processing

037 Freewriter, prints, (II+ need paddles) \$5

Business

038 Budgeting calendar, calculator... \$5

039 General ledger, 15 financ. programs... \$5

045 House sale calculations, payroll... \$5

051/052/053 Relational database, 80 page document (on disk)... \$15

056 Check balancer, w/documentation... \$5

057 Omnifile database, w/documentation... \$5

404 Family Finance, amortization, acctg... \$5

Education

058/059 Physics tutorial (2 disk set)... \$10

062 Alphabet, spelling, word games... \$5

064 Drills: typing, spelling, states... \$5

065 Talking calc., math, flash cards... \$5

066 Teaching aids, grade averager, tests... \$5

068 Story problems, metrics, history... \$5

069 Geography, fractions/decimals... \$5

085 23 Elem. math drills (+, -, x, /)... \$5

089/090 French Tutor-nouns & verbs... \$10

Food and Nutrition

092 Count calories, recipe box, nutrition... \$5

Games

118 Adventure Andromida & Sp. Shuttle... \$5

122 Dragon Maze, Airport, Football... \$5

Math

174 Algebra, quadratics, plotting... \$5

Music

186 Music Maker & text editor, w/doc... \$5

Passion

190/191 Graphic displays, games... \$10

Pastime

203 Video Librarian: Store/sort entries... \$5

Utilities

213 Best utilities... \$5

226 Diversi DOS faster than DOS 3.3... \$5

243 Programming Utilities: Applesoft & Mach. Lang... \$5

Communication

260/261 Bulletin board system, w/doc... \$10

262/263 Hayes modem utilities... \$10

Book: 150 page directory of disks... \$6.95

1 Year Membership: book, quarterly bulletins, plus many DISCOUNTS... \$20

Library: Complete set of 210 disks... \$695

SPECIAL OFFER!!

6 Disks + Book

Plus! 1 Year Membership

ONLY \$39.95 + \$4 S&H

Add \$4 (\$10 foreign) for shipping and handling or \$2 (\$5 foreign) if ordering book only. California orders add sales tax.

Enclosed \$ _____ by Check VISA MC

Card No. _____ Exp. _____

Signature _____

Name _____

Address _____

City _____ State _____ Zip _____

The Public Domain Exchange

2074C Walsh Avenue, Dept. 515
Santa Clara, CA 95050

CALL NOW to order 800-331-8125
or in CA call 408-496-0624

DEALER INQUIRIES INVITED

Although some computer users feel that command-line interpreters are preferable to visual displays of "desktops" and that typing RUN PROGRAMNAME is better than double-clicking a mouse on an icon, the visual user interface is steadily gaining converts and is convincing people that you don't have to know anything about computing to use a computer.

The education market is one where this feature is probably more important than anywhere else. Teachers do not have the time to wade through massive manuals just to learn how to load a program. Have you ever seen a second-grade teacher tell a student who is using a Commodore 64 to type LOAD "8,1"? It is not a pretty sight.

By creating a uniform and highly visual user interface—and by providing toolbox routines to encourage developers to write software that uses this interface—the Apple IIGS promises to allow the creation of educational programs that are easy to learn and easy to use. Most important, as with most Macintosh programs, users will find that commands that behave in a certain way for one program will behave the same way for another. The benefit of a well-designed user interface is that it gets out of the users' way, and this unobtrusiveness is part of the promise of the Apple IIGS. I believe the Apple IIGS (in the hands of the right programmers) will be a showcase for some excellent educational software. **And Now for Question 2**

All of which brings me to the second question: Should schools rush to upgrade their old Apple IIe computers to the Apple IIGS?

My guess is that, over the long term, Apple will phase the Apple IIe out of production as soon as demand falls and that the Apple IIGS will become its logical successor. The IIGS's ability to use existing peripheral cards and equipment is essential to this transition.

To show just how compatible the IIGS really is, I connected a 1979 Apple II disk drive (with a new connector) to the disk-drive port of the Apple IIGS, and it worked perfectly. Such attention to compatibility is unprecedented in the personal-computer industry.

Still, it might be wise to wait a bit before rushing to purchase the upgrade. For one thing, there isn't

much software that requires the IIGS yet, although this situation is sure to change soon.

Cloning Around

Second, you can spend the money elsewhere. Even with special institutional discounts, upgrading the IIe to the IIGS is going to cost several hundred dollars.

A few months ago, a friend dropped by to show me a Laser 128 with a built-in disk drive and all the printer and communication ports you could ask for. He'd paid about \$370 or so for this Apple II-compati-

The point here is that no one should upgrade a computer for its own sake.

ble computer. Spend another \$70 for a monochrome monitor, and you'd have a complete computer system for close to the price of the IIGS motherboard alone. Never mind new disk drives, mice, and other devices you need to take full advantage of the GS.

Most schools are trying to reduce the student/computer ratio. For people in this situation, the purchase of another computer may make much more sense than spending money on an upgrade at this time.

What Are We About?

The point here is that no one should upgrade a computer for its own sake. The whole reason we have computers in the classroom is to help our students. As we make purchase decisions regarding software and hardware, our overriding concern should be to ensure that the students' needs are served. For some of us, working toward this goal requires that we get more computers, and for others it means that we should make our existing computers more powerful.

Should you upgrade your Apple IIe computers to the Apple IIGS? Think about your real needs—the answer will be obvious. **+**

David Thornburg is a consulting editor of A+ and is actively engaged in the design and creation of computer-based tools that foster the development of creativity in their users. He can be reached in care of this magazine.

Power Play.

Computer performance, power makes the difference. When you increase your computer power, you increase your performance. It's that simple. WordPerfect 1.1 for the Apple IIe/IIc and the new IIgs* works on that perfectly simple premise. And it works beautifully. WordPerfect 1.1 is the word processor designed to get the most out of your Apple IIe/IIc or IIgs. The most power. The most efficiency. The most functions. And the most for your money.

Power to the Core.

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

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

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

WordPerfect 1.1 features include:

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

Easy as Pie.

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

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

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

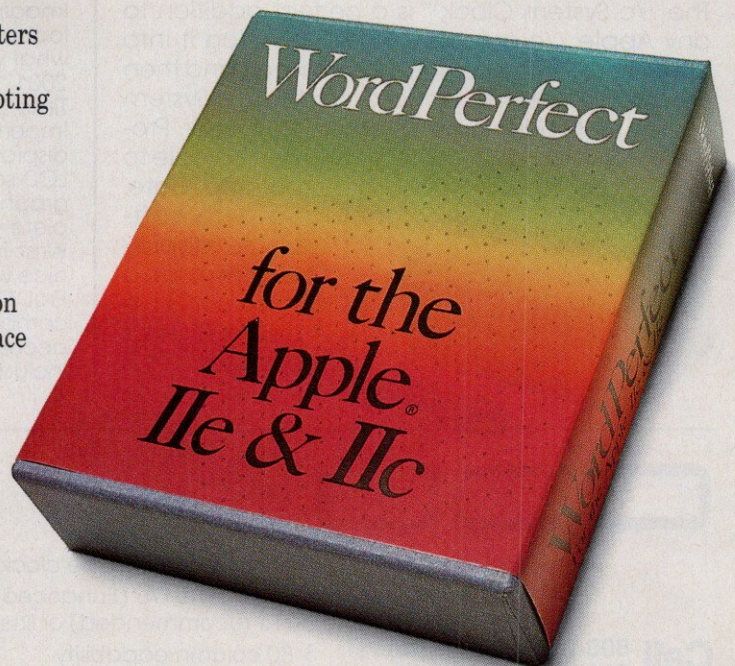
Harvest the Power.

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

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

*Runs under ProDOS-16.

WordPerfect
CORPORATION

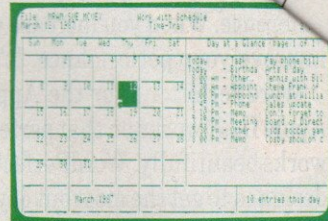


CIRCLE 118 ON READER SERVICE CARD

Time-Trax II

Please excuse the interruption, but scheduled event has come due...

Time-Trax II™ is an active, time and date oriented calendar program. When a scheduled event is due Time-Trax II will beep and display your entry! Time-Trax II will remind you of meetings, appointments, errands, phone messages, birthdays, holidays, bills to pay and much more. With Time-Trax II you can even schedule advance notice reminders so that you are ready for your important event! No more excuses that you forgot to look at your calendar!



Time-Trax II is easy to use. With just a few simple keystrokes you can make, review, copy and edit entries. Easily change the time or date of an event and edit text of any entry. Time-Trax II's cut, copy and paste commands along with its clipboard makes it simple to enter regularly scheduled events. Search for any name, phone number or other information in any entry. Customize Time-Trax II with your own meaningful category labels for your entries. Print out a day, a month or any period of time easily. Keep schedules for any number of users.



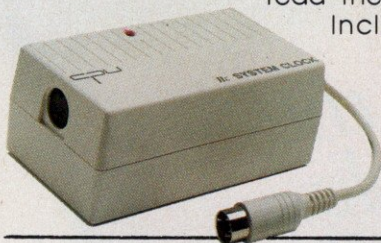
And best of all Time-Trax II uses the AppleWorks™ user interface, so if you're using Appleworks you're ready for Time-Trax II!

Busy people everywhere need Time-Trax II. Time-Trax II can be installed as a Pinpoint Desk Accessory and then either run as a normal desk accessory or an active one! When active Time-Trax II will run behind other programs like AppleWorks, Manzanita BusinessWorks™ and ProFiler™ and will actually interrupt you while you are working to notify you of a scheduled event!

//c System Clock

The //c System Clock™ is a perfect addition to any Apple //c or Laser 128. Simply plug it into either your printer or modem serial port and then plug your printer or modem into the //c System Clocks pass through port. Your ProDOS software will then be able to read the time and date.

Included with software to display the time and date on the AppleWorks menu too!



SEIKO® DATAGRAPH 2001

Imagine having your Time-Trax II schedule loaded into a wrist watch. That's exactly what you get with the Seiko Datagraph 2001™. Now you can be anywhere and Time-Trax II will notify you of your important events with an alarm and display on an easy to read 4 line LCD screen. The Seiko Datagraph 2001 version comes complete with Time-Trax II, the Seiko Wrist Terminal (it's also a very nice watch) and a combination ProDOS clock/interface for your computer. No other cards or accessories are needed. We include everything you need.



Call 800-228-1165 National
714-770-3334 Calif.

SYSTEM REQUIREMENTS

1. ProDOS compatible clock
2. Apple //c, //e (Enhanced //e recommended) or IIGs
3. 80 column capability

PRICING

- | | | |
|---|----------------|----------------|
| 1. Time-Trax II | | \$69.00* |
| 2. Time-Trax II with //e ProDOS Clock | \$158.00 Value | Only \$129.00* |
| 3. Time-Trax II with //c System Clock | \$158.00 Value | Only \$129.00* |
| 4. Time-Trax II & Seiko Datagraph 2001 (specify //e or //c) | | \$229.00 |
| 5. //c System Clock | | \$89.00 |
| 6. Pinpoint V2.0 (ordered with any product) | | Only \$59.00 |

*Introductory offer
Mastercard, Visa and COD Dealer Inquiries Welcome

AppleWorks, ProDOS and Apple are trademarks of Apple Computer, Inc. BusinessWorks, ProFiler, Seiko, Pinpoint and Laser 128 are trademarks of Manzanita Software. Custom Computer Products, Hattori Corporation of America, Pinpoint Publishing and Virtual Combinatics, Inc., and Video Technology, Inc. respectively. Time-Trax II is a trademark of Creative Peripherals Unlimited, Inc.

Creative Peripherals Unlimited, Inc. 22952 Alcalde Drive, Suite 160, Laguna Hills, CA 92653

PALETTES, COLOR MIXING, AND DITHERING

Graphics take a quantum leap forward with the Apple IIGs

The Apple IIGs has arrived, with graphics that are a quantum leap better than standard Apple II graphics. While new GS software slowly trickles in, let's look at what the new platinum machines can do.

A Little Background

All Apple graphics modes are memory-mapped—that is, a pixel on the screen represents a bit or combination of bits in active RAM. The video display is generated by circuitry tied to this area of memory.

Prior to the Apple IIGs, memory for graphics was a problem. Because the entire graphics screen must be kept in memory and because the 6502 processor cannot use more than 64K of memory easily, Apple engineers used a bag of tricks—both in memory arrangement and in how colors were generated—to enable the Apple II to have such a colorful display. (For more information see "Seeing Double," *A+*, January 1985.)

The 65816 CPU in the Apple IIGs is capable of addressing 16 megabytes of memory, although the current IIGs allows only 8 megabytes of user RAM. Still, Apple engineers no longer need tricks. The super-hi-res IIGs modes (320 × 200 pixels and 640 × 200 pixels) use 32K of memory and are linearly mapped. Although you don't really need to know what linear mapping is, suffice it to say that it allows programmers to create much simpler graphics routines than they could with the earlier graphics modes.

Color was also a problem on earlier Apple IIs. Normal hi res on the

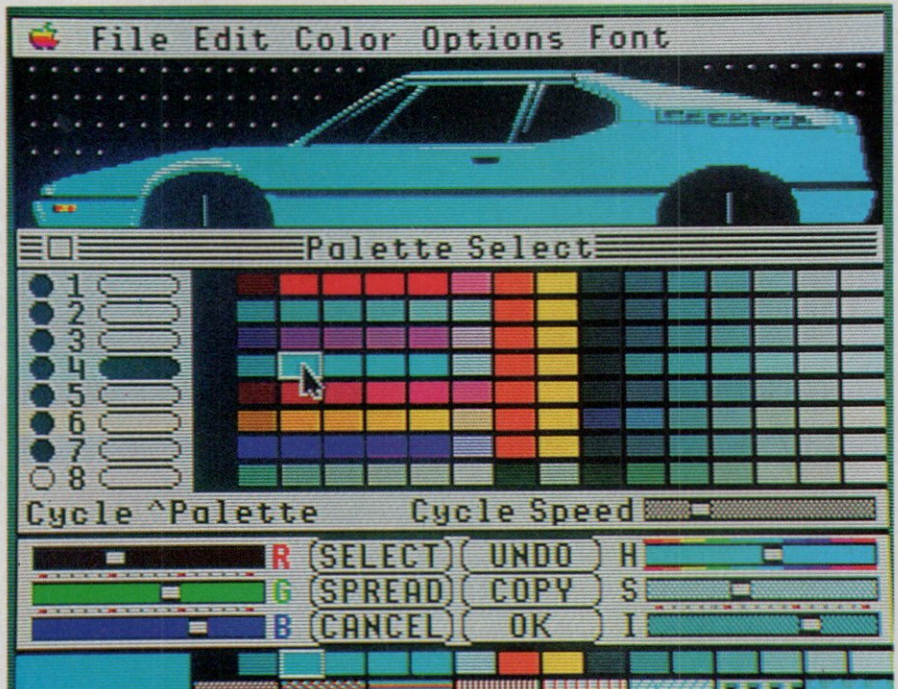


Figure 1: Baudville's 8/16 Paint color-selection dialog. Note the two methods of color selection. Either method can be used to create any of the Apple IIGs's 4096 colors.

Apple II relies on idiosyncrasies of the standard video signal to generate color. Color is tied to pixel position on the screen. Each pixel on the screen must be either violet or green (or orange or blue). Pixels adjacent

Palettes are new to the Apple II family of computers; they use special areas of RAM.

to each other merge to white. Software that lets you plot or draw in green, for example, filters out the pixels of the violet. Thus when you draw a green line, every other pixel is lit. The result is that the resolution

of the hi-res screen is halved. Double-hi-res is similar but a bit more complicated.

The IIGs has no such color complications—at least not in the 320 × 200 mode. Each of the 320 pixels can take on any of 16 colors. This ability is accomplished by a new circuit in the IIGs called the Video Graphics Controller (VGC), which oversees all video output. The VGC doesn't have built-in color; instead it determines the colors to use by looking into "palette RAM."

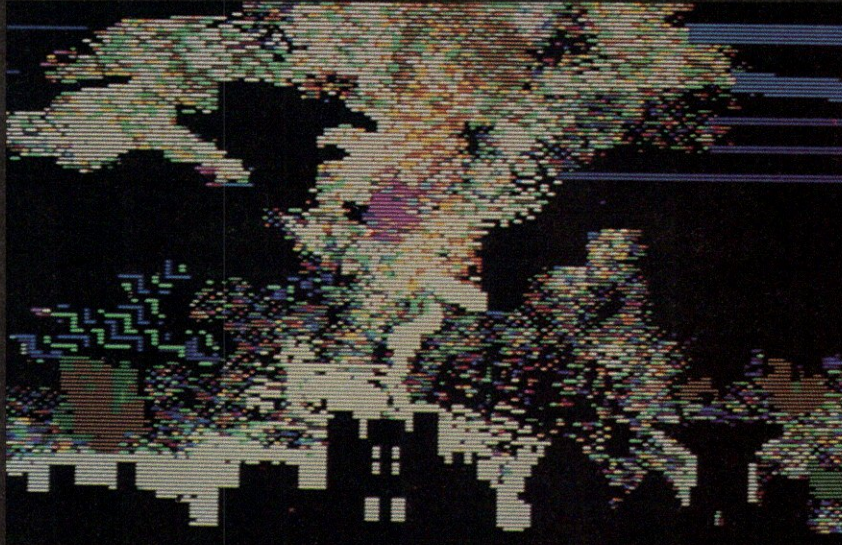
Palettes

Palettes are new to the Apple II family of computers; they use special areas of RAM that contain entries for the red, blue, and green components of the video signal for each possible bit combination in display memory. When the IIGs plots a point, it finds

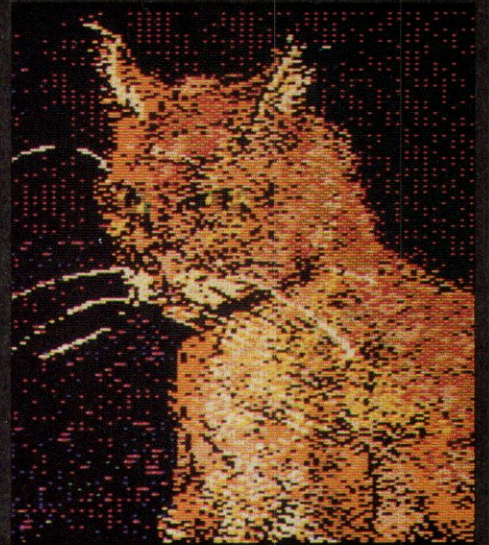
SPEAKING OF GRAPHICS GALLERY

A SKYLINE, A FELINE, AND THREE FACES

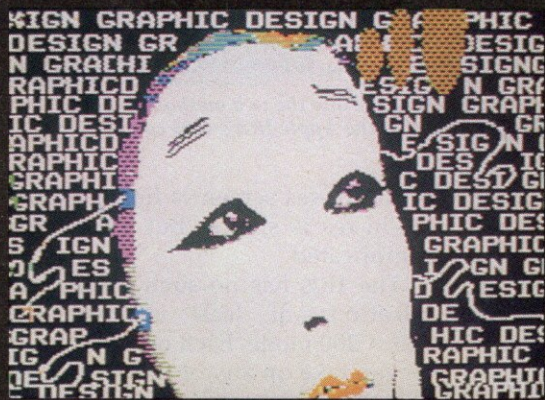
Hi-res and double-hi-res graphics provide lots of color on all Apple IIs. Poobah and Night Sky are double hi-res and were drawn on an Apple Graphics Tablet with Dazzle Draw by Broderbund. Klimpt, Japan, and Composition #1 are hi-res images and were drawn on the Apple Graphics Tablet with Blazing Paddles by Baudville and an assist by the Digisector Video Digitizer.



NIGHT SKY, IAN KLAPPER, *New York*



POOBAH, JANET McDOWELL, *New York*



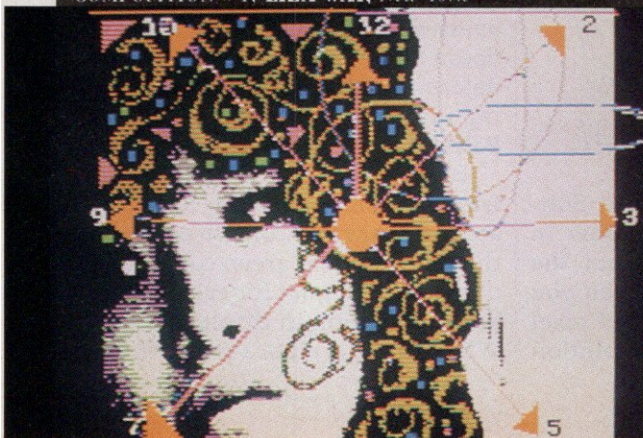
JAPAN, LIZA WAI, *New York*

COMPOSITION #1, LIZA WAI, *New York*

A+ invites readers to submit artwork created with the Apple II to the "Speaking of Graphics Gallery." We will pay \$25 for pictures selected for publication. Submissions must be on a diskette and include a written description of the hardware and software used. Send your artwork to: *A+* magazine, 11 Davis Drive, Belmont, CA, 94002. Attn: Graphics Gallery. Submissions cannot be returned.



KLIMPT, LEAH HARTOG, *New York*



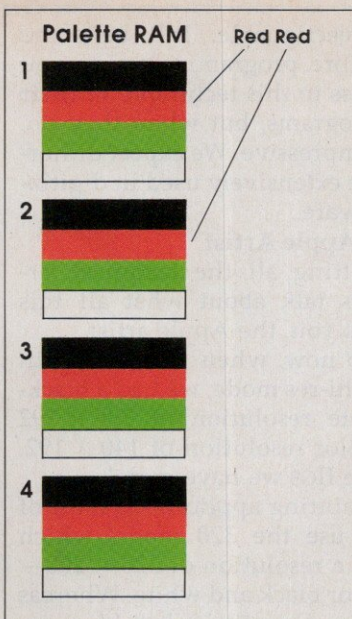


Figure 2: Each mini palette contains the same color values. The IGS determines which mini palette to use from the pixel's position on the screen.

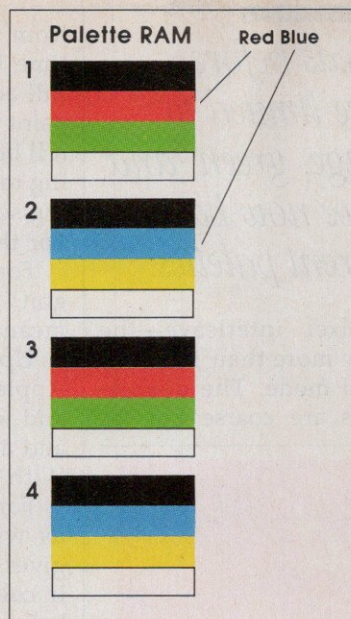


Figure 3: Mini palettes 2 and 4 are different from 1 and 3, resulting in automatic dithering. Pixels merge to produce a new color - in this example, violet.

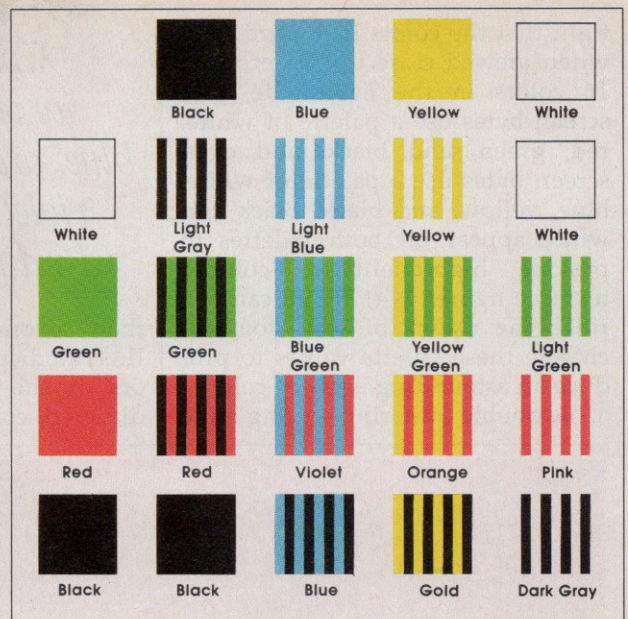


Figure 4: This chart illustrates the 16-color 640 mode using the palette shown in figures 2 and 3. By substituting different colors, you can generate an astounding array of different hues, and by double dithering, you can make the IGS display more than 100 "colors" in the 640 mode.

the correct color by looking into the table for the pixel's bit combination. In the 320 mode, a pixel is generated for every adjacent 4 bits in the video memory map. In the 640 mode, a pixel is generated for every adjacent 2 bits in the video memory map. (Sixteen possible combinations of 4 bits provide 16 colors in the 320 mode; four possible combinations of 2 bits provide four colors in the 640 mode.)

By changing the numbers stored in palette RAM, you can change the colors produced. The total number of possible colors is 4096. This large number is because of the choice of analog RGB rather than digital (TTL) RGB. (See "The IGS Shows Its Colors" in this issue.)

The palette area can contain 16 different palettes, and a different palette can be used for different scan lines, which means that in the 320 mode you can actually have 256 colors on-screen at once. You can use one palette at the top of the screen, another palette midway down the screen, and so on. Palettes can be changed on the fly, allowing for color cycle animation, which we'll discuss in a future column.

Color Mixing

Application programmers have several ways of determining what colors appear on the palette. (Foley and VanDam, in *Fundamentals of Interactive Computer Graphics*, [Published by Addison-Wesley, 1982] list

five different methods.)

As an example of these alternatives, let's look at Baudville's 8/16 Paint program, which uses two different methods for mixing colors. Its Color option contains two sets of controls (see figure 1). One is labeled H, S, and I (hue, saturation, and intensity), and the other is labeled R, G, and B (red, green, and

Palettes can be changed on the fly, allowing for color cycle animation.

blue). Each set can generate all 4096 colors. To create a bright yellow, for example, you can slide the red and green controls to the same level and slide blue all the way off. Similarly, you can slide the saturation, the hue, and the intensity controls until the color is correct. Both methods accomplish the same thing. The red control selects both the amount and intensity of red in the mix. To brighten the yellow but maintain the same hue, you must slide both the red and the green controls equally. Or you can adjust only the intensity control, which has the effect of sliding both color controls. Baudville's Mike Darooge says that he likes to set up the initial palette

with the HSI controls and then do fine-tuning with the RGB controls. Not all paint programs offer alternative methods for color mixing, but we like having a choice.

If you're surprised that red and green make yellow, remember that you're working with light. The subtractive color mixing you may have learned with paints does not apply here. In additive color mixing, mixing equal intensities of the primary colors (red, green, and blue) results in white rather than black.

Dithering Magic

Because the 320 mode is the most colorful, most of the artists' tools we've seen work in this mode. The 640 mode offers some surprises, however. In hi-res or double-hi-res graphics, many programs offer dithered colors. Dithering is the placement of two or more pixels of different colors in close proximity. These pixels blend to a new color. You can, for example, generate a reddish tone in standard hi-res by mixing orange and violet. With dithering, the effective resolution drops, resulting in a coarse image because a unit of color consists of a group of pixels rather than a single pixel.

Apple IGS engineers, when creating a demo program to show off the new computer, made an interesting discovery. With dithering, the IGS can be coaxed into producing 16 colors in the 640 mode. The dither is so

tight that the colors look pure even when viewed close up. To produce 16 colors in the 640 mode, odd screen bytes use a palette of white, red, green, and black, and even screen bytes use a palette of white, blue, yellow, and black. Black and white appear on both palettes to provide high-quality, 80-column text (see figures 2-4). If you can sacrifice the clarity of text, you can change these palette values to produce an astounding array of colors.

By double dithering—using more

*Whereas before
we were limited to
blue, orange, green, and
violet, we now have
16 different palettes.*

than a one-pixel interleave—the IIGS can display more than 100 “colors” in the 640 mode. The double-dithered colors are coarse but far

from objectionable. It'll be some time before programmers give you full access to this technique in their paint programs, but when they do, it'll be impressive. We expect dithering to be extensively used in digitizing software.

For the Apple Artist

Forgetting all the technical jargon, lets talk about what all this means to you, the Apple artist.

Up to now, when we worked in Apple's hi-res mode, we had a black-and-white resolution of 280 × 192 and a color resolution of 140 × 192. With the IIGS we have more!

For painting applications most of us will use the 320 mode, which gives us a resolution of 320 × 200—in color or black and white. Whereas before we were limited to blue, orange, green, and violet, we now have 16 different palettes. And the colors in these palettes are real colors. A red pixel, for example, can be plotted anywhere on the screen and can be put next to any other color without creating problems.

Because different palettes can be used for different scan lines, we can cleverly use up to 256 colors in one graphic. In a seascape drawing, for example, the top of the screen can use a palette with lots of reds and oranges for a sunset, and the bottom of the screen can use a palette of blues and greens for water.

Although we could do some simulated color shading on our Apple IIs by dithering the colors (black and blue pixels to create a dark blue), it was well nigh impossible to create the illusion of a three-dimensionally shaded object. Now we can use color-mixing options to create a whole range of shades for each color.

For drawing applications, mechanical drawing, CAD, charting, and so on, we have the 640 mode. In this mode, both palettes have black and white, so text will be as crisp and clear as the lines we draw. Higher resolution means fewer jaggies. Diagonal lines won't be perfect, but with four times the resolution we had before, we'll see a great improvement.

We've always been amazed by what you Apple artists have been able to achieve in spite of the color and resolution limitations of the II. We'd like to know what you think about the IIGS, and we're looking forward to seeing what you're doing with it—it should be dazzling. +

Ribbon Land

QUALITY COMPUTER PRODUCTS

Order **HOTLINE** 1-800-221-4892

In PA or for information CALL (215) 524-9760

SPECIAL

Designer Dust Covers (Red, Blue or Grey) - Apple IIc or IIe, Mac or Mac+ \$14

NYLON Ribbons

Printer Type	Black		Color		Transfer	
	EACH	6+	EACH	6+	EACH	4+
Anadex 6500/9500	7.50	7.00	—	—	6.50	6.00
*Apple Imagewriter, DMP, Prowriter	4.50	4.00	5.50	4.50	5.50	6.00
Apple Imagewriter II	4.50	4.00	10.00	9.00	—	—
Apple Scribe (Thermal)	5.00	4.50	—	—	—	—
Brother 1109, 1009, Comm. MPS 803	5.50	5.00	—	—	—	—
Brother HR15/35, Comrex II	5.50	5.00	6.50	6.00	—	—
Canon A-40/50/55, 1080A/1088/1156	6.00	5.50	6.50	6.00	—	—
Comm. MPS801, Comrex 220, Axiom GP550, GP700	5.00	4.50	6.00	5.50	—	—
Commodore 1525	5.00	4.50	6.00	5.50	—	—
Epson AP80, Seikosha SP1000	NEW					
Epson DX10, Silver Reed	5.50	5.00	6.50	6.00	—	—
Epson JX80	4.50	4.00	13.00	12.00	—	—
*Epson MX, FX, RX 80/85, Citizen 10/20	4.50	4.00	5.50	4.50	6.50	6.00
Epson MX, FX, RX 100/185, Citizen 15/25	6.00	5.50	7.00	6.50	—	—
Epson LQ 800	6.00	5.50	7.00	6.50	—	—
Epson LQ 1000	7.00	6.50	—	—	—	—
Epson LX 80/90, Homewriter 10	5.00	4.50	6.00	5.50	7.00	6.50
Epson LQ 1500	5.50	5.00	6.00	5.50	—	—
IBM Proprinter	5.50	5.00	6.50	6.00	—	—
Nakajima/Adler Satellite	5.50	5.00	6.50	6.00	—	—
Nec P2/P6	7.00	6.50	—	—	—	—
Nec P3/P7	8.00	7.50	—	—	—	—
*Okidata 82, 83, 92 & 93/Star SG 10	2.50	2.25	3.50	3.00	4.50	4.00
Okidata 182, 192 & 193	6.50	6.00	7.50	7.00	—	—
Okimate 20 (Thermal)	5.00	4.50	6.00	5.50	—	—
Panasonic 1080, 1090, 1091 & 1092	7.00	6.50	8.00	7.50	—	—
Smith Corona D 100/200, RS DMP 120	6.00	5.50	7.00	6.50	—	—
Star NX 10	7.00	6.50	—	—	—	—
Toshiba 1350, 1351, P1340, P351, 341	6.00	5.50	7.00	6.50	—	—

Colors: Red, Yellow, Blue, Green, Brown, Purple, *Orange & Silver.

Transfer Colors: Red, Yellow, Blue & Black.

MULTI-STRIKE Black Film Ribbons

	EACH	6+
Apple LQP, Qume IV	5.00	4.50
Brother HR 15/35, Comrex II	5.50	5.00
Diablo Hi-Type II	3.50	3.00
Epson DX-10, Silver Reed	6.50	6.00
Juki 6100, IBM Selectric II, Tech II	5.00	4.50
Nakajima, Adler Satellite	7.00	6.50
Nec 3500	5.00	4.50
Nec 5500	5.00	4.50
Qume Letterpro 20	4.00	3.50
Ricoh 1600, RS DW-2	5.00	4.50
*Spirit 80, BMC-80, Legend 880, 808, 1080, 1380	6.00	5.50
*Available in Red, Blue & Brown, (Add \$1.00 Each)	6.00	5.50

DISKS - 5 1/4" Verbatim Brand - 20 Pack

SSDD or DSDD **.69 Each** 20 Pack of Labels & Sleeves **\$2.20**

MacInker - Re-Ink Ribbons for about 5¢

Apple Imagewriter, DMP, Prowriter	41.95
Epson MX, FX, RX 80/85/100/185/286	49.95
Universal Base plus Driver Kit for Most Nylon Ribbons	64.95
Ink Kit (Available in Red, Yellow, Blue, Green, Brown, Purple & Black)	8.00

White Computer Paper - Micro-Perf 2500 Sheets

100 Sheets **\$6.00** 600 Sheets or Rainbow Pack **\$24.00**

*Not included in Rainbow Pack.

Color Envelopes - Invitation Size/Red, Blue, Gold, Lt. Blue & Pink.

50 Envelopes **\$4.50** 100 Envelopes **\$8.00** 250 Envelopes **\$15.00**

Color Index Cards (PIN FEED) Available in Canary, Blue, Green, Orange & Cherry.

100 Cards **\$2.50** 500 Cards or Rainbow Deck **\$10.00**

PRINT HEAD CLEANING KITS - A must when using color ribbons or heat transfer ribbons! **ONLY \$8.00 Each**

Apple (Imagewriter I & II, DMP)/C-Itoh Prowriter/Nec 8023/Epson MX, FX, RX 80-85-100-185-286/Citizen 10-20-15-25/Epson LX-80-90, Homewriter 10/Okidata 80, 82, 83, 92 & 93/Star Micronics SG10/Panasonic 1080, 1090, 1091, 1092/Okidata 182, 183, 192.

CALL FOR PRICING ON ALL HARD TO FIND RIBBONS!

School & Business Purchase Orders Accepted. PA residents add 6% Sales Tax. MC, Visa, COD ORDERS Accepted. Ribbon orders over \$50 are shipped free. UPS Ground Only. All other orders add \$3 S & H. UPS Ground Only. Prices subject to change without notice. Dealer Pricing Available.

Ribbon Land • P.O. Box 506 • Exton • PA • 19341

CIRCLE 202 ON READER SERVICE CARD

Interlude II

A BED OF ROSES—INTERLUDE # 136

Why did you bring me so many roses?

It was Interlude's idea.

Oh?

Imagine lying in a bed of roses...

Sounds a bit thorny.

Just the petals, darling...cool, velvety, fragrant.

Oh. Oooooooh.

Interlude II. The long-awaited sequel to the first adult computer game in history is finally here. It's provocative and playful! Outrageous and romantic! It has all the excitement of the original Interlude, plus significant new features.

The computerized interview, which is taken by one or both players, has been greatly expanded. It probes your innermost desires to discern your mood of the moment, your secret longings, your special fantasies, and then suggests for your pleasure one of its more than 160 Interludes. You can ask the computer for an Interlude for now, or one for later.

Special options give each player added control over surprises and special erotica hidden in the Interludes.

Six years ago the original Interlude took the computer world by storm, creating a media sensation:

FORUM Magazine: "The Interludes are imaginatively and sensitively written... the computer's recommendations are uncannily appropriate."

US Magazine: "The most edifying third party to join couples between the sheets since *The Joy of Sex*."

Chicago Tribune: "This marriage of computer technology and sex is natural... erases forever the image of computer-users as dull guys with slide rules in their pockets and square roots on their minds."

Money Magazine: "Sometimes it's easier to tell a computer what you want than it is to tell your partner."

Interlude II will take you to the outer limits of fantasy and romance. And, if the computer selects Interlude #99 your love life may never again be the same.

Interlude II. Are you ready for it?

Recreational Technology, Inc., 2900 Wilcrest, Houston, TX 77042

Name _____ Age _____

Address _____

City/State/Zip _____

Accepted for payment:

MasterCard® Acct. # _____ Exp. Date _____

VISA® Acct. # _____ Exp. Date _____

Charge customers must sign here: _____

1-800-752-7001 ext. 829
(in Texas call 1-800-442-4799 ext. 829)

\$39.95 Interlude II
Shipping \$3.00 (outside U.S.A. \$10.00)

Available for Apple II, II+, IIc and IIe.¹

TX residents add 6 1/2% sales tax (\$2.45)

¹Trademarks of Apple Computer, Inc.

\$ _____ TOTAL A +

CIRCLE 177 ON READER SERVICE CARD

AT LAST, A GAME THAT TAKES YOU SERIOUSLY.

Exactly what is Might and Magic™?
Technically, it's a fantasy role-playing
simulation game for you and your Apple
II® series personal computer.

Emotionally, however, Might and
Magic™ is an adventure game.

It packs more detail than any
other role-playing game. Yet it has more
text than most adventure games.

It also has more monsters, more
spells, more speed, more individuality,
more geography, more psychology and
even more cartography than the best-
selling fantasy game we all know the
name of.

Cartography? That's the science
of map making. Which you'll need to
master pretty quickly.

You see, the map on the right
only gets you to the outskirts of town.
After that, you're on your own.

Sorry about that.

Might and Magic™

See your local dealer or order direct from
New World Computing, Inc. P.O. Box 491415,
LA, CA 90049. Send check or money order for
\$54.95 plus \$2.00 for shipping and handling
(CA residents, add 6.5% sales tax.) VISA or
MASTERCARD, call toll-free 1 (800) 443-1888
In California, call 1 (800) 445-1888.

Apple and the Apple logo are registered trademarks of Apple Computer, Inc.
Might and Magic is a trademark of New World Computing, Inc.

CIRCLE 149 ON READER SERVICE CARD



GamePort

BY BOB LINDSTROM

Ace programmer Chris Crawford tells all about the latest version of his masterpiece of international geopolitics, Balance of Power

HOTHOUSE DIPLOMACY

For players who want more out of a computer game than pumping a fire button, the best news of 1987 is the scheduled Apple II-series conversion of Balance of Power, a complex yet highly playable simulation of international geopolitics. In addition to being much more fun than a week in Reykjavik, Balance of Power is the masterpiece (so far) of acclaimed programmer Chris Crawford. Since the early 80s, Crawford has been recognized as the thinking person's game maker, beginning with his innovative war game Eastern Front. Before Eastern Front, computer war games weren't innovative, evocative simulations of military combat. They were elec-

tronic recreations of board games. In these hexagonal-hexadecimal worlds, pixilated blips replaced metal markers, and sketchy graphics imitated tabletop battlefields.

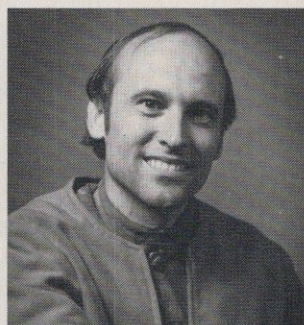
There were some advantages, though. Board war games required notebooks filled with statistics, ordnance strengths, morale points, and supply-line ratings. The computer versions allowed war-game fanatics to rely on their computer to do all the bookkeeping. Suddenly, even nonmathematicians could compete strategically with numerically minded living-room warriors.

And then came Crawford.

Eastern Front for the Atari 400/800 computer system revolutionized computer war gaming. The mechanics of a war game had never before been so transparent to the user. And when you were playing against the computer, your electronic opponent didn't wield its forces like a skinhead kid just out of ROTC. Here was a real general, a worthy combatant with genuine strategic smarts.

When Crawford, an educator turned game designer and programmer, turned to the Macintosh,

the result was the remarkable Balance of Power, the first cold-war game. Its combative tools weren't tanks, infantries, and other weapons of military might. Balance of Power trained players in the suggestions, subversions, blusters, and covert threats of diplomatic combat. Instead of staring at a simulated battleground and calculating fields of view, Balance of Power players gazed at a world map, contemplating GNPs and terrorist activity.

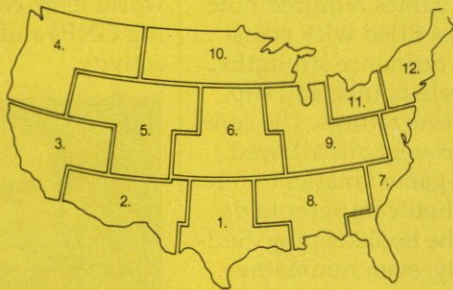


"I'd wanted to do a game about the problem of war and peace for many, many years," Crawford explains. "If you look at the games I've designed, there is a rather clear, logical progression from focusing on the mechanics of war; to asking larger questions about how you win wars; to Balance of Power, which asks questions about how you use military power without getting into a war. In fact, Balance of Power asks, 'How do you use power in general—not just military power but economic and diplomatic



Fly to Florida!

Scenery Disk # 7 covers the entire East Coast area from Philadelphia to Miami. The Florida coastline, from Cape Canaveral to Miami, is perfect for concentrated sight-seeing. Or fly to Washington DC, where scenery details include the Capitol Building, Pentagon, and Washington Monument. Whether seeking the intellectual challenge of Flight Simulator or the brute-force fun of Jet, you'll find this latest evolution of SubLOGIC scenery absolutely breath-taking!



Scenery Disks now available: Areas 1-7
 San Francisco 'STAR'
 Central Japan

See your dealer. SubLOGIC Scenery Disks are available individually for \$19.95. The six-disk Western U.S. set is available for \$99.95. For additional product ordering information or the name of the dealer nearest you, call

subLOGIC
 Corporation
 713 Edgebrook Drive
 Champaign IL 61820
 (217) 359-8482 Telex: 206995
ORDER LINE: (800) 637-4983
(except in Illinois, Alaska and Hawaii)
 Open 7 AM to 9 PM Central Time



CIRCLE 110 ON READER SERVICE CARD



power—to accomplish policy goals without having everything blow up in your face?”

In *Balance of Power*, an individual assumes leadership of either the United States or the Soviet Union with the intention of spreading his philosophies and influence around the world. Players have the ability to distribute financial and military aid, create treaties, fund insurrections, and generally threaten to make the other guys bite the big mushroom.

If a game ends tragically in worldwide nuclear war, Crawford reprimands the player with a text screen that notes, “We do not reward failure.” To succeed in *Balance of Power*, players must learn to pound a fist without pushing the button. And although military force lingers dangerously in the background, it is not the focus of the game.

“The whole thrust of *Balance of Power* is to start you off with the emphasis on military power that most Americans accept and then waltz you down a primrose path away from that emphasis,” Crawford says. One of the triumphs of *Balance of Power* is how skillfully Crawford leads that dance.

“This is highly charged political stuff, and *Balance of Power* in one way or another runs a very real risk of antagonizing people who have strong political beliefs. I chose to emphasize a power-politics view of the world. Yes, the game does have a very strong Chris Crawford stamp on it; but I tried to make that stand palatable to most players.

“The game is pretty evenly attacked by extremists on both sides of the political spectrum. Very staunch conservatives feel the game is a little too equivocal in its comparison of the United States and the Soviet Union. Basically, it doesn’t take into consideration that ‘We’re the good guys, and they’re the bad guys.’ And they resent that. They feel that the game should reflect some fundamental superiority.

“And then, liberals object because it is straight, pure power politics, and they would rather anthropomorphize international relations and emphasize the goodness of spirit that is intrinsic in all human beings.”

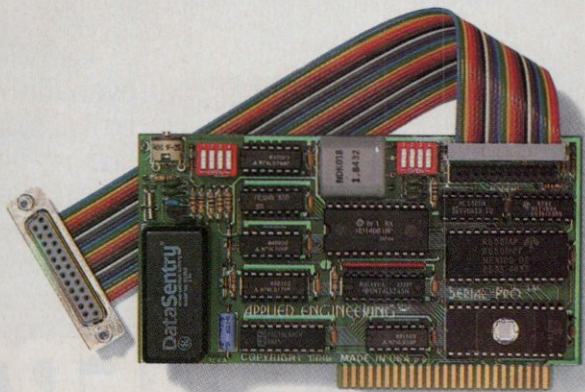
Crawford did not program the Apple II conversion of *Balance of Power* but closely supervised a revision of the Macintosh version of the game to accommodate the graphics and computing power of Apple II computers.

“We didn’t take what we had and start chopping,” Crawford notes. “I redesigned the map completely. I actually added a few countries, but I also took away quite a few. So it’s been an extensive redesign.”

After simulating the world of international geopolitics, what new project could be big enough to stimulate Crawford’s imagination? Next time the context will be human communication and interpersonal relations.

“I’m now deep in the midst of a really weird game,” Crawford reveals. “It’s called *Siboot* (pronounced *See-boot*). It’s very difficult to describe this game because I’ve

Serial Pro® The intelligent multifunction card from Applied Engineering.



Serial Pro is a powerful multifunction card for the Apple IIe, II+, IIgs and compatible computers. Serial Pro combines a powerful serial port for interfacing to a printer, modem or other serial device, with a full function clock/calendar. Serial Pro’s serial port is compatible with virtually all letter quality and dot matrix printers, including Apple’s Imagewriter and Imagewriter II, and can communicate with the fastest external modems at baud rates from 50 to 19,200.

Set up is easy, because unlike other cards, there are no switches to program serial parameters or disks to use. Serial Pro has a built-in setup screen that allows all parameters to be set. And on-screen help that makes it super-easy. An on-board battery stores your selections for over 20 years, but you can change them at any time. Serial Pro is the perfect upgrade for Super Serial card owners looking for more performance or a built-in clock.

Serial Port Features

- Fully Super Serial Card compatible but more versatile and easier to use
- Compatible with printers
- Compatible with modems
- Prints graphics to printer (without software) in normal mode, 90° rotation, double size, side by side, and black/white inversion
- Variable word length, number of stop bits and parity selection
- Crystal controlled circuits are used to provide ultra accurate baud rates.

Clock Calendar Features

- ProDos, DOS and AppleWorks compatible. Displays time and date on the AppleWorks screen
- Automatically time and date stamps AppleWorks files
- 20 year auto recharging nickel-cadmium battery
- Realtime interrupts
- Built-in on screen time and date settings (no software needed)
- Does not use phantom slots.

Serial Pro is perfect for Apple IIe, II+, IIgs or compatible owners in need of a serial port or clock/calendar or both. But unlike other multifunction cards on the market, Serial Pro does not use phantom slots, so all the slots in your computer are useable.

Serial Pro comes complete with manual, cable and instructions for connecting to all the leading printers and modems.

Serial Pro \$159

Order Today! See your dealer or call Applied Engineering, 9 a.m. to 11 p.m. 7 days. Or send check or money order to Applied Engineering. MasterCard, VISA and C.O.D. welcome. Texas residents add 5% sales tax. Add \$10.00 outside U.S.A.

AE APPLIED ENGINEERING™

The Apple enhancement experts

(214) 241-6060

P.O. Box 798, Carrollton, TX 75006

The time: 1400 hours. Somewhere in the Pacific. Some ill-fated coordinates in World War II.



Damage Control reports a hit on the starboard side. Send in Alpha, Baker and Charlie to repair.

eyeball to eyeball action. This time around you'll be right in the middle of it all. You knew it wouldn't be pretty.

But how tough could it be to rescue a downed pilot?

Will it be the twin 40mm Bofors anti-aircraft guns? Or the 5" lead-spewers aft? Depth charges or torpedoes? Autopilot or guts?

LIFE, LIBERTY AND THE HAPPINESS OF PURSUIT.



Radar spots inbound Zeroes. Ready forward gunnery positions. Man the anti-aircraft turrets. They're coming.

You're at the helm, commanding the greatest concentration of firepower

ever put in a lightweight fighter. The deadly Fletcher Class Destroyer.

You've embarked on the first simulation that actually combines the intricate, large-scale strategy of wargaming with the intensity of furious,

It sure seemed a lot easier than shelling islands, escorting a convoy or hunting subs.

Or so you thought. But now look what you've got. Thirteen fully-operational, ear-

bursting battle stations to worry about, all armed to the gills. Not to mention radar. Navigation. Sonar.

And half the Japanese fleet crawling up your spine.

Time to make some tactical decisions.

Any choice could be your last, so make it good.

Suddenly, you hear the ominous rumble of incoming Zeroes. You fire, and send one plummeting to the sea, trailing a plume of smoke.

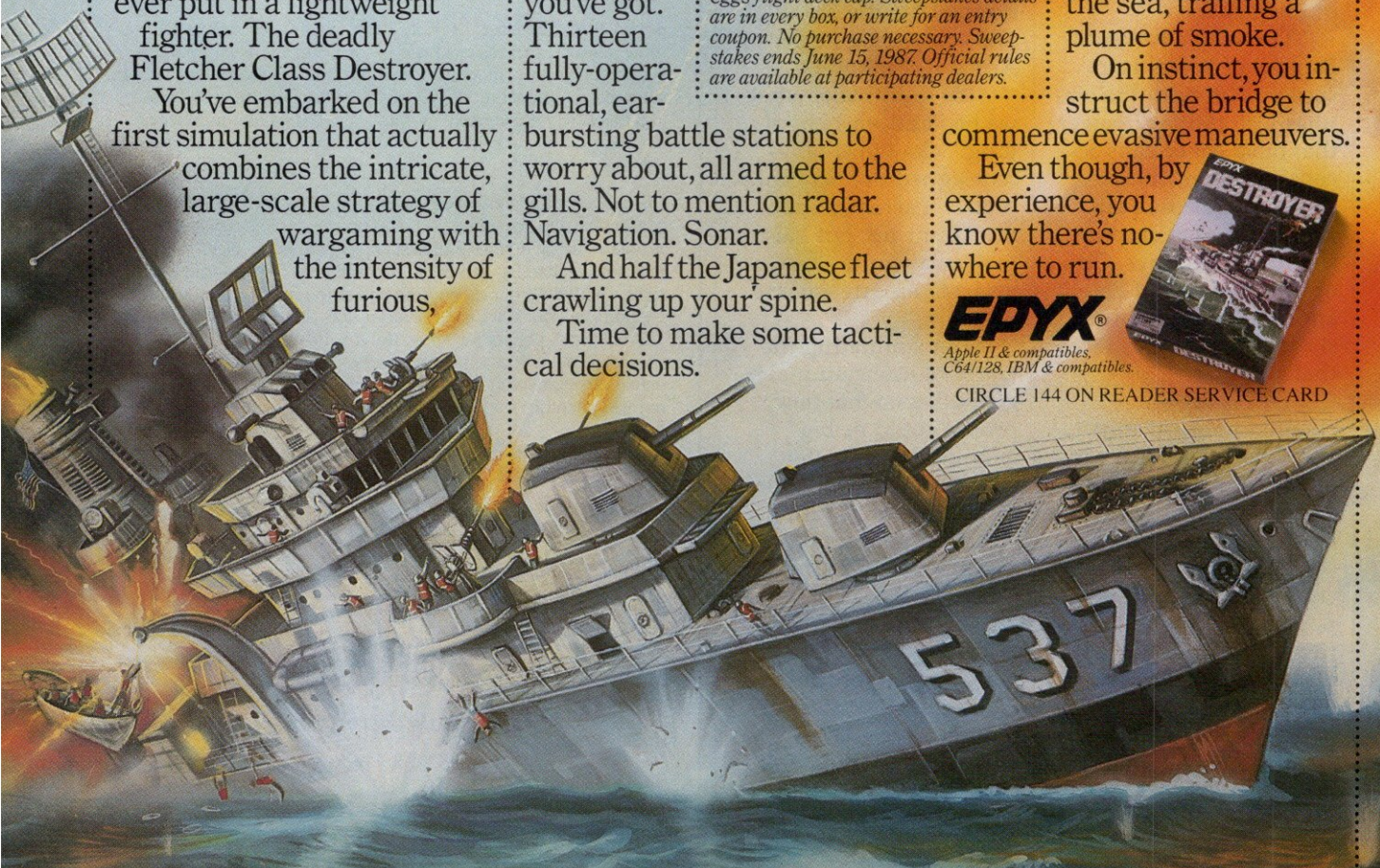
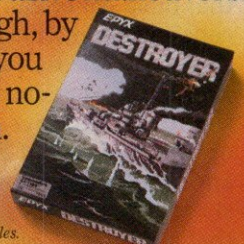
On instinct, you instruct the bridge to commence evasive maneuvers.

Even though, by experience, you know there's nowhere to run.

EPYX

Apple II & compatibles,
C64/128, IBM & compatibles.

CIRCLE 144 ON READER SERVICE CARD



really gone out on a limb here. I wanted to blow open a lot of problems of game design. And so far I'm on track for achieving that.

"It has its own language that you have to learn to speak, and it's an iconic language. I've got the language operational now. And it's nice. You can sit around chatting away in this strange little language. It's got all sorts of strange things in it. It's a very strongly mentalist game. You engage in mind combat with other characters."

So, start developing those muscles between your ears, Crawford fans, and get those little gray cells in aerobic shape. Chris hopes to have Si-boot ready in time for Christmas 1987.

In the meantime, check out the hothouse diplomacy of Balance of Power and try to keep the peace.



TO SIR-TECH WITH LOVE

One question lingers on the lips of Wizardy addicts the world over. Where is Wizardry IV: The Return of Werdna? Shortly after Legacy of Llylgamyn (Wizardry III) appeared, the talk began

about yet another installment in this classic role-playing game series. Was it just talk?

"The talk isn't very loud right now," joked a Sir-Tech spokesperson. "But it is something the programmers are working on. We just don't have any schedule on it."

So don't stop feeding your pet dragon in protest over the delay, or you might find yourself left with a skinny salamander. Don't look for The Return of Werdna soon at your software dealer.

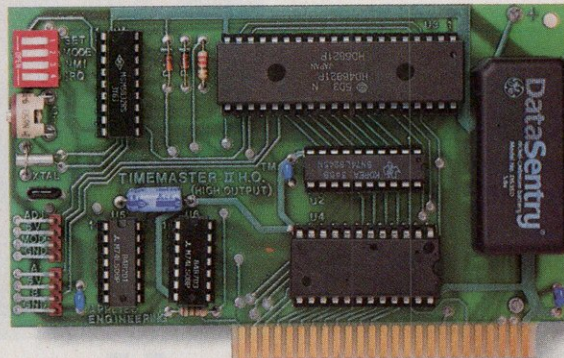
CHEATING THE MAD OVERLORD

I wasn't kidding when I sent out the cry for cheat techniques, uh, I mean game-playing tips, in the November GamePort. Tips on new games have been few in the intervening weeks. Either play testers are getting a lot sharper than they used to be (an Alarming Fact: today's cheater could become tomorrow's play tester), or the modern gamer plays strictly by the rules.

It looks like times have changed. "Sonny," exclaimed the sage old gamer, "In my day the first thing we'd do with a game was boot it and then start pressing every key combination possible. It's amazing how those control keys can uncover things the programmer never thought of." I guess unauthorized key punching is a fading technique, a sad comment on the Reagan era.

In any case, in lieu of a more up-to-date tip, Jim Ahn of Newark, Delaware, contributes a golden oldie for Sir-Tech's

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



Timemaster H.O. So many features its become the world's best selling clock card.

It's the smart way to put the time and date on your Apple IIe® or II+®. Because only the Timemaster H.O. packs ALL the important features of all the competition combined, including leap year, year (not just in PRO-DOS), month, date, day of week, hours, minutes, seconds and milliseconds. It's totally PRO-DOS, DOS 3.3, PASCAL and CP/M compatible. And, of course, it works better than any other clock with AppleWorks.

With the Timemaster H.O., you're assured of reliable, trouble-free operation along with simple, one-command time setting, accuracy through leap years, and a firmware maintained interrupt setting.

If you're using or writing software for other clock cards, you're still covered. Because the H.O. will automatically emulate them. And only the Timemaster H.O. adds 15 new commands to BASIC. The H.O. even comes complete with two disks full of sample programs, including a computerized appointment book, a DOS dating program, interrupt programs, and over 30 programs that others charge you extra for — or don't even offer. As a low-cost option, you can add true BSR remote control to the H.O., giving you remote control of up to 16 lights and appliances in your home or office.

- Time in hours, minutes, seconds and milliseconds; date with year, month, day of week and leap year • 24-hour military format or 12-hour AM/PM format • Eight software controlled interrupts so you can run two programs at the same time (many examples included) • Can be set to the second • Allows AppleWorks to time and date stamp all data automatically • Displays time and date on AppleWorks screens and files • Five-year warranty

Timemaster H.O. \$129.00
BSR option (may be added later) \$ 39.00

Call to order today, 9 a.m. to 11 p.m. seven days, or send check or money order to Applied Engineering. Master-Card, VISA and C.O.D. welcome. Texas residents add 5% sales tax. Add \$10.00 outside U.S.A.

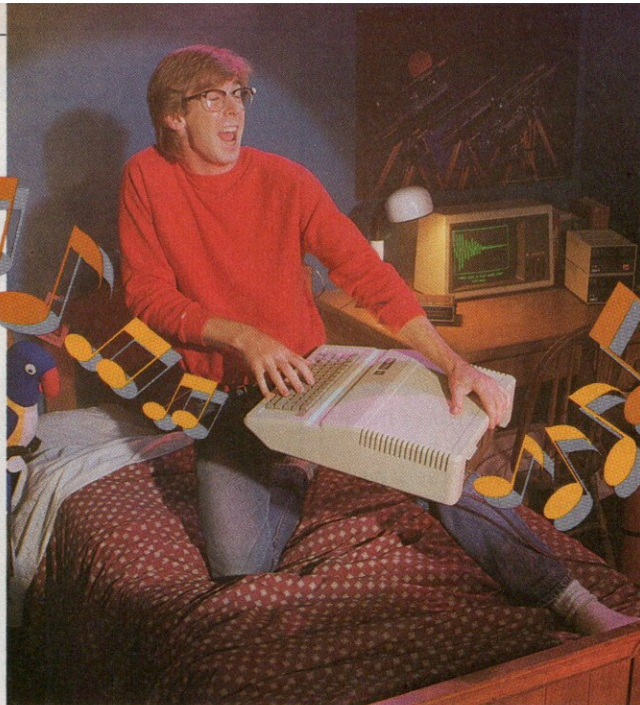
AE Applied Engineering
The Apple enhancement experts.

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



Now you can play your Apple like you've never played before with SoundBuster, the music system that turns your Apple IIe or II+ into a digital synthesizer that *anyone can use*. No musical talent required.

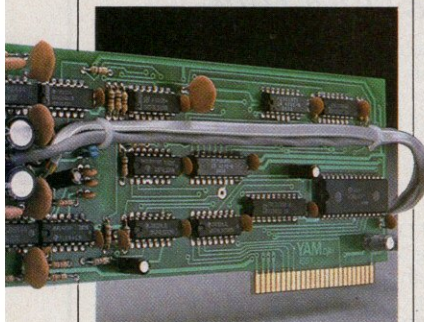
SoundBuster breaks the sound barrier with high fidelity music that'll really shake your



New Games for Preschool Children! **WordBuster**

- Learn to read and spell with real animal and environmental sounds!
- Use a microphone to let children put their own sounds into animated stories!
- Only \$19.95 for SoundBuster owners! (Regular \$40. value)

Have you *really played* your Apple lately?



SoundBuster comes with the YES Card that fits into slot 2 of your Apple.

The SoundBuster System comes complete with:

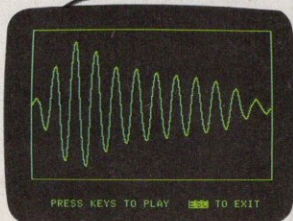
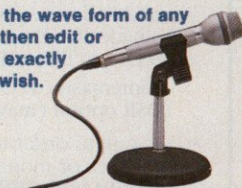
- **The YES Card**
- **Junction Box** with volume controls, speaker and microphone ports
- **SoundBuster System Disk** with synthesizers, sampler, sequencer and wave editor
- **Sound Disk** with over 20 instrumental sounds, background rhythm tracks and sample tunes.
- **Also included is a comprehensive User's Guide.**

SoundBuster requires an Apple IIe or II+ with at least 48K memory and one disk drive.

SoundBuster connects to standard speakers or your stereo system.

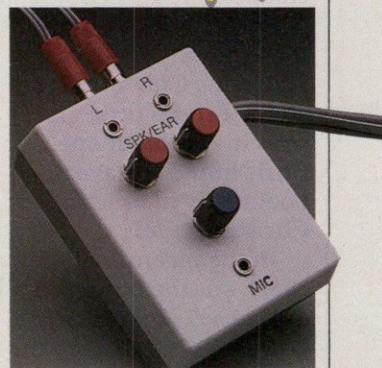
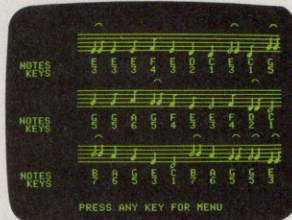
Apple's core. Sound quality that's so good, you can take it center-stage. In fact, a SoundBuster concert was recently staged in London without any additional musical instruments. A video is available upon request.

Call up the wave form of any sound, then edit or 'shape' exactly as you wish.



From good-time rock & roll to the boogie-woogie beat, you'll amaze your friends, your family and even yourself.

Musical notation is displayed as keys are pressed, allowing the absolute beginner to look, listen and learn.



The Junction Box provides volume controls, speaker and microphone ports.

SoundBuster's sampler also lets you record and modify your own sound effects. You can even create and edit sound waves on screen. Build a personal sound effects library.

Order today at our special introductory price of \$99.95. For further information, and to hear SoundBuster in action, call:

(415) 349-8988.

SoundBuster™

BREAKING THE SOUND BARRIER.

YES YAM EDUCATIONAL SOFTWARE
2028 EL CAMINO REAL, SAN MATEO, CA 94403



Wizardry on Apple II computers.

"To give your bishop one million experience points instantly, go to the maze, go to camp, bring up your bishop, and identify number 9." And there's where the experimentation comes in because there are only eight Identify options.

"Some glitch in the game gives your bishop a million points, and from there you can go to the

It's amazing how those control keys can uncover things the programmer never thought of.

Adventurer's Inn and make level after level. Your hit points skyrocket, and you learn all the spells in a flash."

I see that some of the sanctimonious among you are waving your fingers and clucking tongues in disapproval. Cheat? Me? Oh no, I couldn't. What's the matter? You don't think Wizardry: Proving Ground of the Mad Overlord is hard enough? Obviously, you've never brought a character along for six months only to lose him in a sudden ambush. It's OK, cheaters, you go right

ahead with those bishops. But before you do, don't forget to send comments, opinions, and game-playing tips to GamePort, A+ magazine, 11 Davis Drive, Belmont, CA 94002.

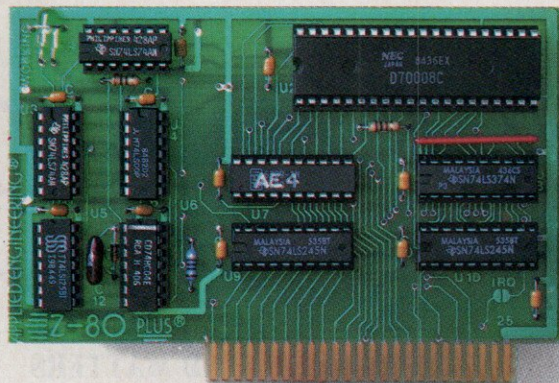
THE MOMENT OF TRUTH

And now it's time for entertainment software to get its praise or just deserts from our crack A+ reviewing team. Here are the games that are about to be analyzed for your amusement.

Mind Pursuit is DataSoft's contribution to the rapidly growing pile of computer trivia games. Shard of Spring finds Strategic Simulations adding tactical combat to computer role-playing games. The Coveted Mirror is another graphic adventure from Penguin Software. Finally, Elite is one of the first of a new breed: a cult computer game. This space-combat and trading program from Firebird has invaded Great Britain and large parts of the U.S. Some folks just can't get enough of it. Next thing, they'll be dressing up in bizarre costumes and playing it every Friday and Saturday at midnight.

+

With the Z-80 Plus, run over 5000 new CP/M® programs.



Now, get two computers in one, and all the advantages of both.

Enter the CP/M world with the new Z-80 Plus card from Applied Engineering, and introduce your Apple IIe, IIgs or II+ to thousands of CP/M programs. Only the Z-80 Plus comes standard with the new 5.1 software, the most advanced system ever for running CP/M programs.

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

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

Each Z-80 Plus comes with our CP/M Ram Drive software, enabling most memory cards to work as a high-speed Ram disk so CP/M software can run up to *twenty times faster*. So packages like WordStar, dBASE II, Turbo Pascal and most others run at blinding speed.

Simply plug the Z-80 Plus into any slot in your Apple. You'll get the benefits of two computers in one—all at an unbelievably low price (only \$149!).

- Fully compatible with ALL CP/M software
- Fully compatible with 5¼" and 3½" disk drives as well as most hard disks including the Sider
- Fully compatible with Microsoft disks (no pre-boot required)
- Specifically designed for high speed operation
- Runs WordStar, dBASE II, Turbo Pascal, and ALL other CP/M software with *no pre-boot*
- Semi-custom I.C. and low parts count allows Z-80 Plus to fly through CP/M programs with extremely low power consumption (we use the Z-80B)
- Does EVERYTHING other Z-80 boards do, *plus* Z-80 interrupts
- Five-year warranty

To get your Z-80 Plus or for more information see your dealer, or call 214-241-6060 9 a.m. to 11 p.m. seven days, or send check or money order to Applied Engineering. MasterCard, VISA and C.O.D. welcome. Texas residents add 5% sales tax. Add \$10.00 outside U.S.A.

AE Applied Engineering™
 P.O. Box 798, Carrollton, TX 75006
 (214) 241-6060

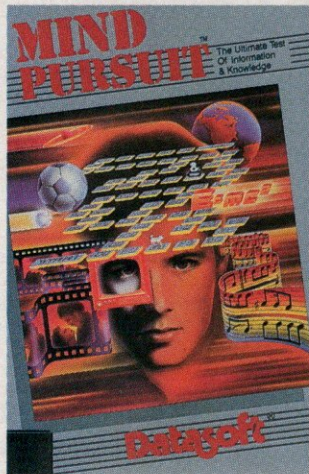
Reviews

This month's game reviews bring you brain teasers, a magical missing crystal shard, a broken enchanted mirror, and space adventure through eight galaxies.

MIND MATTERS

Mind Pursuit, Datasoft's new quiz game for the whole family, meets the growing national craving for knowledge and nostalgia. It offers three types of question with increasing point ratings (true/false, 25 points; multiple choice, 50 points; fill in the blank, 100 points) in six different categories: Science and Nature, History and Geography, TV and Film, Sports and Games, Culture, and Grab Bag. Typical questions are "Who is known as The Father of Medicine?", "What do you examine with an otoscope?", "In Law, a spoken lie under oath is called what?", and "The maximum weight of

MIND PURSUIT
Datasoft, Inc.



a ball in tenpin bowling is how many pounds?."

The game is designed for 1-4 players or teams. At the beginning of your turn, a flashing "die" on the computer screen determines your question category. If you answer a question incorrectly, you lose that question's point value from your score. There are thousands of questions, and you can purchase an additional question disk separately. On repeat play, some of the same questions pop up—but this happens in most trivia games.

You can also play in board-game style. In this mode, the screen shows numbered squares on which you move in response to correct answers. Higher-point-value questions earn you greater progress on the "board." Shortcut options and bonus flashing squares add variety to play.

When you start the game, you can preset the time allowed for answering questions (30, 45, or 60 seconds), or you can play without using the timer. Having a time limit is nice if you get bored waiting for others to give their answers.

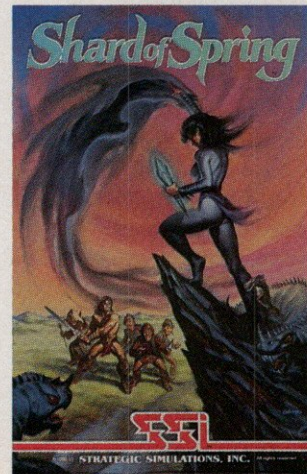
It may be unfair to compare this software to a mere board game such as

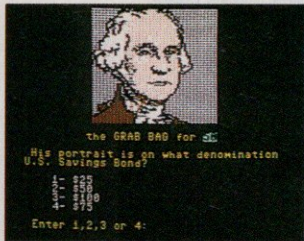
Trivial Pursuit, but I can't resist. One of Mind Pursuit's advantages is that musical and/or graphical clues accompany some questions—something Trivial Pursuit can't do. Mind Pursuit also keeps score automatically. I found the question categories in Mind Pursuit



less rigid than those in Trivial Pursuit. In Trivial Pursuit, for instance, a sports buff may have an edge over other players because sport is a specialized topic not everyone shares. Mind Pursuit, however, has sports and games wedded in a single category, so there's a bit more leeway. Also, you're not required to answer questions from *all* categories as you are in Trivial

SHARD OF SPRING
Strategic Simulations, Inc.





Pursuit—you can play the game out without answering in some areas.

If you've got the impression that I like Mind Pursuit, you're right. It's a great cranial teaser for all ages.

John DiPrete

MIND PURSUIT

Datasoft, Inc.
19808 Nordhoff Place
Chatsworth, CA 91311
(818) 886-5922

LIST PRICE: \$29.95

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

CIRCLE READER SERVICE NO. 400

SHARD OF SPRING

My most exciting hours in graduate school were spent exploring an ancient pyramid on the planet of Tekumel. Recently, Shard of Spring took me on a similar journey to the island of Ymros. In this fantasy/role-playing adventure game, you are searching for—you guessed it—a magical crystal shard. It's been stolen by an evil sorceress, and your mission is to join other adventurers to recover it.

You and your fellows march through the wilderness, fighting monsters, searching through dungeons, and piecing together clues you find or overhear in the taverns. Along the way you ac-

quire gold and other items (if you're lucky). Shard of Spring has all the elements role-playing gamers know and love, plus graphics and some nice refinements.

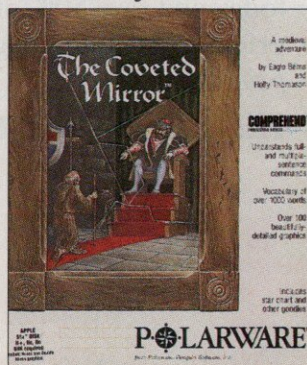
You begin Shard of Spring by forming a party of 1-5 adventurers. These adventurers are either warriors or wizards, chosen from five races: human, elf, dwarf, gnome, and troll (why are humans always the tallest good guys in these games?). All characters have individual traits and skills that determine what they can do and how well they can do it. Traits include speed, attack skill, endurance, intellect, and strength.

Your quest begins outdoors. The screen shows a colorful map of your position on a 9 x 9 grid, and windows show the status of your characters and let you enter commands. As you wander through forests, swamps, plains, and mountains, you may encounter towns, dungeons, and monsters.

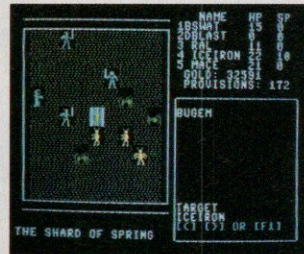
When you encounter a

THE COVETED MIRROR

Polarware/Penguin Software, Inc.



monster, the screen changes to an enlargement of the square you are in. Now each character and monster is shown individually. You can move, strike, or cast a spell by issuing simple commands. Dungeons also have this enlarged combat feature, and the graphics are very good.



Be sure to map the corridors and contents of the dungeons as you go.

Towns are good places to be. You can buy weapons and armor, get healed (or maybe even resurrected), sleep to regain your strength, or chat with other adventurers. Who knows which bits of gossip will ultimately lead you to the shard?

Periodically you can set up camp to equip your players with weapons, identify things you have picked up (maybe), sleep, or print out the current status of each character. As with other activities in Shard of Spring, you select these options from a menu with single key-strokes. The computer responds rapidly to keep the tempo of the game lively.

Shard of Spring contains many features that will keep you from mastering it too quickly. Mag-

ic spells are one example. There are some 24 different spells, grouped into fire, metal, wind, ice, and spirit runes. Only very experienced wizards can use many of these, so you'll have to play for quite a while to encounter everything the game has to offer. The areas to be explored are very large, also, but they are populated enough to stay interesting. One of my few complaints is that encountering too many monsters at once can get boring.

Both beginning and experienced fantasy/role-playing enthusiasts will enjoy Shard of Spring. If you rate your entertainment software by dollars per hour played, this is a bargain.

Karl E. Wieggers

SHARD OF SPRING

Strategic Simulations, Inc.
1046 North Rengstorff Avenue
Mountain View, CA 94043
(415) 964-1200

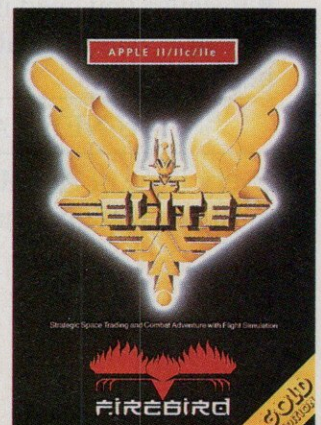
LIST PRICE: \$39.95

REQUIRES: Apple II Plus, IIe, or IIc; 64K RAM

CIRCLE READER SERVICE NO. 401

ELITE

Firebird Licensees, Inc.



THE NO. 1 MAGAZINE FOR ALL



APPLE II USERS

- Because you use an Apple II computer...
- Because you require in-depth product reviews and evaluations...
- Because you want hands-on tutorials...
- Because you need information covering new business, educational and personal applications...

YOU NEED A+ MAGAZINE!

Every issue of A+ Magazine brings you the most complete information on applications,

new products and ways to expand the overall performance of your system. There's no other Apple II magazine as complete and definitive as A+, and there's no better time than now to subscribe to A+ and save 50%!

Enter your subscription to A+ Magazine today and save 50% off the annual single-copy price—that's just like getting 2 issues for the price of 1!

For fast service call 1-800-852-5200!

A+
The #1 Apple II Magazine

REFLECTIVE RESTORATION

For many years, Munjistan's mirror was an instrument of justice and peace. But one day the power-hungry Voar crept in and stole it, hoping to use it for his own evil purposes. As he fled, he broke the mirror into five pieces, escaping with only four of them. Munjistan took the fifth piece and cast a spell on it to hide it. To defeat Voar, someone must reassemble the five shards.

So begins *The Coveted Mirror*, a new adventure game from Polarware/Penguin Software. Actually, the game is more of a puzzle than an adventure—there's no violence, and nothing *really* bad happens if you lose. To win, "all" you have to do is master a complicated series of trades and short-cuts.

The authors, Eagle Berns and Holly Thomason, have filled out their puzzle with a host of entertaining characters and locations. In one direction there's the inevitable prison tower and its adjoining maze of corridors. In the other direction there's a thriving medieval town filled with merchants, peasants, priests, and animals. Beyond the town, things take a mystical turn. There's a magic horse, a secret ring, and a mysterious door; beyond the door lies still another world, this one hidden by the *Impenetrable Mist*. All the characters like to give clues, and most of them respond to a quick wit and a good barter. (Some of them respond to bribes, too.)



The game has many considerate touches. You can save three versions, which helps if you like to cheat. At any point you can bypass the graphics by shifting into the text mode. You can speed the entry of commands by stringing them together with commas. If you suffer from occasional amnesia, the Inventory command lists your booty, and a Help command lists the other commands. An ever-present hour-glass helps you keep track of the time.

The graphics are colorful and detailed. They aren't really animated, but the program does use an "overlay" technique that places a variety of figures against a static background. When you come into the town square, for example, the buildings are always the same, but you often meet a different person—a knight on horseback, or Toby Troublesome, or Granny Garbled-Marbles. Doors and windows open or close as you instruct, and objects that you take leave the picture.

Thanks to Polarware's Comprehend system, you can use full English sentences to manipulate characters. You do have to exercise special care in spelling things out—for instance, the thief can't help you much if you forget to open the stocks after you pick the lock.

★ APPLE ★ COMPUTER

INCLUDES
DRIVE



Compare
AT \$850

APPLE
COMPATIBLE

LASER 128

\$395

FREE
HOME
TRIAL

FREE DELIVERY

PRINTER



\$78

FREE HOME TRIAL



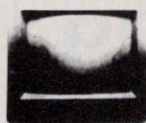
RETAIL
\$349

\$149

BROTHER
NEAR LETTER QUALITY

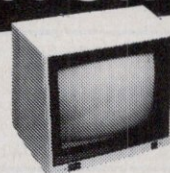
MONITOR

MONOCROME MONITOR



\$59

FREE TRIAL PERIOD



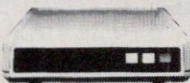
RETAIL
\$450

\$199
RGB

COLOR

MODEM

1200 BAUD
HAYES COMPATIBLE



\$98

FREE HOME TRIAL



\$129
APPLE

RADAR DETECTOR

High
Performance

\$78

SUPERHET



FREE HOME TRIAL

CABLE TV

NO
PAY TV
CONVERTERS/
DECODERS
• JERROLD
• OAK
• HAMLIN



CALL TODAY
FOR PRICE

QUICK DELIVERY

1-800-345-5080

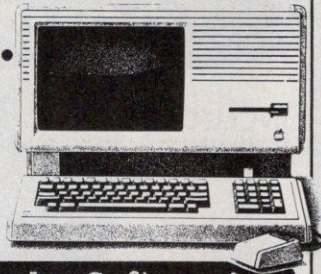
PRO-TECH-TRONICS
6870 Shingle Crk. Pkwy
#103
Minneapolis, MN 55430

When You're Ready to Mouse Around...

The **Lisa**™
Professional

Do it for less with a Lisa.

Runs Macintosh Software!

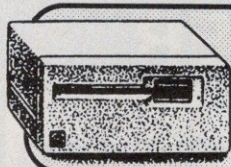


The Lisa Professional. You'll find it nowhere else! A powerful computer with up to a full megabyte of RAM, 40Mb internal hard disk capacity, 400K internal disk drive, large 12" screen and keyboard complete with numeric keypad. And, powerful as it is, it's as easy to run as any Macintosh™ and a whole lot easier to afford!

\$799
Warranted Reconditioned

RAM	DRIVE	PRICE
512K	400K Internal	799.00
1Mb	400K Internal	995.00
1Mb	5Mb ProFile	1495.00
1Mb	10Mb Internal HD	1595.00
1Mb	20Mb Internal HD	1795.00
1Mb	10Mb Internal HD	1795.00
1Mb	20Mb Internal HD	1995.00
Lisa Office System (7/7)		295.00

New! *New!*



Apple® Macintosh™
400K Disk Drives

Original External Drives! **\$79** each
Reconditioned - Warranted

Apple® Modem

- Hayes Compatible
- 300 Baud - New
- With Apple Acc. Kit

1200 Baud \$195

\$89

Limited Supply



SPECIAL PURCHASE

MacWrite™ /
MacPaint™

Write ver. 2.20 - Paint ver. 1.3



Buy Both Only

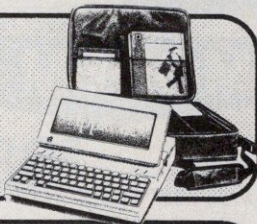
\$99

Apple® IIC

Carry Case

While They Last **\$19.95**

Makes a Great Briefcase!



Comrex®
Deluxe Joysticks

NEW
IN BOX!

- Works on Apple and Franklin Atari 2600, 400/800, Vic 20 Commodore 64, Sears Arcade and ColecoVision
- Can be "fine tuned"

\$14.95

II Adapter 2.00 additional

Specializing in Remarketed and Obsolete Apple Products...



P.O. Box 4059 Logan, UT 84321

ORDERLINE -

1-800-821-3221

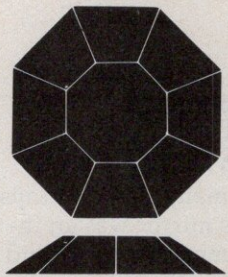
For a complete listing of products
CALL FOR OUR LATEST CATALOG

801-752-7631
Questions - Service



Apple and the Apple logo are registered trademarks of Apple Computer, Inc. Macintosh is a trademark of McIntosh Laboratory, Inc.

ENTERTAINMENT



THARGOID INVASION SHIPS

The Coveted Mirror is the kind of adventure we might have had if Agatha Christie had written *The Hobbit*. You won't invest much in it emotionally, but you'll spend a lot of time pleasantly scratching your head.

Tad Davis

THE COVETED MIRROR

Polarware/Penguin Software, Inc.
521 Hamilton/P.O. Box 311
Geneva, IL 60143
(312) 232-1984

LIST PRICE: \$17.95

REQUIRES: Apple II Plus, IIe, or IIc;
64K RAM

CIRCLE READER SERVICE NO. 402

CELESTIAL CAREER LADDER

As I sit here in the cockpit of my Cobra MK III spacecraft, I see the planet Lave coming up on my scanners. I haven't been back here in a while, and the big white ball on the view screen brings back memories of when it all began.

I was a green space jockey. My rating was Harmless, my police record Clean. My ship? The same Cobra MK III, but without the special equipment I have since added. I had one front pulse laser, shields, four missiles, and a 20-ton cargo bay. The cockpit looked the same then as now. Besides the main view screen, there was the familiar flight-grid scanner that showed ships and other objects in three-dimensional space. Then there were the gauges—forward and aft shields, four energy banks, hyperspace fuel, laser temperature, cabin temperature, altitude, gyros, and the all-important compass that always led me true to the planet or space station nearest

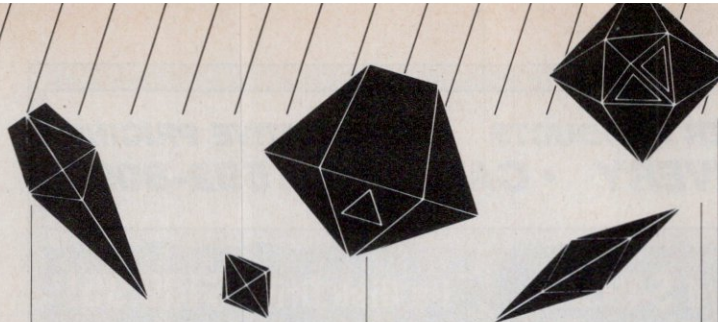
me. I had 100 credits to my name, and I intended to make my fortune as a space trader.

A hundred credits won't buy you diddley in that part of space, so I had to start small. I bought food and textiles on agricultural planets such as Lave and sold them at industrial planets. What a feeling! Eight whole galaxies, each with hundreds of planets to visit, alien life-forms to trade with, profits to make.

Not to mention the glory. There's a bounty on space pirates and Thargoid invasion ships. Of course, you have to kill them before they kill you. I remember studying the space manual, thick with detailed descriptions of expensive equipment I couldn't yet afford, pictures and data on the many common space-going vehicles, and hints for the novice trader on how to get along with aliens and different governments. I learned to stay away from planets whose governments were in Anarchy. Anarchy planets always had too many pirates hanging around to handle with pulse lasers and just a few missiles.

As soon as I could, I bought a docking computer. I had crashed many times trying to master the tricky rotating entrance to the Coriolis space stations where all trading took place. Lucky my resurrection file was kept up to date in the master com-

CIRCLE 103 ON READER SERVICE CARD



World of Computers

CDA WORLD OF COMPUTERS

* HARDWARE * SOFTWARE * ACCESSORIES
* COMPLETE READY-TO-RUN SYSTEMS

NO SALES TAX COLLECTED OUTSIDE N.J.

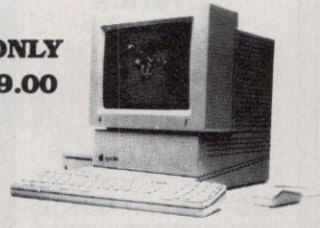
APPLE IIGS SUPER COLOR SYSTEM

System Includes:

- Apple IIGS Computer
- Apple RGB Color Monitor
- Apple 3.5 Disk Drive
- Apple 5.25 Disk Drive
- Apple Imagewriter II
- Applied GS-RAM 256K
- Maxell 10 5 1/4" Diskettes
- Maxell 10 3.5" Diskettes
- Imagewriter Color Ribbon
- Dust Cover for Computer
- Dust Cover for Printer

SAVE OVER \$600.

**NOW ONLY
\$2,449.00**



List - \$3,093.00

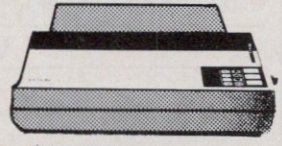
Another Complete Ready-To-Run System -
*When ordering specify Package #8702

EPSON EX-1000 COLOR PRINTER PACKAGE

SAVE OVER \$300.

Package Includes:

- Epson EX-1000 CPS Printer
- Epson Color Option
- Color Printer Ribbon
- Black Color Ribbon
- Orange Micro's Pro Grapppler
- Printer Cable
- Table Top Printer Stand
- Printer Dust Cover
- Package of Computer Paper



List - \$1,249.00

NOW ONLY \$949.00

*When ordering for IIGS/IIe specify package #8703
*When ordering for IIc specify package #8704



New ! IIGS Software	LIST	NOW
Paintworks Plus by Activision	\$ 79.95	\$ 55.00
816 Paint by Baudville	75.00	54.00
Drawing Table by Broderbund	89.95	63.00
Fantavision by Broderbund	59.95	42.00
Print Shop by Broderbund	59.95	42.00
GraphicWriter by DataPak	149.95	108.00
Deluxe II by Electronic Arts	99.99	70.00
Music Construction by Elec. Arts	49.95	35.00
Comworks 16 by PBI	49.95	35.00
Visualizer by PBI	99.95	70.00
Top Draw by Style	99.95	70.00
New ! IIGS Hardware		
Apple 5.25 Drive Platinum	299.00	219.00
Apple 3.25 Drive Platinum	399.00	319.00
Apple Monochrome Monitor GS	129.00	109.00
Apple Color Composite Monitor GS	399.00	299.00
Apple Color RGB Monitor GS	499.00	399.00
Applied GS-RAM 256K	169.00	139.00
Applied GS-RAM 512K	219.00	169.00
Applied GS-RAM 1 MEG	389.00	299.00
Orange Juice Box	CALL	CALL
Orange RamPak 4 GS W/512K	CALL	CALL
Orange RamPak 4 GS W/4 MEG	CALL	CALL

MODEMS	
Apple Personal Modem	\$319
Hayes Micromodem 300	\$139
Prometheus 1200 A	\$219
Prometheus 300 C	\$ 90
DISK DRIVES	
Apple Unidisk 5 1/4"	\$219
Apple Unidisk 3.5"	\$299
Apple Unidisk 3.5 w/cat	\$319
Apple 3.5 Controller	\$ 69
Gamma 5 1/4" IIc	\$139
Gamma 5 1/4" IIc	\$139
Maple 5 1/4" IIc	\$109
Maple 5 1/4" IIc	\$115
PERIPHERALS	
<i>Apple</i>	
IIc Mouse	\$119
IIc Mouse	\$ 82
Super Serial Card	\$99
<i>Applied</i>	
RamWorks III 256K	\$179
RamWorks III 512K	\$209
RamWorks III 1 MEG	\$279
RamFactor 256K	\$189
Ramfactor 512K	\$229
Ramfactor 1 MEG	\$299
RamCharger Battery BkUp	\$149
<i>Phasor</i>	
Z-Ram Ultra 2 256K	\$209
Z-Ram Ultra 2 512K	\$249
Z-Ram Ultra 2 1 MEG	\$309
Z-Ram Ultra 3 256K	\$259
Z-Ram Ultra 3 1 MEG	\$359
<i>Orange</i>	
ProGrapppler	\$ 82
Grapppler C	\$ 86
Buffered Grapppler 16K	\$114
Buffered Grapppler 64K	\$129
<i>SMT</i>	
No Slot Clock	\$ 59
<i>Hayes</i>	
CH Hayes Mach III	\$ 39
CH Hayes Mach IV	\$ 59

NO-RISK 30-DAY SATISFACTION GUARANTEE
If you're not 100% satisfied with any Hardware or Accessories purchased from CDA World of Computers, we will refund your purchase price 100% no questions asked!

FREE TECHNICAL SUPPORT HOTLINE
We support our customers with knowledgeable technicians on all products we sell. A Technical Support Hotline is provided for all our customers.

ORDER VIA MAIL - Write: CDA World of Computers, 31 Marshall Hill Road, West Milford, New Jersey 07480. Please include full name, address, and phone number.

ORDER VIA TELEPHONE - 1-800-526-5313

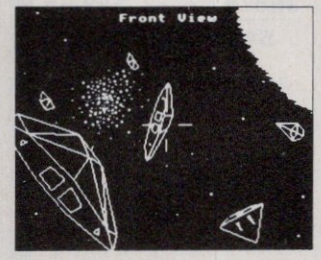
ORDER VIA COMPUSERVE'S ELECTRONIC MALL - 24 hours a day! GO WOC

FREIGHT
UPS GROUND SHIPPING - Add 2% (\$3.50 minimum)
UPS BLUE LABEL SHIPPING - Add 5% (two-day delivery, \$5.50 minimum)
APO/ FPO SHIPPING - Add 4% (\$4.50 minimum)
ALASKA, HAWAII, PUERTO RICO - Add 6% (\$6.50 minimum)

FOREIGN ORDERS - Please call.
MAJOR CREDIT CARDS ACCEPTED - No additional charge! Cashiers Checks, Money Orders, Personal and Company checks accepted. NO COD's please!
In N.J. 201-728-8080
Inquiries & Customer Service 201-728-8082
Mon.-Fri. 9-9 EST Sat. 10-4 EST

puter. Dying these days needn't be permanent, just inconvenient.

After the docking computer and the extra cargo bay (it holds another 15 tons), I bought some beam lasers, front and rear. They were better than the pulse lasers, but I still had my eye on the costly military lasers. I made do with beams for a



while and bought some other items—a fuel scoop to pick up stray cargo and fuel from the sun, and an EEU (Extra Energy Unit) to make my shields charge up faster. An ECM (antimissile system) was essential for avoiding enemy missiles. I also got a one-time energy bomb that could wipe out a whole armada in dire emergencies and an escape pod for those even more dire situations. The escape pod let me keep my money, and insurance supplied me with a fresh ship. I lost the cargo, but I also lost my police record. That came in handy when, to make a buck, I tried trade in guns, slaves, and narcotics. I became a Fugitive, and life became much more difficult. I decided to stay clean after that.

When I finally was able to equip my MK III with military lasers, I became a most daring ad-

venturer. I used to hang out in space near the Anarchy planets just waiting for Thargoids and other low-life scum to try to attack. I liked letting them come close, studying their three-dimensional wire-frame images as they appeared on one of my four view screens. I made short work of them all. By now my rating had climbed from Harmless to Mostly Harmless, then to Competent.

Just as I was beginning to wonder if this was all there was to it, I got a message from the Space Navy. They wanted me to perform a dangerous mission! Well, that's a long story, and it's classified anyway. And then there are the other missions, classified all. So what am I telling you for? I'm the Elite. You'll have to find out for yourself. Just remember, when you think you have it all figured out, beware. Something unexpected and unseen might cut you down to size.

Hey, you want some advice? Study your manual, perfect your maneuvers, and buy low/sell high. And don't take any wooden lasers or trust a blue bug-eyed lobster with his claws behind his back. You'll make Elite. Sure you will . . .

Rusel DeMaria

ELITE
Firebird Licensees, Inc.
P.O. Box 49
Ramsey, NJ 07446
(201) 934-7373
LIST PRICE: \$34.95
REQUIRES: Apple II Plus, IIe, or IIgs;
joystick optional
CIRCLE READER SERVICE NO. 403

ORDERS ONLY
1-800-526-5313
Ad #1019-2

Disk Drive \$99.95!

Printer Card \$49.95!

IIc Disk Drive \$109.95!

JOYSTICK
 for Apple IIe & IIc



AJS-1 \$19.95

VHF COMPUTER INTERFACE

for Apple II, II+, IIe and IIc
 FCC approved, high performance
 VHF interface.

SUPRMOD . . . \$19.95

NUMERIC AUXILIARY KEYPAD
 for Apple IIe-VisiCalc Users
 JE614 \$49.95

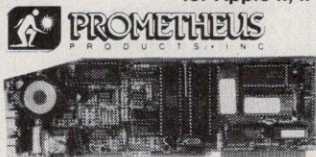
COOLING FAN
 for Apple II, II+ and IIe
 APF-1 \$29.95

SWITCHING POWER SUPPLY
 for Apple II, II+ and IIe
 KHP4007 . . . \$34.95

PARALLEL PRINTER INTERFACE
 for Apple IIc
 MW-100 \$49.95

12" MONOCHROME GREEN MONITOR
 for Apple II, II+ and IIe
 AMON. \$99.95

1200/300 BAUD MODEM
 for Apple II, II+, IIe and II GS



• NEW, single card version • Built-in software in ROM • Comes with ProCom-A disk-based communications software • Hayes compatible • Compatible with ProDOS • Auto-dial/Auto-answer • Auto redial on busy • Built-in speaker and volume control • 2 phone jacks with exclusion switching • 2-year warranty

PM1200A-2 \$199.95

ZOOM

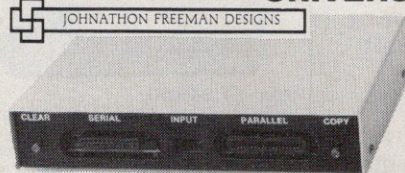
300 BAUD MODEM
 for Apple II, II+ and IIe



• Auto-dial/Auto-answer • Hayes compatible • Includes call progress monitor, speaker, Zoom Communications software and manual • Made in U.S.A.

ZM300 \$89.95

UNIVERSAL 64K/256K



PRINTER BUFFER

for Apple II, II+, IIe, IIc and Macintosh

The UBUFFER Universal Printer Buffer will save you valuable computer time because your computer can send data to the

UBUFFER much faster than your printer can accept and print it. Its dual port feature allows you to take data from either a serial or parallel port on a computer, and send data to either an RS232C serial or Centronics parallel printer. There are four possible combinations: 1) Serial to Serial, 2) Serial to Parallel, 3) Parallel to Parallel, 4) Parallel to Serial.

THREE NEW FEATURES! • Cut sheet feeding • Software selectable output • Modem support • Switch-selectable baud rates (serial) • Ready light • Copy button • Clear button • Weight: 2 lbs. • Manual included

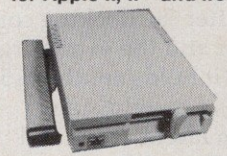
UB64K 64K Universal Printer Buffer \$199.95
 UB256K 256K Universal Printer Buffer \$239.95

64K/256K Parallel Printer Buffer

• Standard Centronics parallel printer buffer • 9VAC adapter included • Size: 9 1/2" L x 4 1/4" W x 1 1/2" H • Weight: 2 lbs. • Manual included

PB64K 64K Parallel Printer Buffer \$129.95
 PB256K 256K Parallel Printer Buffer \$149.95

5 1/4" DISK DRIVE
 for Apple II, II+ and IIe



• Direct drive • 143K formatted • 35 tracks • Super quiet • Works with Apple Controllers or other compatibles (JE875) below • Complete with connector - just plug into your controller • Size: 5 3/4" W x 1 5/8" H x 8" D • Weight: 4 lbs.

ADD-12 \$99.95

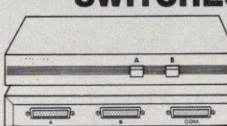
JE875 (Controller Card) \$49.95

5 1/4" DISK DRIVE
 for Apple IIc

• Same specs as ADD-12 (above) except no controller necessary.

ADD-IIc . . . \$109.95

DATA SWITCHES



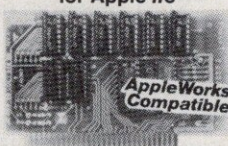
SERIAL 2-WAY
 AB-25 \$49.95

SERIAL 3-WAY
 ABC-25 \$74.95

PARALLEL 2-WAY
 AB-36 \$66.95

PARALLEL 3-WAY
 ABC-36 \$94.95

EXTENDED 80-COLUMN CARD
 for Apple IIe

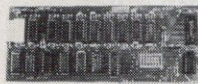


AppleWorks® Compatible!

The JE864 is an extended 80-column/64K RAM Card. This effectively doubles the amount of data that your Apple IIe can display as well as its memory capacity • Ideal for word processing • Ultra High Resolution Graphics capability • Complete with instructions

JE864 . . . **SALE!** . . . \$59.95

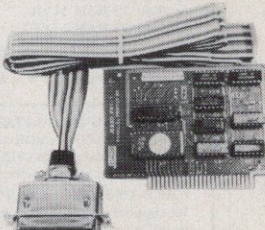
16K RAM CARD



The JE860 RAM Card (Language Card) allows the Apple II and II+ computers to expand from 48K to 64K. Complete with instructions.

JE860 \$39.95

PARALLEL PRINTER CARD



for Apple II, II+ and IIe

• Intelligent interface to most of today's dot matrix graphics printers • Centronics standard • Advanced text printing features

JE880 Parallel Printer Card \$49.95

JE883 64K Buffer for JE880 \$69.95

COMPATIBLE CARDS
 for Apple II, II+ and IIe



Made in U.S.A.!

APPLESURANCE DIAGNOSTIC DISK CONTROLLER CARD
 JE877 \$59.95

128K RAM CARD
 JE868* \$99.95

80-COLUMN CARD
 Smarterm II . . \$139.95

1 MBYTE RAM CARD
 BIGBOARD-256K \$199.95
 BIGBOARD-512K \$249.95
 BIGBOARD-1M \$299.95

\$20.00 Minimum Order - U.S. Funds Only
 CA Residents Add 6%, 6 1/2% or 7% Sales Tax
 Shipping - Add 5% plus \$1.50 Insurance
 Send S.A.S.E. for Quarterly Sales Flyer!

Send \$1.00 Postage for your FREE 1987 Jameco Catalog
 Prices Subject to Change



1355 SHOREWAY ROAD • BELMONT, CALIFORNIA 94002
 Phone Orders Welcome (415) 592-8097 • Telex #176043

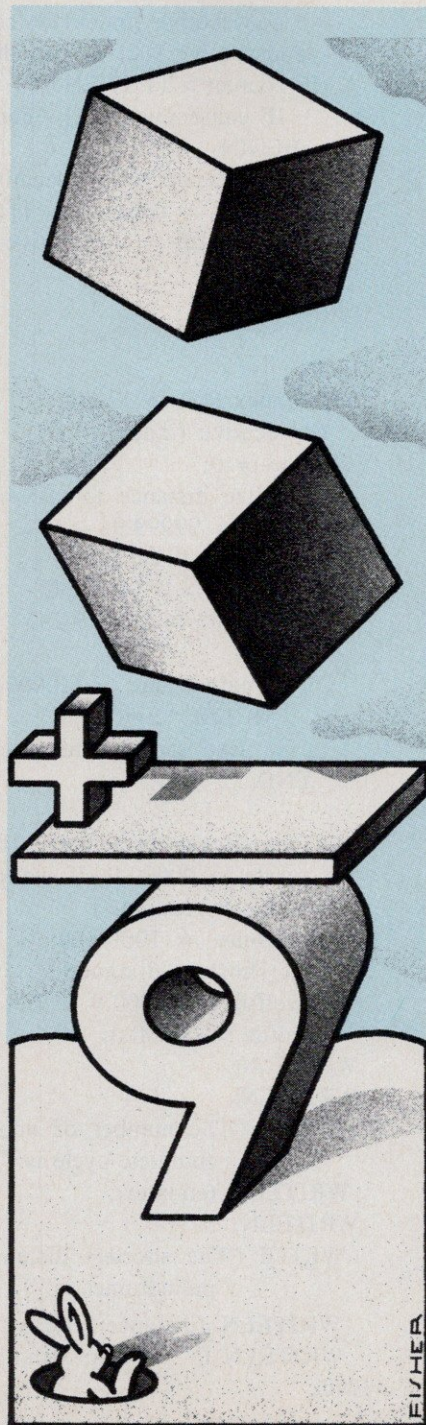
SEARCHING FOR RATIONAL SOLUTIONS

Find the two other numbers whose cubes add up to 9

The numbers 1 and 2, when cubed and added together, produce the number 9. Can you find two other positive rational numbers whose cubes also add up to 9? Hints: Both numbers are obviously fractions; $\sqrt[3]{4}$ and $\sqrt[3]{5}$ are not solutions because they are not *rational* numbers. You cannot solve this problem using real numbers—at least those that are part of the common programming languages found on microcomputers—to compute these fractions because they do not hold enough precision for some of the steps in the computation. This puzzle has a *precise* answer. If you use integers to find numerators and denominators, your computer will not be able to handle numbers large enough to solve the problem.

Send me a complete program that solves the puzzle. Please include output and running time. If you send a disk, please also enclose hard copy. Your program must be short (you can see approximately *how* short by the listing of this month's winner), elegant, and self-documenting. The best solution wins a one-year subscription (or extension) to *A+* and a Certificate of Excellence in Programming and will be published here.

Send all entries, which must be received by February 10, 1987, to Computer Calisthenics, Box 2329, Stanford, CA 94305. All entries become the property of this column's author, who will select the winner and whose decision is final. The winning program will be announced in the May 1987 issue of *A+* magazine.



Answer to November's Puzzle

November's puzzle requested a program that found all palindromic occurrences in one complete cycle through a car's odometer (those that can be expressed algebraically as $xyzyz.x$ (with x , y , and z possibly but not necessarily being all different integers)). It also asked you to find the shortest trip (from where to where on the odometer, in miles) to contain 12 such numbers.

A program that checks for odometer palindromes must include 00000.0 in its reckoning. This is the only number that occurs *twice* in one complete cycle because, of course, a trip could either start at 00000.0 or end there. Also, I specified "one complete cycle through the odometer." By that I meant once through from the all 0s when you first enter the car as it leaves the assembly line to that same palindrome once again, just as the odometer finally rolls over a tenth of a mile after reading 99999.9—not any other 999,999 cycles (as, say, from 11111.1 back to 11111.0).

In such a trip, then, you don't need a computer to figure how many total palindromes there are. Because every instance of the first digit determines the sixth, every instance of the second determines the fifth, and every instance of the third determines the fourth, and because you can have any of ten digits in each position (0 through 9), the answer is simply $10 \times 10 \times 10$ plus 1.

For which is the shortest trip to produce 12 palindromes, a lot of people said there were 18 such, each of 1002.1 miles. Three examples of these are 08998.0 to 10000.1, 09999.0 to 11001.1, and 8999.8 to 91001.9. I asked, however, for the *shortest* trip, which certainly implies one only, not 18. That trip is the 1001.1 miles

from 98998.9 to 00000.0.

Peter Rokitski of Detroit gets an honorable mention for his Apple-soft BASIC program. Peter also correctly states that if "rollovers" are permitted, a second occurrence of a 1001.1 mile trip containing 12 palindromes is from 9999.9 to 01001.0 and comments, "but that is not completed during one cycle."

Marvin Barnes of Clemmons, North Carolina, gets the prize for a Pascal program that produces an answer (depending on your machine) in seconds. When run, the program prints:

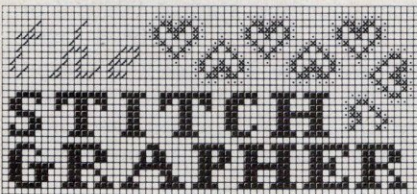
The number of odometer palindromes in one complete cycle is: 1001

The shortest distance containing twelve palindromes is: 1001.1
from: 98998.9 to 0.0

Notice the clever way Barnes constructs a palindrome, as shown in this statement:

```
palindrome := (10000.1 * digit1) + (1001 * digit2) + 110 * digit3;
```

The routine `find_shortest_distance` always assigns the shortest distance found so far to the variable `distance`, with the start of that trip stored in `first` and its end in `twelfth`. +



DESIGN

NEEDLECRAFT CHARTS

for Counted-Cross-Stitch, Needlepoint, Latch Hook, Knitting, etc. using a revolutionary new computer program--

The Stitch Grapher.

Graphs as large as 240 X 400 stitches with up to 30 symbols may be generated and printed with any of 3 grid styles along with a color chart. A unique windowing feature allows the designer to move, copy, rotate, mirror image, save and re-use previous designs.

The Stitch Grapher is compatible with the 64K Apple II series microcomputers. Disk plus 90-page spiral bound manual--\$89.95. Dealer inquiries welcome. To place an order, or for complete information contact

COMPUCRAFTS

RFD 2 Box 216, Lincoln, MA 01773
(617) 259-0409

Supports the Imagewriter and Scribe printers directly (depicted grid style is available for these printers only). Other dot matrix printers require graphics capable interface card or separate support software.

NOVEMBER'S WINNING PROGRAM

PROGRAM odometer;

{ An odometer palindrome is represented as:

digit1 digit2 digit3 digit3 digit2 . digit1

One odometer cycle is from 00000.0 to 00000.0 }

VAR

digit1, digit2, digit3, index, counter : INTEGER;

first, twelfth, distance, palindrome : REAL;

consecutive : ARRAY [1..12] OF REAL;

PROCEDURE find_shortest_distance;

BEGIN

{ Count the odometer palindromes }

counter := counter + 1;

FOR index := 1 to 11 DO

consecutive [index] := consecutive [index + 1];

consecutive [12] := palindrome;

IF counter > 11 THEN

IF consecutive [12] - consecutive [1] < distance THEN

BEGIN

distance := consecutive [12] - consecutive [1];

first := consecutive [1];

twelfth := consecutive [12];

END;

END;

BEGIN

FOR index := 1 to 12 DO

consecutive [index] := 0;

counter := 0;

{ Initialize distance to max value }

distance := 99999.9;

FOR digit1 := 0 TO 9 DO

FOR digit2 := 0 TO 9 DO

FOR digit3 := 0 TO 9 DO

BEGIN

palindrome := (10000.1 * digit1) + (1001 * digit2)

+ 110 * digit3;

find_shortest_distance;

END;

{ The mileage is actually 100000.0 when the odometer resets to 00000.0. If we get that value, reset to actual odometer reading. }

palindrome := 100000.0;

find_shortest_distance;

IF twelfth = 100000.0 THEN

twelfth := 00000.0;

Writeln;

Writeln;

WRITE ('The number of odometer palindromes in one complete cycle is: ');

Writeln (counter);

Writeln;

WRITE ('The shortest distance containing twelve palindromes is: ');

Writeln (distance:3:1);

Writeln (' from: ', first:7:1, ' to: ', twelfth:7:1);

END.

SILICON EXPRESS DISKS
SS/IDD 6.95
DS/IDD 7.95

VERBATIM OR MAXELL
SS/IDD 13.95
DS/IDD 16.95

ELEPHANT
SS/IDD 7.95
DS/IDD 8.95

DATAASE
7.95

SILICON EXPRESS

LASER 128—APPLE COMPATIBLE COMPUTER \$395.95

INSIDE OHIO
1-800-225-0755
YOUR TOLL FREE ACCESS OUTSIDE OHIO
1-800-228-0755
CALL...FOR THE BEST PRICES...
BEST DELIVERY...
We have hundreds of other programs in stock at Fantastic savings.

- Aerojet 24.95
- Additional Fonts 8.95
- Adventure Const. 30.50
- Airheart 22.95
- Algebra 26.95
- Algebra I thru IV ea. 26.95
- Algebra V & VI 34.95
- Alphabet Zoo 18.95
- Alpha Plot 24.89
- Alter Ego 34.95
- American Challenge 27.95
- A Mind Forever Voy. 28.95
- Animate 46.95
- Archon I 12.95
- Archon II 24.25
- ASC II Express 73.95
- Assembly Lines Bk. 16.95
- Auto Duel 32.95
- Auto Works 27.95
- Back-it-up III 42.00
- Bag of Tricks #2 28.95
- Ball Blazer 23.49
- Ballyhoop 22.49
- Bank Street Filer 39.95
- Bank Street Mailer 39.95
- Bank Street Writer 39.95
- Bank Street Speller 39.95
- Bard's Tale 27.50
- Baron 31.95
- Beagle Bag 14.95
- Beagle Basic 17.69
- Beagle Compiler 49.95
- Beagle Graphics 29.95
- Beneath Apple DOS 13.95
- Bnth. Apl. Pro DOS 13.95
- Big U 17.69
- Black's Law Dict. 27.95
- Blazing paddles 27.00
- Bookends 64.95
- Bookends Extended 94.95
- Bop & Wrestle 20.95
- Borrowed Time 22.00
- Breakers 30.95
- Carmen Sandiego USA 29.95
- Carmen Sandiego World 22.95
- Captain Goodnight 19.45
- Cat Graphics 13.95
- Certificate Maker 34.95
- Chshp. Load Runner 19.45
- Chart 'n Graph Tlbx. 23.95
- Classmates 34.95
- Clip Art Vol. 1 16.49
- Clip Art Vol. 2 21.25
- Commworks 57.95
- Complete Graphics 27.95
- Conflict in Vietnam 27.95
- Copy II + 17.95
- Coveted Mirror 11.95
- Crimson Crown 11.95
- Crosstalk 95.00
- Crossword Magic 28.95
- Crusade in Europe 22.95
- Crypt of Medea 21.95
- Cut & Paste 12.95
- Cutthroats 22.49
- Database Toolbox 23.95
- Dazzle Draw 34.95
- Deadline 27.95
- Decision in Desert 19.95
- Delta Drawing 27.95
- DiskQuick 15.49
- Disc Repair Kit 8.95
- Dollars & Sense 67.95
- DOS Boss 12.69
- Dragonworld 17.69
- Easy as ABC 22.75
- Eidolon 21.49
- Enchanter 22.95
- Essential Data Dup 22.49
- Europe Ablaze 28.95
- Extra K 30.50
- Extra K 20.49
- F-15 Strike Eagle 19.95
- Facemaker 17.95
- Factory 31.95
- Family Roots 149.95
- Fantavision 28.49
- Farenheit 451 22.75
- Fat Cat 17.69
- Financial Cookbook 30.00
- Fingertips 24.95
- Flex Type 17.95
- Flight Sim. II 30.50
- Fontrix 53.25
- Fontrix 1 thru 13 ea. 13.00
- Forecast 34.00
- Fontworks 34.95
- Fooblitzky 22.00
- Fraction Factory 19.95
- Fraction Fever 17.95
- Frame-Up 14.95
- Fooblitzky 22.49
- Game Maker 34.95
- Gato 20.45
- Gertrude's Puzzles 24.75
- Gertrude's Secrets 24.75
- Goren Bridge 51.95
- Ghostbusters 23.95
- GI Joe 19.95
- Grammar Gremlins 34.95
- Graphics Department 64.95
- Graphics Expander 22.95
- Graphics Magician 26.95
- Graphics Scrapbook 16.95
- Graphworks 56.95
- Greeting Card Maker 26.95
- GPLE 25.95
- Hacker 27.95
- Hacker II 26.95
- Handlers Package 64.95
- Hey Diddle Diddle 17.95
- Hitchhiker's Guide 22.49
- Home Connection 19.95
- Home Data Manager 19.95
- Homework + 41.00
- Homework Filer 41.00
- Homeworker 59.95
- Image Printer II 34.95
- Impossible Mission 23.50
- Infidel 25.95
- Infiltrator 20.95
- I.O. Silver 15.69
- Jeeves 34.95
- Juggle's Rainbow 18.95
- Karateka 19.45
- Kids on Keys 17.95
- Kid Writer 26.95
- Kinder Comp 19.95
- Knight of Diamonds 19.95
- King's Quest I or II 28.00
- Koronis Rift 23.49
- Leather Goddess 26.95
- Legacy of Lylgamy 22.95
- List Handler 36.95
- Little Comp. People 27.95
- Locksmith 56.95
- Lode Runner 19.45
- Macroworks 19.95
- Magic Spells 20.50
- Man. Your Money 114.95
- Map Pack 8.95
- Master Type 22.95
- Math Blaster 26.95
- Math Maze 27.95
- Medical Dictionary 27.95
- Megaworks 68.95
- Merlin 37.95
- Merlin Pro 55.95
- Merlin Combo 63.95
- Micro Cookbook 26.95
- Micro Lg. Baseball 22.95
- Micro Lg. Manager 22.95
- Micro Lg. Team Disk 13.95
- Micro Lg. Stats 31.95
- Millionaire 17.95
- Mind Forever Voy. 24.95
- Minix 1, 2 or 3 16.95
- Missing Links 31.95
- Moebus 35.95
- Monty Plays Scrabble 32.95
- Moon Mist 26.95
- MouseWrite 94.95
- Most Amazing Thing 22.95
- Multi Disk Catalog 17.95
- Multipan DOS 3.3 65.95
- Munch-A-Bug 23.95
- Murder by the Dozen 17.95
- Murder on Mississippi 26.95
- Music Construction 12.95
- Nam 27.95
- NATO Commander 19.45
- Newsroom 30.95
- One-On-One 12.95
- OO-Topos 11.95
- Paper Graphics 13.95
- PFS: File & Report 69.95
- PFS: Graph 69.95
- PFS: Write 69.95
- Piece of Cake Math 19.95
- Picture Builder 23.95
- Pinball Construction 12.95
- Pinpoint 44.95
- Pitstop II 23.50
- Pixit 31.95
- Planetfall 22.49
- Pond 31.95
- Power Print 24.95
- Prince 48.95
- Printographer 23.95
- Print Shop 28.49
- Print Shop Holiday 14.95
- Pr. Shp. Gr. #1,2 or 3 14.95
- Print Shp. Companion 23.49
- Print Shop Refill 12.25
- Probyter 34.95
- Profiler 2.1 69.96
- Prof. tour golf 25.89
- Program Writer 34.95
- Pronto DOS 14.69
- Quicken 34.95
- Rambo 22.50
- Reach for the Stars 31.95
- Reader Rabbit 22.75
- Reforger '88 41.95
- Rendezvous w/Rama 22.75
- Report Card 31.95
- Report Works 68.95
- Rescue on Fractalus 23.50
- Rescue Raiders 24.95
- Rocky Horror Show 23.95
- Robot Odyssey I 27.25
- Rocky's Boots 27.25

- Sargon III 27.20
- Sat (Harcort Brace) 45.00
- Science Tool Kit 39.95
- Seastalker 22.49
- Sensible Grammar 52.95
- Sensible Speller 64.95
- Shanghai 26.95
- Shadowkeep 22.75
- Shape Mechanic 20.00
- Sideways Pro Dos 41.95
- Silent Service 19.45
- Silicon Salad 12.69
- Skyfox 24.25
- Snooper Trp I or 2 22.95
- Solo Flight 19.95
- Sorcerer 25.95
- Speed Reader II 36.95
- Spell Breaker 26.95
- Spellicopter 23.50
- Spell It 26.50
- Spellworks 27.95
- Spitfire Simulator 24.75
- Spy Hunter 26.00
- Spy vs. Spy 24.95
- Squire 31.95
- Starcross 27.95
- Star Trek 27.95
- Sticky Bear ABC 23.95
- Basket Bounce 23.95
- BOP 23.95
- Car Builder 23.95
- Math Word Problems 23.95
- Music 23.95
- Math 1 or 2 23.95
- Numbers 36.95
- Opposites 23.95
- Printer 23.95
- Reading 23.95
- Rd. Comprehension 23.95
- Shapes 23.95
- Spellgrabber 23.95
- Town Builder 23.95
- Typing 23.95
- Story Machine 17.95
- Story Maker 24.95
- Sum. Games I or II 22.45
- SuperCalc 3A 109.95
- Super Macroworks 32.95
- Super Zaxxon 23.95
- Suspect 25.95
- Suspended 27.95
- Sword of Kadash 11.95
- Take 1 33.95
- Tass Times 26.95
- Technical Dictionary 27.95
- Temple of Apsai Trl. 22.95
- Terrapin Logo 54.50
- Terrapin Utilities 14.95
- Think Tank 88.89
- Thinkworks 68.95
- Time Is Money 56.95
- Tip Disk #1 12.00
- T-Shirt Shop 26.95
- Toy Shop 39.95
- Transitions 13.95
- Transylvania 11.95
- Trinity 22.49
- Triple-Dump 20.49
- Turbo Pascal 3.0 44.95
- Turbo Database Tlbx 39.95
- Turbo Tutor 23.95
- Tycoon 31.95
- Type! 29.95
- Typing Tutor III 28.95
- Ultima III 33.25
- Ultima IV 33.25
- Understanding IIE 17.95
- Understanding II+ 15.95
- Universal file conv 24.95
- Utility City 14.69
- Video Toolbox 23.95
- Visible 6502 31.75
- Wilderness 34.95
- Will Writer 27.95
- Winter Games 22.95
- Wishbringer 22.49
- Witness 22.49
- Wizardry 27.95
- Wizard's Toolbox 23.95
- Wizprint 14.49
- Word Attack 26.95
- Word Handler 36.95
- World Karate Champ 20.95
- Word Perfect 23.95
- Word Spinner 20.50
- World Games 26.95
- World's Great. Bball 19.95
- World's Great. Ftbl 22.95
- Write Choice 41.95
- Zork I 22.49
- Zork II or III 25.95
- 80 Col. 64K Card (II E) 49.95
- Apple Cat II 184.95
- Apple Cat 212 349.95
- Compuserve Starter 21.95
- Datacase 7.95
- Disk Notcher 4.95
- Disk Drive Con. Card 47.00
- Disk Drive American 144.95
- Disk Drive Hi-Tech 119.95
- Essential Data Dup 4- CALL
- Flip-n-File 10.95
- Grappler Buffered 114.95
- Grappler + 69.95
- Grappler (serial) 69.95
- Grappler C 69.95
- Hotlink 44.95
- Koala Pad + 70.45
- Kraft Joystick CALL
- Laser 128 394.95
- Lemon 27.95
- Mach II II+ Joystick 25.95
- Mach III IIE Joystick 25.95
- Mach III II+ Joystick 31.95
- Mach III IIE Joystick 31.95
- Micromodem IIE 139.95
- Mockingboard A or B 64.95
- Mockingboard C 114.95
- Multiram CX 512K 209.95
- Multiram IIE (16 bit) 154.00
- Multiram CX 512K (16 bit) 259.95
- Multiram RGB 64K 194.00
- Multiram RGB 512K 234.00
- Multiram RGB 1024K 314.00
- Multiram IIE 80/64K 124.00
- Multiram IIE 80/256K 159.00
- Multiram IIE 80/512K 194.00
- Multiram IIE 80/768K 229.00
- Paddlesticks 26.50
- Parallel Printer Card 44.95
- Print-It 122.95
- Ram Factor 256K 199.95
- Ram Factor 512K 234.95
- Ram Factor 1 Meg 304.95
- Ramworks 64K 139.95
- Ramworks 256K 174.95
- Ramworks 512K 209.95
- Ramworks 1 Meg 279.95
- Super Serial Card 84.95
- System Saver Fan 59.95
- Thunder Clock 109.95
- Wildcard II 74.95
- ZEE 80A Checkmate 54.95
- Zoom IIE 102.95
- PRINTERS
- Citizen 120D CALL
- LV-1210 189.95
- Star NX-10 255.00
- Okidata 182P 229.95
- Okimate 20 209.95
- Okidata 192P 399.95
- Printer Stand 16.95
- Colored Printer Rbns CALL
- Color Paper Pack 12.95
- MONITORS
- Magnavox Monitors CALL
- Sakata Color 189.95

YOUR ORDER FORM
SILICON EXPRESS

5955 E. Main St. Columbus, Ohio 43213

NAME _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____
CHARGE CARD # _____ Exp. Date _____

QTY.	DESCRIPTION	PRICE

Computer Type _____ SHIPPING _____
Phone No. _____ TOTAL _____

Add \$3.00 shipping, \$4.95 in Hawaii and Alaska. MasterCard, Visa accepted. Personal checks allow 2 weeks. 5.5% sales tax for Ohio residents. Returns accepted within 30 days. 20% restocking fee if not replaced with same item. Compatibility not guaranteed.

SILICON EXPRESS
5955 E. Main St. Columbus, Ohio 43213
1-614-868-6868

TWO WAYS TO ENHANCE THE POWER OF YOUR

AppleWorks

FontWorks™ by Mark Simonsen

\$49.95

Versatile printing for your AppleWorks

Wouldn't it be nice if you had both flexibility and style in your printouts? FontWorks is the solution that will make your AppleWorks printouts look better than ever before! FontWorks reads your AppleWorks files directly and prints them in your choice of 15 good looking, attention-getting typestyles. You can even print sideways and customize typefaces.

No complicated commands to learn. Same easy-to-use menu style. Works with any Apple IIe, IIc or IIgs. Compatible with most dot-matrix printers including ImageWriter, Epson and Okidata.

FontWorks Font Disk \$29.95

This package has 25 new fonts including Chicago, Geneva, London, Monaco, New York and Venice.

Add \$3. shipping and handling.
California residents add 6% sales tax.
Outside U.S. and Canada add \$5.
Dealer inquiries welcome.

FOR ORDERS ONLY:
800-541-0900 (Outside CA)
800-334-3030 (Inside CA)



AutoWorks™ by Alan Bird

\$49.95

- Automates AppleWorks
- Saves Time
- Increases Productivity

AutoWorks automates AppleWorks by adding time-saving features such as Mail Merge, File Organizing, Macros, new AppleWorks Commands and Mouse Control.

With Mail Merge, you can automatically print form letters, fill out forms from your data base files and you don't have to exit AppleWorks.

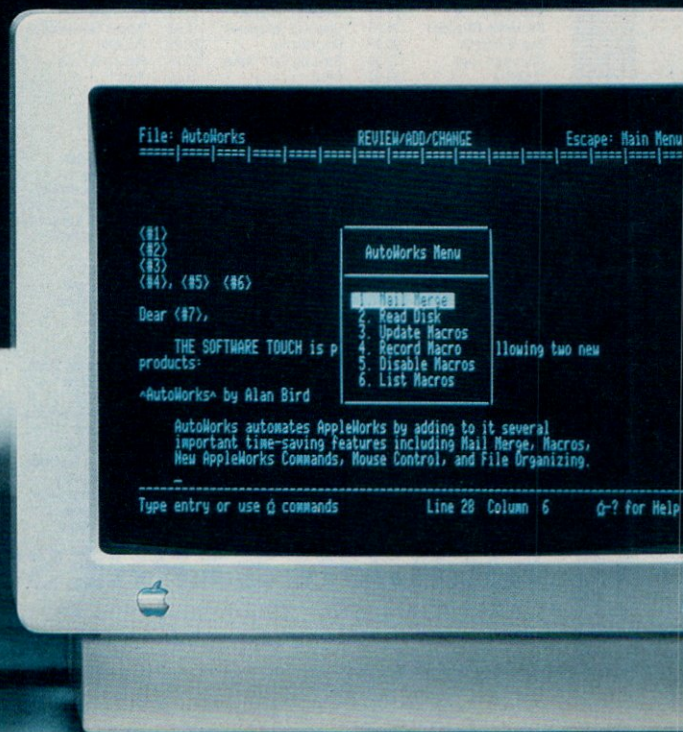
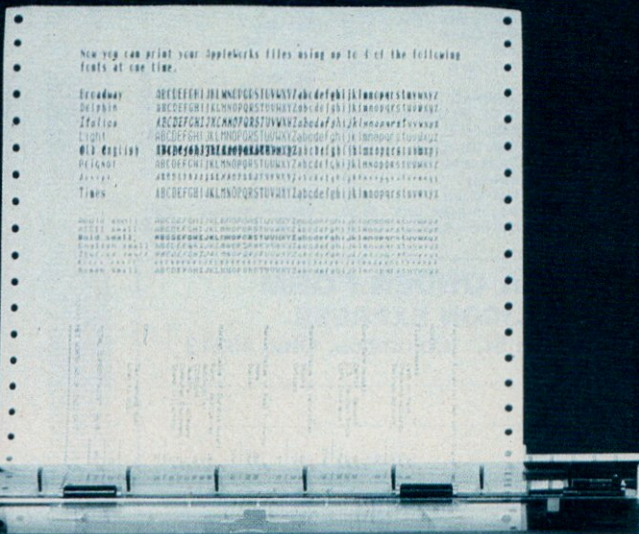
Your mouse can now make menu selections and quickly scroll through and position the cursor in your document, data base file or spreadsheet.

With AutoWork's powerful macros, you can automatically enter hundreds of keys with a single keystroke. The Disk Librarian helps you keep track of all your disk files.

AutoWorks is compatible with AppleWorks versions 1.1, 1.2, 1.3 and 2.0.



9625 Black Mountain Rd., Suite. 204
San Diego, CA 92126
619-549-3091



ON-LINE ORACLE FOR THE NEW YEAR

Telecommunications predictions for '87, BBS news, and teletips

In ancient times, the art of prognostication consisted of examining animal entrails, casting runes, and watching the flight path of birds. As you can imagine, the results were rather erratic.

The funny thing is that, even in this time of high-tech telecommunications, the accuracy of predicting the course of the personal-computer industry can be just as erratic. For example, in the April 1986 issue, I predicted we could all expect junk E-mail. Well, I haven't received any yet—and don't look forward to it either.

On the other hand, I said you would be filing your federal tax returns electronically and was right on the money. The IRS processed more than 25,000 such returns in 1986.

As for the rest of the predictions, they fell somewhere in between. But I'll take another stab at it and log onto my crystal ball to offer some predictions on telecommunications for 1987.

Vision '87

• **Electronic Tax Returns.** Wait a second, didn't I just say that was a pick for '86? Yes, I did, but this time around, the IRS has taken the pilot program and made it more attractive. The agency recently announced that businesses anywhere in the country can file their tax returns electronically. Also, individuals in seven areas of the country—Albany, New York; Cincinnati, Ohio; Milwaukee, Wisconsin; Norfolk, Virginia; Phoenix, Arizona; Ra-



leigh, North Carolina; and Sacramento, California—will also be able to file electronically. Finally, electronic filers can receive an electronic refund by identifying their bank. Check with your local IRS office for more details.

• **Faster Modems for Less.** Faster modems, such as 2400-bps modems, are in a catch-22 situation: people won't buy them because of the high cost and lack of services, yet prices won't fall and services won't change until people buy more of them. Right now, according to Dataquest of San Jose, California, the modem market breaks down like this:

1200 bps	78%
2400 bps	9%
9600 bps	1%
Other	12%

Look for this cycle to break in 1987. Businesses will lead the way, as they look for ways to transmit documents quickly. The 2400-bps market, after it gets rid of the misconception that

these modems cause more transmission errors than 1200-bps modems, will expand dramatically. The 4800-bps modem will be bypassed in favor of the 9600-bps modem, but do not expect either of these high-

Businesses anywhere in the country can file their tax returns electronically.

speed modems to gain general consumer acceptance—you can buy an entire Apple IIGS system with peripherals for the price of one such high-speed modem.

• **Electronic Distribution.** Often, software upgrades are more trouble than they are worth. Mailing an extra disk and manual costs time and effort for both the vendor and the consumer. How much easier it

would be to download code and documentation directly onto a program disk. In the IBM world, Lotus is just starting to offer electronic distribution to corporate "site licensees." So far, Exxon and others have accepted. If Lotus finds such an arrangement cost-effective, you can bet that this idea will spread to other software vendors.

• **ISDN.** The Integrated System Digital Network may be a solution in search of a problem. It replaces the analog telephone system with a digital system, theoretically eliminating the need for a modem (although you would still need a hardware device of some sort to access the network). Its capabilities are impressive, but modem technology tarnishes some of the glitter. Nevertheless, Pacific Bell recently declared its pilot program—Macs hooked into an on-line network—a success and plans to start commercial service later this year. IBM evidently agreed, for it has filed a complaint with the FCC claiming Pacific Bell is in violation of the AT&T divestiture agreement because the network includes a certain type of equipment that Pacific Bell

should not be permitted to operate. Stay tuned for round 2.

• **Junk E-Mail.** Oh, I know I picked this for '86, but I figure if I keep choosing it, sooner or later, for better or worse, it will become a reality. **For Whom the Carrier Tone Polls**

No electronic augury is complete without a look at bulletin board systems (BBSs). System operators are

*Systems operators
are living the
telecommunications
revolution instead
of reading about it.*

generally ahead of their time, for they are living the telecommunications revolution instead of reading about it. A BBS vendor in Sunnyvale, California, called e-Soft has released the results of its poll of almost 200 BBS operators. The company found that

- 93% of those surveyed have upload/download capability
- 67% do not charge for access

- 33% use 2400-bps modems
- the average system receives 45 calls a day

It seems that 2400-bps modems are starting to become popular with the BBS set. I only wonder if the 33% who own 2400-bps modems are the same 33% who charge for their BBS. **W/PUG BBS**

The Word Processing Users' Group, established in 1985, has started a BBS called SCROLL for users of word-processing software. Reviews, tutorials, public-domain programs, and more are available. Annual membership is \$25. **TELETIPS**

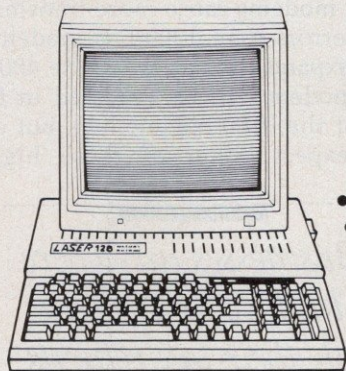
Here's a look at news, views, and breakthroughs in the telecommunications world.

New Products

PBI Software has released Version 1.3 of its terrific telecommunications program CommWorks. Among the upgraded features are XMODEM transmission of ProDOS system files, more powerful macros, the ability to exclude or include control characters when downloading a file, increased ability to work with interface cards, and more protection against accidental deletion of data in

Conroy-LaPointe Inc.

Since 1978
"The name says it all."



Laser 128 **\$379** List: **\$479**

Apple II+ & IIc Compatible

- 128K RAM, 32K ROM
- Internal Floppy Drive
- Mouse/Joystick Port
- Enhanced Keyboard
- Central Point Copy II+
- Serial Modem Port
- Serial Printer Port
- 1 Expansion Slot
- Parallel Port

With Monitor & Cable	List \$652	Conroy \$475
With Monitor, Printer, 2nd Disk Drive & Cables	\$1,136	\$825

Laser 128 is the Apple IIe compatible computer that brings you the best of all worlds. Transportable like the IIc, expandable like the IIe, but priced like a Commodore 128. *A + Magazine* calls **Laser 128** the 'clear winner' of Apple compatible computers.

For Apple II & Laser 128

DRIVES/INTERFACES	List	Conroy
5¼" 143K Drive	\$150	\$135
3½" 800K Drive IIe, IIcS, Mac & 128	\$285	\$195
Controller for above drives	\$100	\$73
Expansion Box, 2 slot for Laser	\$80	\$65

PRINTERS & INTERFACES

CONROY-LAPOINTE Quiet Printer, 10" CPS: 100 & 20 NLQ	\$299	\$199
PANASONIC 1080i, 10", 120 cps	\$329	\$269
STAR MICRO NX-10, 10", 120 cps	\$349	\$285
ORANGE MICRO Grappler for II+/c	\$119	\$79

MONITORS

SANYO 12" Amber Composite	\$158	\$75
MAGNAVOX 12" RGB Hi Res Color	\$499	\$359

MODEMS

CONROY-LAPOINTE 1200 External w/Software	\$299	\$179
---	-------	--------------

DISKETTES

10 ea. + case/100 ea.	
SS/SD 5¼ (Apple II) 10 ea./100 ea.	\$8/\$55
DS/DD 3½ (Mac, H/P) 10 ea./50 ea.	\$20/\$95

YEAR-END CLEARANCE ITEMS

Save up to 75% while they last!	
CENTRAL POINT Copy II+	45% off
BEAGLE Software	55% off
BPI Software	75% off
EDUCATIONAL Software	50% off
WORDSTAR 3.3	50% off
MANY OTHERS (also for Mac)	to 75% off

Ordering Information:

Call our toll-free number,
or mail your order to:

12060 SW Garden Place
Portland, OR 97223



1-800-4-CONROY

(1-800-426-6769) In Oregon: 1-800-451-5151

Local/Foreign: (503) 620-9877 Hours: 6-6 Pacific Mon-Fri, 8-4 Sat

Business Accounts: 1-800-458-8324



Shipping Charges: U.S. & Puerto Rico 3% (\$6 Minimum) except Alaska & Hawaii 6% (\$10 Min.) • Canada 12% (\$15 Min.) • APO, FPO—U.S. Rate PLUS \$5 • Foreign 18% (\$25 Min.) • Prices reflect a 3% discount for cash, so add 3% on VISA, MasterCard, or American Express purchases. Prices subject to change without notice.

A49

Seattle Store: (206) 455-0206 Portland Store: (503) 620-5595 San Francisco Corporate Accounts Sales Office: (415) 751-3830

CIRCLE 129 ON READER SERVICE CARD

the capture buffer. Also, an optional VT-100 emulation module is available. A review of CommWorks, Version 1.2, appeared in the October 1986 issue of *A+*. If you are looking for a telecommunications program, take a close look at CommWorks—Version 1.2 is a first-rate program, and Version 1.3 is even better.

Cellular Interface

For all you upscale readers out there, Morrison & Dempsey Communications has introduced a \$399 AB1X interface for cellular telephones. It provides all the features of a standard telephone line that you don't usually find in an average car. If you own a cellular telephone and a IIc (or other laptop computer for that matter), this device may prove to be valuable.

Dark Side of the Modem

The Associated Press has reported that a hacker who goes by the name of Pink Floyd has broken into dozens of computers at universities and businesses around the country. None of his targets has reported any damage, although Pink Floyd has made subtle alterations to some systems to make detecting his intrusions more difficult. Among the

targets: Stanford University, Lawrence Berkeley Laboratory, Massachusetts Institute of Technology, University of Illinois, Mitre Corporation, and at least three Silicon Valley companies.

Outhacking the Hacker

The Electronic Mail Association (EMA) has released a brochure de-

*Telecommunications
makes the world smaller
all the time. Someday
we'll have a commercial
link to Europe.*

tailoring methods of protecting your E-mail from prying eyes. Among the tips: Create levels of access on the E-mail system, use a common encryption program, and use esoteric passwords. Write to the EMA for a free brochure.

When Visions Collide

The Information Industry Association (IIA) is scheduled to publish a study in February detailing how new information systems will affect

mankind between now and the year 2000. The study, undertaken by the Institute for Alternative Futures and funded by Dun & Bradstreet Corporation and Pacific Telesis Group, is entitled "The Information Business of the Future: A Strategic Planning Process."

According to IIA president Paul Zurkowski, the study attempts to "provide an independent and objective analysis of the issues facing government and industry; provide strategic information that companies can use in developing new products and new markets; and serve to initiate a continuous dialogue among individuals, industry, and government on critical issues."

International Connections

Reader Ed Gilchrist notes that the French government has installed more than two million videotex terminals within the country. That's a lot of people on one system. CompuServe and MCI Mail boast approximately 500,000 subscribers combined. Nice numbers, but, yawn, so what?

Well, you already know you can send E-mail from CompuServe to MCI Mail and vice versa. What you

We Make Measurement And Control Easy!

12 BIT, 16 CHANNEL, PROGRAMMABLE GAIN A/D

- All new 1984 design incorporates the latest in state-of-art I.C. technologies.
- Complete 12 bit A/D converter, with an accuracy of 0.02%!
- 16 single ended channels (single ended means that your signals are measured against the Apple's GND.) or 8 differential channels. Most all the signals you will measure are single ended.
- 9 software programmable full scale ranges, any of the 16 channels can have any range at any time. Under program control, you can select any of the following ranges: ±10 volts, ±5V, ±2.5V, ±1.0V, ±500MV, ±250MV, ±100MV, ±50MV, or ±25MV.
- Very fast conversion (25 micro seconds).
- Analog input resistance greater than 1,000,000 ohms.
- Laser-trimmed scaling resistors.
- Low power consumption through the use of CMOS devices.
- The user connector has +12 and -12 volts on it so you can power your sensors.
- Only elementary programming is required to use the A/D.
- The entire system is on one standard size plug in card that fits neatly inside the Apple.
- System includes sample programs on disk.

PRICE \$319

A few applications may include the monitoring of ● flow ● temperature ● humidity ● wind speed ● wind direction ● light intensity ● pressure ● RPM ● soil moisture and many more.

A/D & D/A

A/D & D/A Features:

- Single PC card
- 8 channels A/D
- 8 channels D/A
- Superfast conversion time
- Very easy programming
- Many analog ranges
- Manual contains sample applications

A/D SPECIFICATIONS

- 0.3% accuracy
- On-board memory
- Fast conversion (.078 MS per channel)
- A/D process totally transparent to Apple (looks like memory)
- User programmable input ranges are 0 to 10 volts, 0 to 5, -5 to +5, -2.5 to +2.5, -5 to 0, -10 to 0.

The A/D process takes place on a continuous, channel sequencing basis. Data is automatically transferred to its proper location in the on-board RAM. No A/D converter could be easier to use.

D/A SPECIFICATIONS

- 0.3% accuracy
- On-board memory
- On-board output buffer amps can drive 5 MA
- D/A process is totally transparent to the Apple (just poke the data)
- Fast conversion (.003 MS per channel)
- User programmable output ranges are 0 to 5 volts and 0 to 10 volts

The D/A section contains 8 digital to analog converters, with output buffer amplifiers and all interface logic on a single card. On-card latches are provided for each of the eight D/A converters. No D/A converter could be easier to use. The on-board amplifiers are laser-trimmed during manufacture, thereby eliminating any requirement for off-set nulling.

PRICE \$199

SIGNAL CONDITIONER

Our 8 channel signal conditioner is designed for use with both our A/D converters. This board incorporates 8 F.E.T. op-amps, which allow almost any gain or offset. For example, an input signal that varies from 2.00 to 2.15 volts or a signal that varies from 0 to 50 mV can easily be converted to 0-10V output for the A/D.

The signal conditioner's outputs are on a high quality 16 pin gold I.C. socket that matches the one on the A/D's so a simple ribbon cable connects the two. The signal conditioner can be powered by your Apple or from an external supply.

FEATURES

- 4.5" square for standard card cage and 4 mounting holes for standard mounting. The signal conditioner does not plug into the Apple, it can be located up to ½ mile away from the A/D.
- 22 pin .156 spacing edge card input connector (extra connectors are easily available i.e. Radio Shack).
- Large bread board area.
- Full detailed schematic included.

PRICE \$79

I/O 32

- Provides 4, 8-Bit programmable I/O Ports
- Any of the 4 ports can be programmed as an input or an output port
- All I/O lines are TTL (0-5 volt) compatible
- Your inputs can be anything from high speed logic to simple switches
- Programming is made very easy by powerful on-board firmware
- The I/O 32 is your best choice for any control application

The I/O manual includes many programs for inputs and outputs.

Some applications include:

Burglar alarm, direction sensing, use with relays to turn on lights, sound buzzers, start motors, control tape recorders and printers, use with digital joystick.

PRICE \$89

Please see our other full page ad in this magazine for information on Applied Engineering's Timemaster Clock Card and other products for the Apple. Our boards are far superior to most of the consumer electronics made today. All I.C.'s are in high quality sockets with mil-spec. components used throughout. P.C. boards are glass-epoxy with gold contacts. Made in America to be the best in the world. All products compatible with Apple II and IIe.

Applied Engineering's products are fully tested with complete documentation and available for immediate delivery. All products are guaranteed with a no hassle three year warranty.

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

Send Check or Money Order to:

APPLIED ENGINEERING
P.O. Box 798
Carrollton, TX 75006

Call (214)241-6060
9 a.m. to 11 p.m. 7 days a week
MasterCard, Visa & C.O.D. Welcome
No extra charge for credit cards

PROF JONES
SUMMER/FALL 1986

ORDER LINE
(208) 342-6939

THOROUGHBRED
GREYHOUND
TROTTER

LOTTERY/LOTTO
FOOTBALL

BASKETBALL
OFFICE HOURS

M-F 8 AM - 5 PM
SAT 9 AM - 1 PM
(Mountain Standard Time)

FREE CATALOG

1840 W. STATE
BOISE, IDAHO 83702

AMERICAN EXPRESS
VISA

PROFESSIONAL HANDICAPPING SYSTEMS

Professor Picks Football™
\$99.95; with win/loss power ratings \$149.95; Professional Series™ \$199.95

Expanded Lottery/Lotto Analysis
Lottery: 3-4 digits \$79.95; Lotto: max. of 99 digits \$99.95; Enhanced Lottery/ Lotto \$129.95

PC-3 Portable Computer (4k)
Choice of Thoroughbred/Greyhound/Trotter Gold Edition™ software. \$249.95

Model 100 Portable Computer (32k)
Choice of Thoroughbred/Greyhound/Trotter Gold Edition™ software with Master Bettor™ \$649.95

PROFESSIONAL SERIES

PROFESSIONAL SERIES™ (Tho/Grey/Trot)
The all new Professional Series™ represents the most advanced handicapping software available.



Analysis Module™
Complete bet analysis highlights this basic Professional Series™ module. Full 50 tracks/kennels/etc. \$249.95

Factor Value/Multiple Regression Module™
Factor Value Weighting highlights this addition module™ \$149.95

Data Base Manager Module™
Automatic storage of last 11 races highlights this module. (\$99.95 with Factor Value Module) \$149.95

GOLD EDITION™ (Tho/Grey/Trot)
The classic Gold Edition™ from Prof. Jones offers flexibility, results, and ease of use.

Gold Edition™	\$159.95
Enhanced Gold Edition™	\$199.95
Limited Gold Edition™	\$299.95
Ultra Edition™	\$399.95

Handicapper's Bulletin Board now available
VHS Training Tapes now available

Terms: Free shipping all software. Add \$6.00 COD / \$6.00 UPS Blue / \$9.00 Out-of-country / ID residents add 5% / 3 weeks personal checks / cash price only add 2% Visa, MC, AMEX. Prices subject to change.

CIRCLE 132 ON READER SERVICE CARD

DIGITAL VISION ALL NEW COMPUTEREYES/2™

VIDEO DIGITIZING SYSTEM FOR APPLE II SERIES COMPUTERS

The world's highest-quality, lowest-priced video digitizer has just gotten even better! The new card-based COMPUTEREYES/2™ for Apple II, II+, IIe and compatibles connects to any standard video source to capture real-world images on your Apple's graphics display. Hundreds of applications!

COMPUTEREYES/2™ features include:

- Fast scanning—single 6 second scan for all capture modes
- Automatic and manual control over both brightness and contrast
- Keyboard-controlled video switching to allow previewing the video source on the Apple monitor.
- New, familiar, Appleworks-style menu
- Standard software supports Apple Hi-Res and Double Hi-Res graphics, plus Gray-Scale boards for really superb images!
- Optional COMPUTEREYES/2™ Enhancement Software package available to convert COMPUTEREYES images to Printshop, Printmaster, Newsroom, and other formats, perform image negate, flip, etc.
- Also available as complete system including quality video camera

See your dealer or order direct. Mass. residents add 5% sales tax. Mastercard, Visa accepted. To order, or for more information, write or call:



STILL ONLY \$129.95

- Versions available for:
- Apple II, II+, IIe and IIc
 - Commodore 64/128
 - Atari 800/800XL/130XE
 - IBM PC and compatibles (\$249.95—includes additional features)
 - Atari ST (\$249.95—full color digitizer)

66 Eastern Avenue

DIGITAL VISION, INC.
Dedham, MA 02026

(617) 329-5400

CIRCLE 170 ON READER SERVICE CARD

may not know is that MCI Mail has demonstrated an E-mail exchange (using CCITT's X.400 standard) between company headquarters in Washington, D.C., and a computer in Cannes, France. This development helps MCI Mail catch up to Western Union, which signed agreements with the French Post and Telecommunications Administration last year. All this activity means that someday we'll have a commercial electronic link to Europe.

Logging Off

Telecommunications makes the world smaller all the time. You can do your part by dropping me an E-mail message on CompuServe (73537,1075) or MCI Mail (RLOCKWOOD) or by relying on the post office and writing a letter in care of A+. I warn you, E-mail gets priority. May your modem be true all year long. +

FURTHER INFORMATION

PBI Software
1111 Triton Drive, Suite 201
Foster City, CA 94404
(415) 349-8765

CIRCLE 351 ON READER SERVICE CARD

W/PUG BBS
Box 144
Malvern, NY 11565
(516) 746-0056 (voice)
(516) 294-9724 (modem)

CIRCLE 352 ON READER SERVICE CARD

Morrison & Dempsey
Communications
19201 Parthenia Street, Suite D
Northridge, CA 91324
(818) 993-0195

CIRCLE 353 ON READER SERVICE CARD

Educomp
2431 Oxford Avenue
Cardiff, CA 92007
(619) 942-3838

CIRCLE 354 ON READER SERVICE CARD

EMA
1919 Pennsylvania Avenue NW
Suite 300
Washington, DC 20006
Written inquiries only

CIRCLE 355 ON READER SERVICE CARD

IIA
555 New Jersey Avenue NW
Suite 800
Washington, DC 20001
Written inquiries only

CIRCLE 356 ON READER SERVICE CARD

TIPS AND TECHNIQUES

Readers share tips for the II

Welcome to the second month of our new "Tips and Techniques" section. This month we are using a sampling of tips from Bert Kersey and Bill Sanders' *The Big Tip Book for the Apple II Series* (Bantam Books, 1986) while we wait for you to send in your great tips. If we publish your contribution in this column, you'll receive credit, and we'll pay you \$2500 (that typo got your attention—it should be \$25.00). We are looking for your ingenious routines, insignificant tricks, Easter eggs (unusual commands embedded inside a program that cause secret messages to appear), or whatever you feel might be

useful or fun for other readers.

So don't wait another day—send us your best tips to share with all the A+ readers.

A+ magazine
Attn: Tips and Techniques
11 Davis Drive
Belmont, CA 94002

SQUEAKY DRIVE?

If your Disk II drive is driving you up the wall with a squee-eee-eak as it does its thing, it probably has a worn pressure pad. If you're good at

taking things apart (aren't we all?) and getting them back together properly, take the four Phillips screws out of the bottom of your drive and slide off the metal case. Remove the two Phillips screws that hold down the horizontal green board inside. Carefully unmount the green board (watch what you're doing; you have to put it back!). It will remain connected to the drive by wires. Now, insert a disk in the drive and close the drive door. You will see the pressure pad (a little cottony thing about ¼ inch in diameter mounted on the end of a black arm) on top of the oval slot of the disk. Turn the pressure pad's black screw about a quarter turn. This should rotate it just enough to stop the squeaking. Or you can fluff the pad up with a screwdriver or something.

Warning: All of this will undoubtedly void your warranty if anyone finds out what you've done... but it's your equipment, right? If you mess up your drive, forget where you read this.

While you've got the cover off, watch your drive work; it's fun! INIT a disk, DELETE some file, CATALOG, and so on, and watch the pressure pad move. The read/write head is directly under the pressure pad contacting the bottom of your disk. Disk drives are indeed amazing.

IIC POWER OFF?

Did it ever occur to you that turning a IIC off using the built-in switch doesn't turn off the power supply, which is halfway down the cord... or does it?

SCREEN SHIFTER

This program performs a fast, simple memory move from Applesoft, similar to the one on the PEEKs and POKEs chart. Run it and press the left arrow a few times until any character other than a space is in the upper-left corner of the screen. Then press the right arrow.

```

10 POKE 768,216: POKE 769,160: POKE 770,0:
   POKE 771,76: POKE 772,44: POKE 773,254:
   LIST: LIST
20 HTAB 1: PRINT "<- ->:";: GET A$:ST =
   1024:EN = 2046
30 DEST = 1024 + (A$ = CHR$(21)) - (A$ =
   CHR$(8)): GOSUB 100: GOTO 20
100 I = INT (ST / 256): POKE 60,ST - 256 *
   I: POKE 61,I
110 I = INT (EN / 256): POKE 62,EN - 256 *
   I: POKE 63,I
120 I = INT (DEST / 256): POKE 66,DEST -
   256 * I: POKE 67,I: CALL 768: RETURN

```

The left arrow moves the text screen memory down one byte; the right arrow moves it up. Because of the nature of this memory move, the upward move *copies* the value of the first byte (VTAB 1, HTAB 1) all the way through the screen.

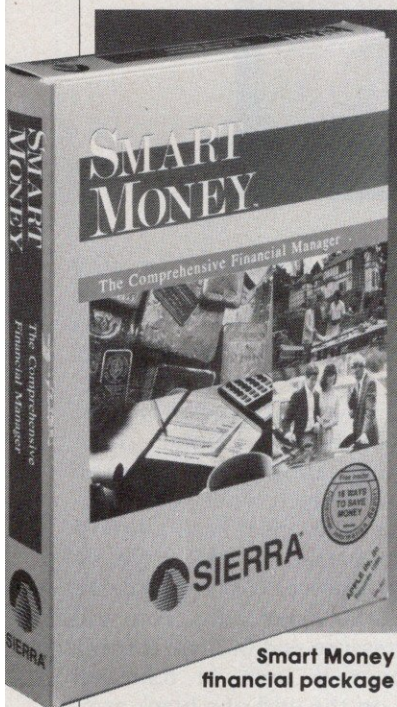
Try pressing the right arrow when a character is in the upper-left corner of the screen.

P

I

P

E



Smart Money financial package

SMART MONEY

An easy-to-use financial-management package for personal and small-business use, Smart Money provides a full range of accounting features to record cash, check, and credit-card transactions. Users can create budgets and adjust and track them easily. The program can balance monthly checking and credit-card statements and can print checks customized with the user's name, address, and company logo. It can track assets, liabilities, income, and expenses for up to 200 accounts and can print a variety of detailed reports. It also contains special financial-computation templates that let users perform in-

vestment analysis on stock, commodities, and real-property purchases, and "what if" calculations on annuities and loan-interest charges. (List Price: \$79.95)

Requires: Apple IIe or IIc, 128K RAM
Sierra On-Line, Inc.
P.O. Box 485
Coarsegold, CA 93614
(209) 683-6858

CIRCLE READER SERVICE NO. 536

TEKDRAW

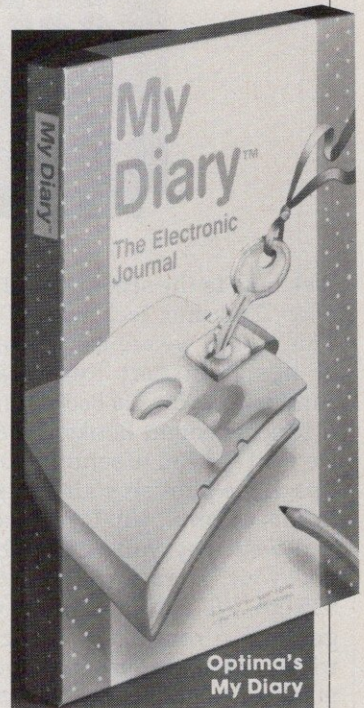
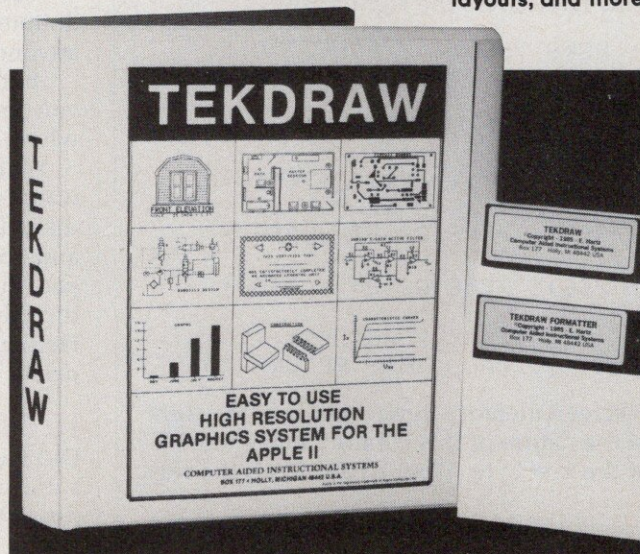
A flexible, easy-to-use graphics system, Tekdraw lets users design circuit schematics and boards, robotic systems, architectural layouts, certificates, charts, graphs, and more. Users can draw, plot, write text, erase, and create drawings to their own specifications and can rotate and position symbols

on the screen. Each package contains hundreds of predrawn technical symbols and shapes; a technical screen-format library of predrawn grids, scales, borders, and curves; and a keyboard menu card. It also contains utility programs, such as a memory reader, ASCII keyboard decoder, picture reconstructor, and a Page II to Page I HGR graphics converter. (List Price: softcover version, \$69.95; hardcover version, \$79.95; two backup disks, \$15)

Requires: Apple II Plus, IIe, or IIc; 48K RAM; one disk drive
Computer Aided Instructional Systems
North Service Drive
Building #5
P.O. Box 177
Holly, MI 48442
(313) 634-7574

CIRCLE READER SERVICE NO. 523

Tekdraw helps users design circuit schematics, architectural layouts, and more.



Optima's My Diary

MY DIARY

An entertaining and educational program, My Diary: The Electronic Journal is designed to promote creative thought and writing skills. Users "unlock" their diary by entering a unique secret code. They can then make daily entries for up to one year and record addresses, telephone numbers, and birthdays in a separate section. Users can change days and edit text with simple commands. (List Price: \$19.95)

Requires: Apple II Plus, IIe, or IIc
Optima Techniques, Inc.
1200 E. 104th Street
Suite 200
Kansas City, MO 64131
(816) 942-3727

CIRCLE READER SERVICE NO. 522

L

I

N

E

ALPS AMERICA DOT-MATRIX PRINTERS

ALPS America has introduced six dot-matrix printers suitable for producing graphs, CAD/CAM printouts, forms, and project-management charts. The fast, high-resolution printers also feature letter-quality and seven-color printing, quiet operation, easy-to-use front-panel buttons, cartridge slots that accept multiple fonts, and interchangeable 18- and 24-pin printheads.

Designed for multi-user setups, the P2400C

Series printer features a 4K buffer, expandable to 256K; a push-and-pull tractor feeder; and a wide carriage. The 24-pin P2424C prints draft at 360 cps, correspondence at 180 cps, and letter quality at 120 cps; the 18-pin P2418C prints draft at 250 cps and letter quality at 125 cps.

For high-volume, single-user applications, the ALQ300 Series offers a standard 7K buffer, expandable to 64K and a wide carriage. The 24-pin ALQ324 prints draft at 240 cps, correspondence at 120 cps, and letter qual-

**The Sound-write
Acoustical
Cover Pedestal
from Ring King
Visibles**



ity at 80 cps. The 18-pin ALQ318 prints at 200 cps in draft mode and at 100 cps in letter-quality mode.

Finally, the ALQ200 Series of narrow-carriage printers for single users offers a standard 7K buffer, expandable to 64K. The 24-pin ALQ224 prints draft at 240 cps, correspondence at 120 cps, and letter quality at 80 cps, and the 18-pin ALQ218 offers draft printing at 200 cps and letter-quality printing at 100 cps. (List Price:

P2424C, \$1395; P2418C, \$1295; ALQ324, \$995; ALQ318, \$895; ALQ224, \$695; ALQ218, \$595)

ALPS America
3553 North First Street
San Jose, CA 95134
(408) 946-6000

CIRCLE READER SERVICE NO. 521

SOUND-WRITE ACOUSTICAL COVER PEDESTAL

Ring King Visibles has introduced the Sound-write Acoustical Cover Pedestal for use with its line of Sound-write Acoustical Covers. Available in oak or walnut wood grains, the pedestal is designed to provide mobility and storage capacity for printers housed in Acoustical Covers. The unit features adjustable storage for continuous forms, comes with double front doors, and rides on four double-wheel casters. (List Price: \$329.95) Ring King Visibles, Inc. 2210 Second Avenue P.O. Box 599 Muscatine, IA 52761 (319) 263-8144

CIRCLE READER SERVICE NO. 520

**ALPS America's new
dot-matrix printers
offer seven-color
printing.**



P I P E L I N E

HARDWARE

PROWRITER C-185 SUPRA PRINTER

Designed for multiuser business use, the ProWriter C-185 Supra is a quiet, 24-pin dot-matrix printer that prints at up to 400 cps in draft mode and up to 162 cps in letter-quality mode. It features a special diamond-shaped printhead and incorporates a 16-bit 8086 chip with one megabyte of ROM and 64K of RAM. A 42K buffer is standard. Users can select all print-er functions, including a Clear Buffer function, from the front panel.

Other features include a Copy+ function that



The ProWriter C-185 Supra from C. Itoh

lets it handle up to six-part forms, the ability to produce true circles for pie charts, bidirectional graphics print with a resolution of 180 x 360 dpi, built-in character fonts, enlarged printing, and tractor feed. Available as options are a download font card, Font Master

software, bidirectional tractor feed, and single- and dual-bin sheet feeders. (List Price: \$1995) C. Itoh Digital Products 19750 S. Vermont Avenue Suite 220 Torrance, CA 90502 (800) 423-0300 (213) 327-2110

CIRCLE READER SERVICE NO. 524

ELECTROHOME PROJECTORS

Electrohome has released two systems for projecting data and graphics—the ECP 2000, a high-resolution color system, and the EDP-58XL, a light-weight monochrome system. Both systems offer an aspect ratio of 3:4.

The ECP 2000 has a lens capable of resolving 1024 x 1280 pixels and converges colors inside the projector instead of on the screen. Three external controls let users vary the system's focus, adjusting center, corner, and top-to-bottom optical foci for screen sizes from 5 to 14 inches diagonally. It also features electronic pincushion circuits that

Print-It!

THE NEW APPLE® COMPATIBLE SERIAL AND PARALLEL PRINTER INTERFACE

Go From Screen to Paper and Disk* at the Touch of a Button.

The ONLY way to get fast, easy printouts of ANY screen, at ANY time, with ANY program.

Push the red button that comes with PRINT-IT! - Your program pauses instantly; touch RETURN and whatever is on your screen - text, graphics or both - is printed in color or black & white.

Whether your Apple II, II+, IIe[®] 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 II/e and Videx[®] 80 column cards including the new Apple 80 column RGB card
- Software - Prints from ALL software, even allows any printer to be used directly from Apple MousePaint
- Printers - All of the most popular printers,[®] including color, are easily selected with a dip switch.

PRINT-IT!, complete with cable (serial or parallel), is available at your local computer store now! If they don't have it in stock, ask them to get it for you.

Can't find a local dealer? PRINT-IT! is available for \$199 directly from Texprint.[®] Qualified educational and dealer discounts available.

¹ Visa/MC/AMX accepted. Add \$4 shipping and handling within USA. Mass res. add 5% tax.

² Apple II, II+, IIe, and MousePaint are registered trademarks of Apple Computer, Inc.

³ CP/M is a registered trademark of Digital Research.

⁴ Videx is a registered trademark of Videx, Inc.

⁵ Apple DMP/IMAGEWRITER/SCRIBE, BMC, C. Itoh, Canon, Epson, Dataproducts, IDS, Tally, NEC, Okidata, Quadram, Panasonic, Radio Shack, Star Gemini, Transstar, Diablo plus many others.

*"Save It!" Disk for only \$29.95.

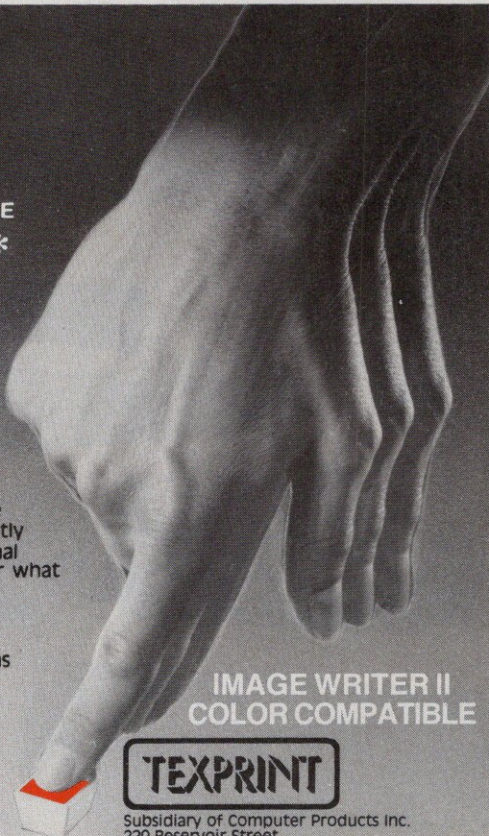


IMAGE WRITER II
COLOR COMPATIBLE

TEXPRINT

Subsidiary of Computer Products Inc.
220 Reservoir Street
Needham Heights Ma. 02194
Tel. (617) 449-5808

For information call Toll Free
1-800-255-1510



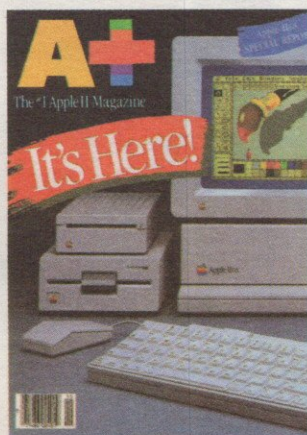
The #1 Apple II Magazine

If you own or use an Apple II computer, subscribe to **A+** and you'll get the ideas and information you need to improve the way you work with your Apple II.

- IN-DEPTH PRODUCT REVIEWS AND EVALUATIONS.
- HELPFUL BUSINESS, EDUCATIONAL AND PERSONAL APPLICATIONS.
- HANDS-ON TUTORIALS.
- USER-TO-USER TIPS.

FREE WITH YOUR PAID SUBSCRIPTION THE **A+** UTILITIES AND PROGRAM DISKETTE! Imagine receiving a state-of-the-art Telecommunications program... a new program that creates sounds for your IIGS... an educational game to teach children fractions... programs that create bar, line and pie charts, easily and quickly... 5 new commands to expand the programming capabilities of your Apple II and up to 10 more valuable business, educational, recreational and utility programs FREE WITH YOUR PAID SUBSCRIPTION TO **A+**! Subscribe today, Save 50% and get your FREE **A+** diskette!

For faster service call toll-free,
1-800-852-5200



SUBSCRIBE TO **A+** AND SAVE UP TO 50%!

Please enter my subscription to **A+**:

- 1 year (12 issues) \$19.97. Save 44%!
 2 years (24 issues) \$35.40. Save 50%!

Name _____ 45937

Company _____

Address _____

City _____ State _____ Zip _____

Check one: Payment enclosed Bill me later

Your **A+** Utilities and Program Diskette will be shipped upon payment. Add \$5 per year outside US for postage, US currency only. Please allow up to 60 days for delivery of first issue. Basic annual subscription price is \$24.97.



SUBSCRIBE TO **A+** AND SAVE UP TO 50%!

Please enter my subscription to **A+**:

- 1 year (12 issues) \$19.97. Save 44%!
 2 years (24 issues) \$35.40. Save 50%!

Name _____ 45937

Company _____

Address _____

City _____ State _____ Zip _____

Check one: Payment enclosed Bill me later

Your **A+** Utilities and Program Diskette will be shipped upon payment. Add \$5 per year outside US for postage, US currency only. Please allow up to 60 days for delivery of first issue. Basic annual subscription price is \$24.97.

GIVE



AS A GIFT & SAVE!

Please enter the following one-year gift subscription to **A+** for only \$19.97, a 44% savings off the single copy price of \$2.95.

SEND TO: _____ 45945
 Company _____
 Address _____

City _____ State _____ Zip _____

GIFT FROM: _____

Company _____

Address _____

City _____ State _____ Zip _____

- Payment enclosed
 Bill me later

Charge My:
 Visa Amex
 MasterCard

Card No: _____

Exp. Date _____

Please enter a subscription in my name too!

Your **A+** Utilities and Program Diskette will be shipped upon payment. Add \$5 per year outside US for postage, US currency only. Please allow up to 60 days for delivery of first issue. Basic annual subscription price is \$24.97.



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

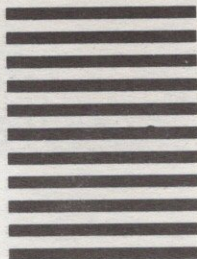
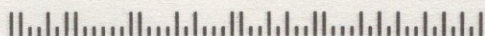
BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 66 BOULDER, COLORADO

POSTAGE WILL BE PAID BY ADDRESSEE



P.O. Box 52324
Boulder, Colorado 80321-2324



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

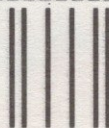
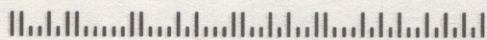
BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 66 BOULDER, COLORADO

POSTAGE WILL BE PAID BY ADDRESSEE



P.O. Box 52324
Boulder, Colorado 80321-2324



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

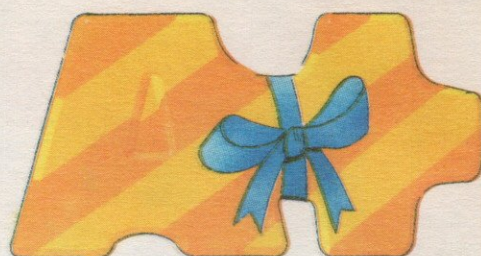
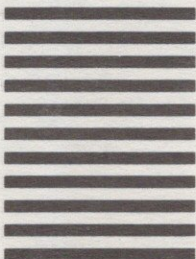
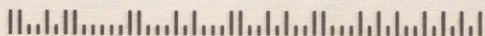
BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 66 BOULDER, COLORADO

POSTAGE WILL BE PAID BY ADDRESSEE



P.O. Box 52324
Boulder, Colorado 80321-2324



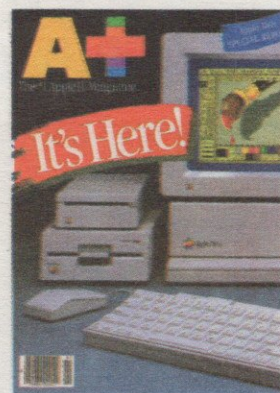
GIVE A ONE-YEAR SUBSCRIPTION TO A+

...And give a friend thousands of ways to get the most out of their Apple II! Your **A+** gift brings:

- INFORMATIVE ARTICLES
- HANDS-ON TUTORIALS
- USER-TO-USER-TIPS
- TIMELY PRODUCT REVIEWS
- INDUSTRY NEWS

SPECIAL OFFER:

The **A+ UTILITIES AND PROGRAM DISKETTE** will be shipped with each paid subscription. This special diskette, not available in any store, provides valuable business, utility, educational and entertainment programs to expand the functions and capabilities of your Apple II system—and it's FREE with each paid order!



P I P E L I N E

correct the projected image's top, bottom, and sides for use with flat, curved, or rear screens. The projector can be mounted on a castored cart or mounted on a ceiling with an optional yoke.

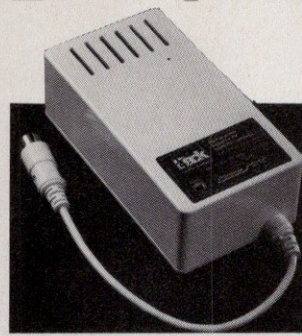
The EDP-58XL projector displays a P53 green-phosphor image; P45 white phosphor is available on special order. The system offers a resolution up to 1300 lines and can be focused continuously to provide a projected picture measuring from 4.5 to 10 feet diagonally. Other features include pin-cushion circuits to correct distortion to within 3% and a front panel that lets users adjust the lens focus

for curved or flat screens. (List Price: ECP 2000, \$11,995; EDP-58XL, \$3,895) Electrohome (U.S.A.) Inc. 1155 S. Milliken Avenue Suite F Ontario, CA 91761 (714) 983-5660

CIRCLE READER SERVICE NO. 525

QUARTERBACK

Designed to work with Apple IIc computers, Quarterback is a backup power supply that can provide the computer with power for 15 minutes. The lightweight, automatic power supply connects in series between the plug-in power supply and the IIc. When the power-line voltage falls below 103 v A.C., the device's internal battery



Quarterback, a lightweight, automatic power supply

takes over. During backup operations the unit emits a tone every 16 seconds, changing to once every 2 seconds as automatic shut-off approaches. (List Price: \$97.95)

Requires: Apple IIc Powersine Products 3517 Collier Avenue P.O. Box 16887 San Diego, CA 92116 (619) 280-1646

CIRCLE READER SERVICE NO. 526

SOFTWARE

FEDERAL TAX FORMS

SKY Computer Resources has announced the 1986 edition of Federal Tax Forms for AppleWorks users. The product comprises AppleWorks spreadsheet templates that automatically calculate and reproduce 12 commonly used tax forms and schedules. Each form or schedule is a separate desktop file containing three sections: a short set of instructions, a transfer area, and the actual form. The transfer area contains information that is required in more than one form, and the software

pd Precision Data Products™
Complete Line of Quality Supplies for Your Computer

TOLL FREE ORDER LINE
800-258-0028
FOR INFORMATION CALL
616-452-3457

3M Diskettes



5 1/4" DISKETTES

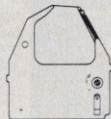
SSDDRH \$.76 Each
DSDDRH97 Each
DSHD 96TPI 2.17 Each

3 1/2" DISKETTES

SS MICRO \$1.32 Each
DS MICRO 1.76 Each
Sold 10/Box



THE CLEAN IMAGE™ PRINTER HEAD CLEANING KIT



Cleans your dot matrix print head in less than one minute. Compatible with Apple ImageWriter I & II and others. Good for up to 10 cleanings.

\$14.95 Each
FREE SHIPPING

PRINTER RIBBONS

Quality replacements for most popular printers. Min./6.

AppleImagewriter \$3.95 ea.
Apple Scribe \$2.95 ea.
Epson LX 80/90 \$2.95 ea.
Okidata 80/82/83 \$1.49 ea.

Min. Order \$25.00. Add 10% for less than 50 disks. S&H: Continental USA \$4.00/100 or fewer disks. \$2.00 per dozen ribbons. Reduced shipping charge on larger quantities. Foreign orders, APO/FPO, please call. MI residents add 4% tax. Prices subject to change without notice. Hours: 8:30 AM - 7:00 PM ET.



Precision Data Products™
P.O. Box 8367, Grand Rapids, MI 49518
Customer Service & Information: (616) 452-3457
Toll Free Order Lines: MI 1-800-632-2468
Outside MI 1-800-258-0028

CIRCLE 228 ON READER SERVICE CARD

BUSINESS • SCIENCE • EDUCATION

The complete
Apple II
statistical
package
for only:

\$99

APP-STAT™

A Powerful Tool for Data Analysis and Forecasting

- Easy to use, no commands to memorize (menu-driven)
- Descriptive Statistics, t-tests (independent and dependent samples), General ANOVA/ANCOVA (up to five factors, **unlimited number of cases**, Repeated Measures, unbalanced designs, contrasts, adjusted means, and more), Correlations, Multiple Regression (up to 15 predictors, **unlimited number of cases**), Crosstabulation, Significance Tests, 10 Nonparametric Statistics, and more
- User defined (multiple) conditional selection of subsets of cases, various ways of treating missing data
- Flexible Data Editor; easy entering/editing of data, complex (conditional) transformations of variables, and more
- Can also access files created by spreadsheets and data bases
- Barcharts, Scatterplots, clear comprehensive output
- Will run on APPLE II+, IIc and IIe with 80 column display, 1 disk drive

To order send check or money order for \$99 (plus \$5 for shipping and handling) to:



StatSoft™



2832 East 10th Street, Suite 4, Tulsa, OK 74104. (918) 583-4149

ASK ABOUT THE VERSION FOR MACINTOSH!

CIRCLE 207 ON READER SERVICE CARD

P I P E L I N E

automatically places this information in the appropriate location on the form.

Each form and schedule is a duplicate of the IRS tax form and can be used in place of it. (List Price: \$39.95)

Requires: Apple IIe, IIc, or III (with III EZ Pieces); 128K RAM; AppleWorks; printer optional
 SKY Computer Resources
 P.O. Box 204
 Portland, OR 97207
 (503) 234-7291
 CIRCLE READER SERVICE NO. 527

DESKTOP

The first in Simple Software's series of desktop tools for the IIGS, Desktop features an enhanced calculator; a control panel; a system lock that provides password security; a chart of ASCII codes in character, decimal, and hex; a scrapbook that lets users cut and paste pictures and text among ap-

plications; a notepad; a cursor editor; a puzzle; and more. Users install all tools on and select them from the Apple icon on the menu bar of their application. (List Price: \$29.95)

Requires: Apple IIGS Simple Software
 4612 N. Landing Drive
 Marietta, GA 30066
 (404) 924-2667
 CIRCLE READER SERVICE NO. 535

ON BALANCE PERSONAL-FINANCE PROGRAM

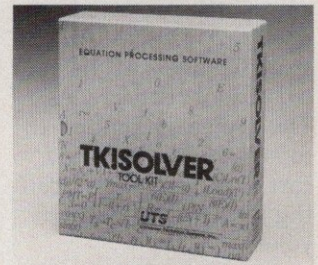
On Balance is a fast, easy-to-use, personal finance program with information screens that work and look like a checkbook register.

Users can create up to 175 accounts and can change names and types of accounts at will. They can define any account as an asset, liability, income, or expense and can flag

any tax-related expenditures for easy recall at tax time. Each month users can enter up to 800 financial transactions, and they can store an entire year's data on one disk.

The program displays on-screen warnings when recurring transactions, such as mortgage payments, are due and can update records automatically. In addition to keeping records and paying bills, the program works as a financial-planning tool for creating monthly and annual budgets. On Balance can also print a variety of reports and is compatible with AppleWorks. (List Price: \$99.95)

Requires: Apple IIe or IIc, 128K RAM
 Brøderbund Software
 17 Paul Drive
 San Rafael, CA
 94903-2101
 (415) 479-1170
 CIRCLE READER SERVICE NO. 529



The equation-processing package TKISolver

TK!SOLVER

Universal Technical Systems has reduced the price of its equation-processing software package TK!Solver. The program is suitable for such applications as financial management, engineering, physics, and science. (List Price: \$99)

Requires: Apple IIe or IIGS
 Universal Technical Systems, Inc.
 1220 Rock Street
 Rockford, IL 61101
 (800) 435-7887
 (815) 963-2220
 CIRCLE READER SERVICE NO. 530

ZIMCO

INTERNATIONAL, INC.
 85-39 213 St., Queens Village, NY 11427

- ◆◆◆ APPLE ACCESSORIES ◆◆◆
- A+ MOUSE (IIc, Mac)\$69
 - Applied Engineering Ramworks III 256k/1Meg\$175/269
 - Applied Engineering RGB Option\$97
 - Applied Engineering Time- or View-master\$95
 - Applied Engineering ZRam 512K\$289
 - AST Multi I/O (IIe)\$149
 - COLOR ENHANCER IIc w/Dazzle Draw\$119
 - Cooling Fan\$24
 - 80 Column Card (II+)\$69
 - Ext. 80 Col. Card 64K(IIe)\$59
 - Graphics Printer Card\$55
 - KENSINGTON System Saver\$59
 - KOALA Pad Plus\$78
 - KRAFT Joystick\$26
 - Joystick for Apple II, II+, IIc (Internal)\$17
 - MOCKINGBOARDSA/B/C/D\$Call
 - OM GRAPPLER + /Buffered\$72/129
 - OM Grappler + /Serial/IIc\$72/78
 - PICO Joystick\$25
 - Printer Interface Parallel\$40
 - 16K Ram Card\$35
 - Super Serial Card\$69
 - VIDEO 7 SLOT 7 (RGB Interface)\$100

FREE SHIPPING
On Prepaid Orders

If it computes, we sell it—Macintosh, Apple, IBM, printer supplies, cables, hardware, software, complete systems. Call toll-free for current prices & huge \$3.50 catalog. Prices are for cash/check. *Needs interface. VISA/MasterCard & purchase orders accepted.

◆◆◆ SOFTWARE ◆◆◆

- GRAPHICS DEPARTMENT\$65
- NEWSROOM\$33
- Newsroom Clip Art vol.1/vol.2\$16/23
- PINPOINT\$46
- PRINT SHOP (New Color Version)\$28
- Print Shop Companion\$23
- Print Shop Graphics Libraries 1/2/3\$15
- SENSIBLE GRAMMAR /SPELLER\$53/64
- SPRINGBOARD Certificate Maker\$31
- Where In The World Is Carmen San Diego\$46
- THE BARD'S TALE\$29

CHRISTMAS SPECIAL

LASER 128 w/MONITOR \$465
APPLIED ENG. RAMFACTOR
512K...\$212 256K...\$175
RAMWORKS 512K...\$190

◆◆◆ PRINTERS ◆◆◆

- APPLE Imagewriter II\$465
- BROTHER HR15-XL\$339
- CITIZEN 120D/MSP-10\$186/290
- EPSON FX-85\$405
- Epson FX-286\$525
- Epson LX-90 w/picl\$235
- NEC Pinwriter P2+\$425
- OKIMATE 20 w/interface\$190
- OKIDATA 192P/193\$330/455
- PANASONIC KXP-1092/1592\$330/419
- QUME LetterPro20+ /Sprint1400*\$592/899
- SILVER-REED EXP-800\$649
- STAR NX-10 Parallel\$239

ZIMCO

INTERNATIONAL, INC.
 85-39 213 St., Queens Village, NY 11427

◆◆◆ DRIVES ◆◆◆

- APPLIED ENGINEERING Disk Drive\$103
- CORVUS Hard Drive\$Call
- Disk Drive - Apple II Series\$99
- PICO Apple II Disk Drive w/ 1yr.warranty\$139
- TYMAC 3.5" Drive IIc\$279

◆◆◆ MONITORS ◆◆◆

- AMDEK 300 Green\$115
- Amdek 600/722\$375/489
- PANASONIC DTH-103\$389
- PRINCETON HX-12 (RGB)\$399
- TOMSON CM36512 VI 14" RGB\$278
- TOMSON CM36632 IV Composite Monitor\$153

◆◆◆ MODEMS ◆◆◆

- Applecat 212 system/upgrade\$353/214
- HAYES Smart Modem 300 (IIc)\$152
- Hayes 1200/2400\$359/559
- Hayes Micromodem IIc\$128
- 1200 Baud Hayes Compatible\$169
- NOVATION Applecat II\$187
- PROMETHEUS PRO-MODEM\$269
- Prometheus 1200A\$239
- US ROBOTICS Courier 2400\$399

1-800-227-6647

Inquiries, Tech Support & NYS:
Call 718-479-7888

P I P E L I N E

VIDEOFILE

VideoFile lets users catalog VHS or Beta VCR tapes. Users can generate lists of shows, in order of length or alphabetically, on-screen or on a printer. VideoFile can also find spaces on tapes for new recordings, delete shows, translate VCR counter numbers into hours and minutes and vice versa, find shows, and display a status report about tapes' contents. (List Price:

\$39.95, \$10 for demo disk)

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

VideoFile

P.O. Box 480210

Los Angeles, CA 90048

CIRCLE READER SERVICE NO. 419

GUNSLINGER

In Gunslinger, the player takes on the role of Kip Starr, a retired Texas Ranger whose only wish is to spend the rest of his days in peace. His wish is not to be granted, though. He learns that his best friend will be hanged in two days unless Kip can rescue him and that the six Dalton brothers are on their way to settle old scores with him. During the game, Kip must travel through a ghost town, explore a deserted mine, negotiate with hostile Indians, and escape from an army fort, all the time avoiding ambushes by the Daltons.



Gunslinger, an adventure game from IntelliCreations

The game uses a split-screen format with graphics in the upper-left section, command choices on the right, and text at the bottom. (List Price: \$29.95)

Requires: Apple II Plus, IIe, or IIc; 64K RAM
IntelliCreations, Inc.
19808 Nordhoff Place
Chatsworth, CA 91311
(818) 886-5922

CIRCLE READER SERVICE NO. 421



Pascal for the Apple IIgs!

TML Pascal - one of the most popular development systems available for the Apple Macintosh is now available for the Apple IIgs!

TML Pascal

\$125.00

TML Pascal is a fast, one-pass native code 65816 Pascal compiler supporting full GS ROM access for developing stand-alone ProDOS16 applications and desk accessories. The compiler supports separate compilation of units, Pascal strings, type coercion, SANE, and much much more.

Available in two versions:

- As a tool to run within Apple's APW environment
- As an integrated mouse-based editing environment

TML Resource Edit

\$49.00

Resource Edit is a multi-window, mouse based tool used to graphically create and modify the definitions for the menus, windows, dialogs, alerts, cursors, etc. used in an application. After creating the resources for an application, Resource Edit automatically generates the code necessary to use each resource in your application. This tool is a must for any serious Apple IIgs developer! Can be used with TML Pascal, APW C, and APW Assembler.

TML Source Code Library

\$49.00

The Source Code Library is a large collection of Pascal source code examples with complete documentation demonstrating the techniques for programming the many fascinating features of the APPLE IIgs. Examples include the use of QuickDraw, Sound, Menus, Windows, Dialogs, and many more all ready for use in your own applications.

TML Pascal and Source Code Library

\$150.00

Please enclose \$5.00 shipping and handling with all orders.



4241 Baymeadows Rd. Suite 23, Jacksonville, FL 32217
To order by Visa, MasterCard or C.O.D. Call (904) 636-8592.

CIRCLE 160 ON READER SERVICE CARD

P I

SALARY MAGIC

Salary Magic is a package designed to help users gather data for use in salary negotiations and office management. Suitable for industrial, insurance, educational, and other situations, the package contains an integrated spreadsheet and database for calculating, recording, and printing virtually any information that might be needed at the negotiating table. Users can quickly determine the cost of proposed contracts and can compare different schedules in terms of dollars, percentages, or both. For office management, the package can record and print personnel information, mailing labels, address lists, job assignments and evaluations, and more.

(List Price: \$395)

Requires: Apple IIe, IIc, or IIGS

Magic Software
121 West Mission
Bellevue, NE 68005
(800) 342-6243

In NE (800) 233-4494

CIRCLE READER SERVICE NO. 531

P E

BODY SYSTEMS II SERIES

Marshware has released Body Systems II Series, a new three-program series of educational software for grades 4-8. The programs are The Endocrine System: The Body in Balance; The Nervous System: Our Information Network, in which Mind Master, a friendly neuron, demonstrates how information travels on neuron pathways to and from the brain; and The Blood System: A Liquid of Life, which teaches students about plasma, red and white blood cells, transfusions, and blood diseases. (List Price: \$39.95 each; complete series, \$99.95)

Requires: Apple II Plus, IIe, or IIc
Marshware
A Division of Marshfilm, Inc.

P.O. Box 8082
Shawnee Mission, KS 66208
(800) 821-3303
In AK, HI, MS
(816) 523-1059

CIRCLE READER SERVICE NO. 532

L I

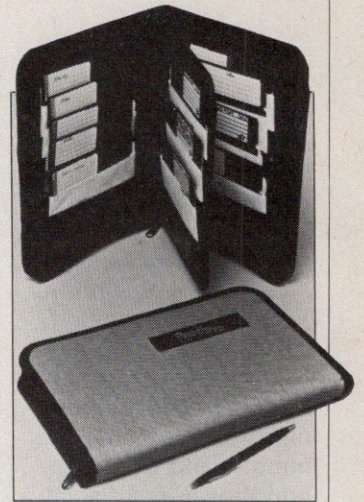
TOM THROOP'S BRIDGE BARON

An enhanced version of Tom Throop's Bridge Baron is now available. This computer bridge game lets the computer bid, play cards, defend, and generate more than a million random deals; alternatively, you can enter preselected deals. The new version lets you play with a partner against the computer, lets the computer keep score in rubber-bridge fashion, and offers an automatic-play mode in which the computer handles all elements of bidding and play. In addition, after playing a deal, you can switch sides and replay the same deal, and you can play either strong or weak two bids and save deals to disk. (List Price: \$49.95)

Requires: Apple II Plus, IIe, IIc, or IIGS
Great Game Products
8804 Chalon Drive
Bethesda, MD 20817
(800) GAMES-4-U
(301) 365-3297

CIRCLE READER SERVICE NO. 537

N E



Cover Craft's portable diskette libraries

diskettes of either size. The libraries resemble small wallets that unzip and open like a book. They hold the diskettes in leatherlike pockets inside. Each library includes a shielding layer to protect diskettes from X rays, magnetic fields, and static. They are made of laminated hardboard and shock-absorbing foam and have a weather-resistant surface of Cordura nylon.

The antistatic mouse mat comes with a 6-foot resistive ground wire that continuously conducts static charges to keep static at safe levels. The mat is made of static-dissipative vinyl material that is both flame-retardant and resistant to chemicals. It measures approximately 12 x 9 1/4 inches and is available in brown or beige. (List Price: Models V12090 and V12095, \$36.95; Model V12135, \$29.95; mouse mat, \$14.95)

Amherst International Corporation
Cover Craft Division
540 N. Commercial Street
Manchester, NH 03101
(800) 547-5600
(603) 644-3555

CIRCLE READER SERVICE NO. 538

Which part of the nervous system is the message center for information?

a. Brain
b. Spinal cord
c. Nerves

▶ A

Good! The brain is the center of the nervous system. It gathers information through the nerves and spinal cord and sends information back.

Brain
Spinal Cord
Nerves

RETURN

A sample screen from Marshware's Body Systems II Series

ACCESSORIES

COVER CRAFT ACCESSORIES

Amherst International's Cover Craft Division has released a new line of portable diskette libraries and added an antistatic mouse mat to its Stat-Pruf line.

Portable diskette libraries are available in three versions—Model V12090 holds up to 20 5 1/4-inch diskettes, Model V12095 holds up to 20 3 1/2-inch diskettes, and Model V12135 holds up to 10

THE HUMAN SIDE OF UPGRADING

Changing the technology alone is not enough

Although all it takes to upgrade an Apple IIe to a IIgs is a moderate amount of money, upgrading your own skills to make full use of this new technology may take a larger investment. And if we're all going to get the most out of the IIgs, it may take some upgrading of popular attitudes as well. Of course, if you use your IIgs only with packaged software, you don't *absolutely* have to learn anything new—and there are even some benefits that the new internal IIgs architecture provides that happen invisibly in the background, whether or not you do anything different. As long as your software is within the 90+ percent that's fully compatible, you shouldn't have any problems. Merely by learning a few keystrokes that turn on the IIgs's fast clock speed, in most cases you can run your existing programs as much as two and a half times faster. The learning investment is minimal, the results noticeable.

For a little more work (and slightly more money), you can upgrade AppleWorks or many of the other popular programs you might already have to versions that make use of the IIgs's special features. The retraining time is still small and for the most part is usually quickly paid back in greater effectiveness and throughput. The new version of AppleWorks, for example, lets you

create larger spreadsheets, lists, and documents, and the larger amount of accessible memory also makes it easier for you to build large compound documents.

Research Time

The greatest time investment, in fact, for this level of change is the research and decision time—it's fre-

quently more difficult to check into the benefits of a software upgrade, make the decision, and then actually complete the purchase than it is to learn some new extensions to an already familiar pattern. Although A+ and other regular sources of information about Apple software cover some of the major upgrades, for other programs you'll have to do most of your research at your dealer or by reading ads.

the IIgs, the pattern changes slightly. Although the investigation and decision cost goes up only slightly from what it takes to decide for or against an upgrade to a familiar package, the required training time involved tends to jump sharply, especially for many of the more powerful software programs.

Although well-written software and documentation can minimize that barrier, the truth is that it does take time and effort to learn any type of complex task, on or off a computer. New programs can handle new functions or new approaches to existing tasks, but they do need an up-front investment in learning how to use them.

Luckily, Apple, building on the success of the Macintosh, has provided a recommended common user interface for IIgs software. That should cut significantly the cumulative time it takes to learn more than one new IIgs application. As on the Mac, once you learn how to work any piece of software that follows the guidelines, you'll know the basics of entering and correcting text, getting files, and saving your work.

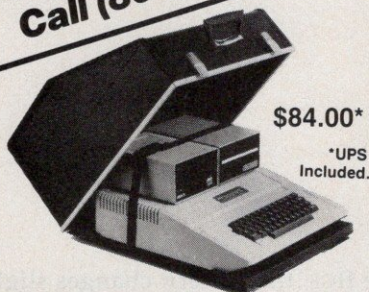
Furthermore, the particular Macintosh-style icons and mouse interface that Apple has chosen for the IIgs should, if the Mac is any indication, prove easier for most of us to learn than the command-line style of ProDOS, DOS 3.3, and CP/M. Still, if you haven't used a Mac, plan on a little training time here as well.

All these skills that you might



**Protect
the fruits of
Apple!**

Call (800) 847-4176



\$84.00*

*UPS
Included.

**IIe Foam Padded Carrying Case
with
Removable Cover**

**Macintosh
Carrying Case
\$114.50***



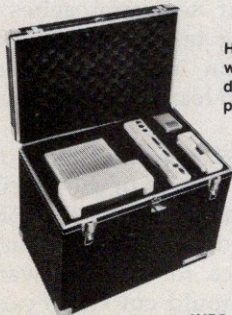
**MacPlus
Flight Case
\$250.50***

Now \$196.50*

*UPS Shipping Included.

shoulder strap
\$5.25

IIc Foam Padded Flight Case



Holds: IIc, monitor
w/stand, external
disc drive, power
pack, mouse.

\$189.50*

*UPS Shipping Included.

**Call for Complete
Computer Case Catalog.**

For
Fast
Service!



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



Fiberbilt
CASES, INC.

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

have to pick up as a user, however, are a small bit of what you'll have to learn to make best use of the IIGS as a programmer. In addition to what you already know about working with the previous members of the Apple II family, you'll have to get up to speed about a new processor, new memory architecture, and some new input and output devices. Still further, the IIGS includes much more built-in code in permanent ROM memory and in the operating environment, so you ought to change your programming style to make use of these toolbox routines instead of fiddling directly with the hardware. The new processor, the 65816, has a lot more instructions and data types than the venerable 6502 of prior Apple IIs, which gives you a lot more possibilities. If you are the hacker type, you can get more done faster, with less code.

But more power in the processor also means a lot more to keep track of at the hardware level, so if you've been doing your programming in assembler, you may want to move up a level to BASIC, C, or Pascal to keep the complexity from getting out of hand. Some speed-critical routines may still need to be written in assembler, but for the most part, the IIGS has graduated to a point at which programs are most effectively written in higher-level form.

That's particularly important with the IIGS because the greater amounts of available memory make compactness of code less of a problem, while the availability of a toolbox and a standard user interface raise our expectations for even the simplest program. It's also easier to let a higher-level language keep track of segment size and the location of code and data—in order to keep compatibility with prior Apple IIs, the IIGS uses a segmented memory architecture, but now you have the possibility of more than a hundred segments instead of the two 64K-long banks offered by the Apple IIc and IIe.

The new video circuitry also has significant extensions. You don't have to forget all you may have learned about shape tables and the peculiarities of the original Apple II video coloring scheme, because the IIGS can still work in the old modes, but you now have a video mode with a full 80 by 25 display and full color possibilities at each point.

Writing for this type of display may be easier, but it still takes some learning if all you've done is write for the prior models.

If you're going to write music or make use of the new sound chip for synthesized speech, you've got an even larger jump to make. Although sound on the older Apple IIs was based on toggling individual output bits, on the IIGS you're dealing with oscillators and waveshaping circuits. You can do more—but it takes a lot more programming to set it up.

Again, none of these techniques are obligatory if you just want to continue to run your existing AppleSoft and machine-language programs. Aside from some changes in the serial port to make the IIGS AppleTalk-compatible, the IIGS is really remarkably compatible with previous models in most important respects. But what the Mac software development showed is that it's a lot harder to write applications that look easy to the user than had been thought, even if you do start with a full toolbox of routines.

Finally, getting the full benefits of upgrading may call for a change in attitude as well. Although Apple may be promoting the Macintosh for business and the II series for home and education, a GS-powered Apple II has roughly the same potential for applications such as spreadsheets and databases as the widely used business machines in the IBM PC class. Unless developers see it that way, and unless enough of us choose the IIGS and make a potential market for those developers, though, we won't see the full range of software and hardware offerings that the IIGS can potentially support.

Changing the technology alone, then, is not enough. For the IIGS to be successful, it needs the requisite human resources and advances as well. To get the most out of the IIGS, you might have to learn a few new skills, and to program it well, you'll have to learn still more. Training and changing people is a lot more difficult than reprogramming silicon, and fortunately, that kind of human engineering still can't be done through mass production or in a lab. In the end, though, regardless of the hardware or software, an investment in upgrading ourselves is probably the best upgrade investment of all that any of us can make.

+

CIRCLE 164 ON READER SERVICE CARD

Rescue Squad

BY GARY B. LITTLE

CRUISING IIc

Q. I spend a lot of time on a yacht sailing around the Caribbean, so I would like to be able to run my IIc from a battery. Is this possible? If so, where can I buy the necessary equipment?

Colin L. Beadon
Barbados, West Indies

A. San Diego distributor/manufacturer Roger Coats ([619] 274-1253) has a wealth of useful products that can transform the IIc into a truly portable computer, including a DC power supply. The Prairie Power System (\$150) can keep your IIc powered for about 8½ hours, and you can recharge the system by plugging it into an AC wall socket. Coats also sells a special cigarette-lighter adapter (\$24.95) so you can use your IIc in the car, by the way.

Keep in mind, however, that you can't run a standard monitor directly from a battery such as the PPS. What you need is Coats' C-VUE flat-panel, liquid-crystal display (\$349) or Apple's LCD (Apple no longer makes it, but you might be able to buy a used one). These screens get all their power from the IIc itself. If you need a printer, try the Epson HS-80 battery-operated printer (\$489).

ROM FOR Z-RAM?

Q. I own an Apple IIc I purchased in 1984. If I bought Applied Engineering's Z-RAM, would I need the new ROM upgrade from Apple?

Jaime Bueno
Cali, Colombia

A. As the name of Z-RAM suggests, you get RAM, not ROM, from Applied Engineering when you buy this peripheral. Apple's new ROM, which allows the IIc to use the UniDisk 3.5, is sold only by Apple or its dealers, and has nothing to do with Z-RAM. If you buy a UniDisk 3.5 from Apple, you will get the new ROM installed for no extra charge.



DEAD DRIVE DILEMMA

Q. My IIc's second Disk II drive just stopped working, and my Apple dealer wants \$55 to repair it. Do you think I should just scrap the drive and use the money I save toward buying a couple of the new 800K 3.5-inch drives instead?

George Del Monte
Slidell, LA

A. The advantage of having a second 5¼-inch drive is that you can make backup copies of disks without having to swap disks. But with good utility programs such as Copy II Plus (\$39.95 from Central Point Software; [503] 244-5782) and Diversi-COPY (\$30 from Diversified Software Research; [313] 553-9460), which copy disks in two passes, making backups with one drive is not as much of an inconvenience as it used to be.

You may also need a second 5¼-inch drive if you use programs that insist on having a data disk in drive 2. If you decide to use 3.5-inch disk drives and have programs that require that the data disk be in drive 2, you can transfer the program and the data to the 3.5-inch disk and put the disk into the second 3.5-inch

drive. (I'm assuming your programs aren't copy-protected; if they are, you're out of luck.)

This technique works nicely for ProDOS programs, because ProDOS automatically recognizes and works with 3.5-inch disks. For DOS 3.3 programs, you must first buy a program such as AmDOS 3.5 (\$15 from RMS Software, Inc.; [604] 681-3371) that patches DOS 3.3 to make it work with 3.5-inch disks. Such patch programs don't work with all DOS 3.3 programs, however, so be careful.

The least expensive way to add two 3.5-inch drives to the IIc is to buy Central Point Software's Universal Disk Controller and two Chinon drives for \$480. The equivalent all-Apple solution (two UniDisk 3.5 drives with controller card) costs \$867. +

Gary Little practices computer law in Vancouver, British Columbia, and writes about Apples in his spare time.

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

AppleWork^{ing} MADE EASY

We have AppleWorks templates to meet most home and small business needs. If you don't see what you need, write for our catalog, or call for our customization service, or send \$5.99 for our SAMPLER disk.

Here are some of our available disks:

TEMPLATES	
MORTGAGE AMORTIZATION.....	\$24.99
FINANCE: STOCKS & FOREIGN EXCHANGE..	\$24.99
APPOINTMENT CALENDAR (1986-87).....	\$29.99
MAILING LIST & ADDRESS FILE SYSTEM..	\$29.99
CHECKBOOK MANAGER - Home & Business..	\$24.99
RESTAURANT GUIDE & VIDEO GUIDE.....	\$29.99
HOME VEGETABLE & HERB GARDEN.....	\$24.99
ROOTS - TRACE YOUR FAMILY HISTORY.....	\$29.99
BOWLING & GOLF.....	\$34.99
BASEBALL & SOFTBALL.....	\$34.99
TRACK (10K, Marathon, Triathlon).....	\$39.99
BASKETBALL - NCAA SCORE SHEETS.....	\$39.99
SCHOOL ATTENDANCE MONITOR.....	\$39.99
TEACHER GRADE BOOK & ROOM SCHEDULES..	\$39.99

postage & handling.....\$1.50
in Maryland sales tax +5%
Espanol.....\$5.00
3.5" disk.....\$2.50



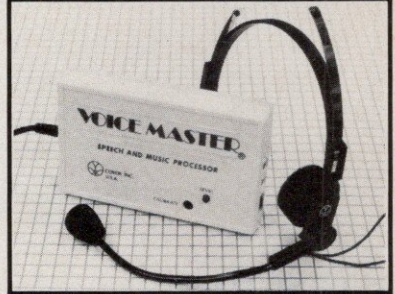
Pacific Technology Systems

Department B
Box 8005
Rockville, MD. 20856
Tel. 301 231-9086

CIRCLE 199 ON READER SERVICE CARD

THE AMAZING VOICE MASTER[®]

ENTER
THE FINAL
FRONTIER
OF
MAN-TO-MACHINE
COMMUNICATIONS



There is nothing else like it. Voice Master gives both speech output and voice recognition with this single hardware product! Your voice controls programs, or home appliances, robots, and more with spoken commands. Verbal response back gives status, verifies, or requests your reply! Speech output and recognition patterns are recorded in with your voice. Or use the voice of your friend, boss, teacher, mother, even the family pet! Programming is simple with new commands added to BASIC. A music bonus program lets you write and compose musical scores simply by humming the tune. Unlimited applications for fun, education, and commercial use. Design your own programs for profit. Speech and recognition quality unsurpassed by even the most sophisticated machines. Only Covox provides this high-tech marvel at a price less than most common peripherals.

The Covox Voice Master comes complete with all hardware and software for only \$89.95. (Add \$4 shipping and handling for USA, \$6 Canada, \$10 overseas.) Available for Commodore 64/128, Apple II, II+, IIc, IIe, Atari 800, 800XL, 130 XE. Specify when ordering. Visa, MasterCard phone orders accepted.

Call or write for **FREE Voice Master Infopak** and special combination package offers.



COVOX INC., DEPT. A +

675-D Conger Street • Eugene, Oregon 97402 • U.S.A.
Area Code (503) 342-1271 • Telex 706017 (Av Alarm UD)

CIRCLE 151 ON READER SERVICE CARD

Leroy's Cheatsheets[®]

PLASTIC LAMINATED
\$5.95 each

APPLEWORKS

116 DIE-CUT Keyboard Overlays or Reference Cards

Our Appleworks Cheatsheet shows ALL the commands for the word processor, database and spreadsheet, grouped separately for easy reference, making Appleworks a breeze to work with. Leroy's Cheatsheets help you get into your program right away. Now use your software more easily and more effectively. With Leroy's Cheatsheets you'll never have to hunt for a program command again!!! Cheatsheets also available for: Newsroom, Elite, Flight Simulator II, Applesoft Basic (3.3 or ProDOS), ProDOS Utilities & many others (over 25 available).

When ordering, please specify 116 Overlay or Reference Card

Add 75 square inches to your Apple IIc

Leroy's **DOCU-TRAY[™]**

\$12.95



Get your reference material off your lap and put it where it does the most good -- right on the computer. Leroy's Docu-Tray[™] is made of sturdy vacu-formed plastic. Supports heavy manuals or our own reference cards. Does not block the air vents.

SHIPPING:

TOTAL ORDER	CONT. U.S.	APC./PRO/AX HI/RE/CAN
UP TO \$10	\$2.00	\$2.00
\$10-\$25	\$3.00	\$4.00
\$25-\$50	\$4.00	\$5.00
\$50-UP	\$5.00	\$6.00

U.S. FUNDS - NO C.O.D.
PA Res. add 6% sales tax

CHEATSHEET PRODUCTS, INC.

P.O. Box 111368 Pittsburgh, PA 15238

Order TOLL FREE 1-800-334-2896 PA Orders call (412) 781-1551

A+ 2

MODEM MGR[™] \$49⁹⁹

plus \$3 ship/hand • plus tax (Calif. only)

- A new modem communications program
- For Apple II+, IIc, IIe, enhanced IIe
- Both DOS 3.3 and ProDOS support
- Supports most serial and modem cards
- Supports most smart and non-smart modems
- Fast operation (110 to 19200 baud)
- Text capture and auto disk-save
- Screen capture (snapshot)
- Full-screen editor
- Full- or split-screen display with block send (for CB, chat, packet radio)
- Macro script files for auto log-on
- Programmable function keys
- XMODEM error-free file transfer
- Supports Apple or Videx 80-column card
- On-screen time-of-day or elapsed-time display (with some clock cards)
- Unattended mode with password protection
- Emulates DEC VT-52, DG 200, others
- Supports most printer cards
- Choice of carrier or "smart" modem control
- Not copy-protected
- Available direct only. Send check to:

MGR SOFTWARE

Suite 101
305 So. State College Blvd.
Anaheim, CA 92806
(714) 993-0294

Apple, ProDOS are trademarks of Apple Computer Inc.

CIRCLE 250 ON READER SERVICE CARD

Recommended by Gary Little

A+ SUPER INDEX

On-disk database summarizes A+ Mag., including programs, tips and letters. Cross-references corrections & updates. Like a "tip-book" cites 1000's of fixes. Ends searches thru stacks of magazines. **GUARANTEED to save TIME & MONEY!**
\$5 for 1986, \$9 for 1983 thru 1985

FASTFIND SEARCH UTILITY

100 times **FASTER** than word processors! Search multiple disks with single keypress. **AND/OR/NOT** logical operators & wild card. Find **lost files**, even if you forgot the names! Prints reports. **A.P.P.L.E.'s BEST SELLER.** Bonus fast **SPEEDOS**. Any **APPLE II or III**.

\$12 & get either INDEX above FREE

NOT COPY-PROTECTED
 Add: \$2 Ship/handling, CAL res. 6.5% tax, Overseas \$3
 FASTFIND CO., 28503 Coveridge Dr., Dept. A1
 Rancho Palos Verdes, CA 90274
 VISA or MasterCard (213) 544-2350
 Modem orders save 4%: 300/1200 baud, 8 bit, parity (213) 377-0804

CIRCLE 600 ON READER SERVICE CARD

APPLE COMPATIBLES LOWEST PRICES ANYWHERE!

- 64K/80 Column BD (Ile) \$ 39
- 256K/80 Column BD w/Software (Ile) \$109
- 80 Column BD-Videx Compatible (II+) \$ 49
- Z80 CP/M BD-
 Microsoft Compatible (II+/Ile) \$ 38
- 16K Ram BD-
 Expands II+ 48K to 64K (II+) \$ 35
- 128K Ram BD-
 Saturn (Titan) Compatible (II+/Ile) . \$ 89
- Graphic Parallel BD w/Cable (II+/Ile) . \$ 45
- Super Serial BD-
 Great for Modems/Printers (II+/Ile) \$ 49
- Disk Drive H/H (Specify II+/Ile or IIc) \$129
- Numeric Keypad-16 Keys (Ile) \$ 35
- Cooling Fan w/Surge Protect (II+/Ile) \$ 29
- Joy Stick (Specify II+/Ile or IIc) \$ 15
- Joy Stick w/Large Fire Button
 on Stick (Specify) \$ 25
- Super Mini Vacuum Cleaner
 w/4 Attachments \$ 15

**ONE YEAR WARRANTY ON ALL PRODUCTS
 CALL/WRITE FOR COMPLETE LIST
 ADD \$3 SHIPPING (Per ORDER, not per item)**

NEXO DISTRIBUTION

914 East 8th Street, Suite 109
 National City, CA 92050
 (619) 474-3328 10am-6pm Mon-Fri

**UNIV & SCHOOL P.O.'s WELCOME!
 VISA/MC OKAY—C.O.D. ADD \$2.00**

CIRCLE 603 ON READER SERVICE CARD

DISK LIQUIDATION!

PREMIUM QUALITY! 5 YEAR WARRANTY!

THE BIG DISKETTE MAKERS ARE PANICKING! The price cuts in the diskette market have forced top makers to sell off their inventory at pennies. These disks are not second-hand, not cosmetic rejects, only top-of-the-line highest quality disks, available to you at a fraction of the original selling price! Guaranteed 100% error-free, money-back satisfaction guarantee, free one replacement warranty. We can't promise the makers, but you'll recognize them as among the highest quality premium disks made! All disks meet or exceed IBM's standards, 50% clippage, level 9.5 mil jackets! (Call 617-868-5523 for prices of over 1000.)

5 1/4" DS/DD universal diskette for IBM-PC XT & compatibles.
 Apple II series; Atari Commodore; TRS-80

HD200 Based in 20's with sleeves, labels, w/ tabs \$4.20/box (420/disk)
HD210 Based in 25's with sleeves, labels, w/ tabs \$10.00/box (400/disk)
HD220 Based in 25's with sleeves, labels, w/ tabs \$10.00/box (400/disk)
HD230 Based in 200's with sleeves, labels, w/ tabs \$34.00/box (340/disk)
HD240 Bulk packed in 1000's with w/ tabs \$280/case (280/disk)
HD250 Bulk packed in 1000's with w/ tabs \$250/case (250/disk)
HD255 Assorted color disks, 5 1/4" drive tabs \$5.19/box (519/disk)
HD270 Hi-density for the "AT", 5 1/4" drive tabs \$5.94/box (594/disk)

5 1/4" DISKS for the Macintosh, Amiga, IBM-PC XT. All are complete with labels for notation:
HD310 Single side, packed in 10's \$13.90/box (13.90/disk)
HD320 Single side, packed in 25's \$32.25/box (13.29/disk)
HD330 Single side, packed in 100's \$119.00/box (11.90/disk)
HD340 Single side, packed in 1000's \$990.00/box (990/disk)
HD350 Double side, packed in 10's \$15.90/box (15.90/disk)
HD360 Double side, packed in 25's \$37.25/box (15.40/disk)
HD370 Double side, packed in 100's \$139.00/box (13.90/disk)
HD380 Double side, packed in 1000's \$1190.00/box (11.90/disk)

COLOR DISK ASSORTMENT: 25 disks w/ tabs, DS/DD, HD220 \$5.19/box (79/ea)
PAPER SLEEVES for 5 1/4" disks, plain white \$1.00/50 (20 each)
TYPER SLEEVES for 5 1/4" disks, plain white \$1.00/50 (20 each)
5 1/4" CLEANER KIT: cleaner disks & solvent for 15 cleanings! HD24 \$4.95
5 1/4" CLEANER KIT: cleaner disks & solvent for 15 cleanings! HD25 \$5.95

HOW TO ORDER: Order by phone or mail, pay by MC/Visa/Amex/COD (no add'l charge for credit card), send check with order or C.O.D. (13% add'l charge). **SHIPPING/Handling add \$3. Canada, FPO APO's, or PO Box numbers include \$8 shipping/handling.** All orders must include daytime phone number. (We can ship orders outside the US.) Call 617-868-5523 for school/univers. Mass residents add 5% sales tax. 30-day money-back satisfaction guarantee!

UNITECH 24-A Thorndike Street
 Cambridge, MA 02141-1882
 In Mass (617) 868-5510

(800) 343-0472

ORDER TOLL-FREE 24 HOURS-A-DAY 7 DAYS-A-WEEK!

CIRCLE 607 ON READER SERVICE CARD

24 TERMINAL EMULATIONS

Softerm 2, an advanced communications package, includes 24 terminal emulations such as:

- DEC VT52, VT100, VT102
- IBM 3101-20 (block mode)
- HP 2622A • VIP7801, 7803
- DG D200 ... and many more.

Guaranteed Compatibility!!

Supports Script Files, Disk Capture, Softkeys, ProDos (floppy), DOS, CP/M, Pascal, & most vendor boards/modems.

Comes with Keyboard enhancer.

For the Apple II, II+, IIe, & IIc.

\$195 MC-VISA-COD

SETRONICS

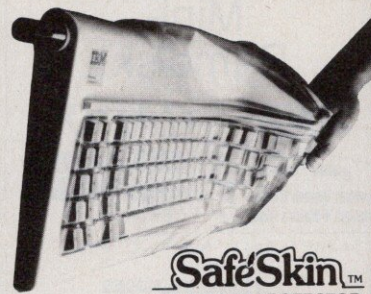
1-800-225-8590

Call for information

(303) 593-9540 Telex 450236

CIRCLE 601 ON READER SERVICE CARD

NEW!



SafeSkin™
 KEYBOARD PROTECTOR

Remains in place during keyboard use. Prevents damage from liquid spills, dust, ashes, etc. Fits like a second skin, excellent feel. Available for: IBM-PC, AT, Apple (all), Compaq, Model 100, NEC 8201, C64, Zenith 150, DEC, Kaypro, KB5151, AT&T 6300, WYSE 50 and many others. Send \$29.95, check, M.O., Visa & MC include exp. date. Specify computer type. Dealer inquiries invited. Free brochure avail.

Merritt Computer Products, Inc.
 2925 LBJ Fwy. #180 / Dallas, Texas 75234
 (214) 339-0753

CIRCLE 602 ON READER SERVICE CARD

TALKING MATH TUTOR

★ Finally a fun and inexpensive way to teach your children mathematics by using both verbal and visual techniques. This system actually talks as it teaches.

★ Package includes speech board, speaker and 4 programs on disk (add, sub, mult, division).

★ Hardware plugs into slot #4 of your (Apple II, II+, IIe).

★ Order yours today—Only \$129.95 Check or Money Order. Includes all shipping charges. Quantity discounts apply.

★ More programs AVAILABLE—CALL OR WRITE for a free catalog.

Intrinsic System Inc.
 P.O. Box 103
 Bronx N.Y. 10470
 (212) 324-6110

CIRCLE 604 ON READER SERVICE CARD



RIBBONS

OVER 300 TYPES!

Examples:

	Black	Colors
Apple Imagewriter	\$2.75	3.30
Diablo HTII M/S	\$2.40	
EPSON MX-RX-FX 80	\$2.45	2.95
MX-RX-FX 100	\$3.40	3.95
LX-80	\$3.50	3.75
LQ-1500	\$3.50	3.75
NEC 3500	\$3.95	4.50
5500/7700	\$3.50	3.75
8023	\$2.75	3.30
Okidata 80-82-92	\$ 90	1.25
192-193-182	\$4.25	5.05
Panasonic KXP	\$4.50	

CALL

1-800-331-6841

1-513-865-0947 (OHIO)

CIRCLE 605 ON READER SERVICE CARD

ComputerEyes™

CALL 1-800-227-0158
 (IN N.J.) (201) 218-1818
 (201) 469-0049, (BBS)

- Make Custom T-SHIRTS
- Take Computer Portraits
- Interface to ANY Standard Video Source (ex. VCR, Video Camera, etc.)



ComputerEyes™
 For APPLE (II, II+, IIe, IIc) \$119.00

- Software interface to:
- Print Shop/Newsroom 24.00
 - Double Hi-RES (IIc) 12.00
 - Teleconference/Video phones CALL
- Panasonic Commercial grade B/W video camera 199.00
- Special Hook-up cabling with instructions 19.00
- UNDERWARE ribbons to make custom heat iron-on transfers for T-Shirts, scarves, etc. 12.00
- Jumbo Color Pens 15.00

Also Available for ATARI, C-64 and IBM

HAL Systems, 674 Route 202-206N
 Bridgewater, N.J. 08807

A PICTURE IS WORTH A THOUSAND WORDS

CIRCLE 608 ON READER SERVICE CARD

1986 FEDERAL TAX FORMS

for APPLEWORKS users

The 1985 Tax Forms "... are the highest quality computer generated tax forms we have reviewed." — IRS, Forms Inspector.

AppleWorks spreadsheet templates that automatically and accurately calculate & reproduce 12 commonly used tax forms. In addition, Depreciation, Amortization, and Tax calculators are provided. Only \$39.95 (plus \$2.50 for shipping and handling). Additional forms available upon request at \$5.00 per form.

Reviewed in Nov., '86 issue of A+, pg. 94
 Send check, money order and/or request for additional information to:

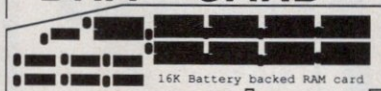
SKY Computer Resources
 P.O. Box 204, Portland, Oregon 97207
 (503) 234-7291

Included are Forms 1040, 1040A, 2106, & 4562, and Schedules A, B, C, D, E, F, S, & W.

CIRCLE 616 ON READER SERVICE CARD

A+

Mini-Ramdisk! DNA CARD



For Apple II Apple II+ Apple IIE

3 OPERATING MODES

- DOS 3.3 Disk Emulator
- PRODOS Disk Emulator
- Machine code load and run

SOFTWARE INCLUDED
 16 K bytes \$250 0 Mastercard and VISA accepted
 To order or get more information call (206) 447-1550



Everybody's Electronics
 5503 17th N.W., #B209
 Seattle, WA 98107

CIRCLE 609 ON READER SERVICE CARD

Personalize and Protect your Apple with the Banana Chip®

When you turn on your Apple™, this remarkable new ROM replacement will display **your** name or personalized message with optional password protection.



\$39.95

CALL TOLL FREE:
1-800-843-0975

Nationwide
1-800-443-9060
In California



Azure Mountain Products

14755 Ventura Blvd., Ste. 1483 Sherman Oaks, CA 91403

CIRCLE 613 ON READER SERVICE CARD

FOR APPLE IIGS, E, C, + & MAC

300 cps C.I.TOH ColorPrinter C310CXP\$499
 EPSON Letter Quality Printer DX-10 \$199
 (Sheet Feeder & Tractor free with DX-10 purchase)
 GS-RAH 1 Meg \$199, GS-RAH 1.5 Meg \$249
 PHASOR by AE \$149, 1200 Baud MODEM \$129
 RAHWORX III 1 Meg by AE for IIE \$249
 RAHFACTOR e.GS.+ 1Meg\$289, Battery \$149
 MULTIRAM RGB 1Meg(Checkmate)IIE...\$269
 SPEED-UP CARD: Transvarp(AE)IIE/+...\$229
 -do- :SpeedDemon Mct IIE/+...\$149
 \$12K ZRAH ULTRA-1 \$199, UII\$249, UII\$299
 Excellent DRIVE:IIE/(cs) \$139, MAC/++\$259
 UNIDISK 5.25 \$199, Drive Controller \$49
 FINGERPRINT printer Interface GS.e.+\$69
 APPLEWORKS Version 2 \$199, GRAPHWORKS\$69
 COHWORX \$79, ASCII EXPRESS PRODOS \$77
 PRINTSHOP COLOR \$35, CERTIFICATEMAKER\$35
 MULTISCRIBES\$49, MACROWORX \$29, FONTWK\$39
 DISK NOTCHER \$5, DRIVE ADAPTOR Iic...\$19
 RIBBON FOR SCRIBE \$5, FOR IMAGEWRITER \$5
 MULTICOLOR RIBBON FOR IMAGEWRITER...\$12

See our fullPage AD in Nibble magazine.
 Shipping Charges(surface) \$3/\$100 in Continental U.S.A.
 Prices subject to availability & changes without notice.
 We do not guarantee product compatibility in any manner.

COMPUTERS PLUS COMPANY

2303 N.44 ST.#2, PHOENIX AZ 85008
 PHONE: 602-955-1404

CIRCLE 611 ON READER SERVICE CARD

Stop Grading Tests!



The Assistant Teacher offers an integrated solution. It combines test preparation, automated scoring, gradebook management, and analysis functions into one program. Runs on all Apple II-series computers.

See your dealer or contact:
 Overdrive Computer Corporation
 1562 Moorings Drive Dept. M
 Reston, VA 22090
 (703) 471-0959

CIRCLE 615 ON READER SERVICE CARD

Handicap with ARTIFICIAL INTELLIGENCE TRACK WIZARD.

FOR ALL
THOROUGHBRED
RACES



YOU
WILL
BE
AMAZED!

For the Apple II Plus, IIE, IIC

Call 1-800-628-2828 Ext. 810

\$69.95 Add \$2.00 Shipping & Handling
 CA Orders Add 6.5% (\$4.55) Tax
 Send check, Visa or MC number & expiration
 date to:

BERLINER SOFTWARE
 P.O. BOX 71565
 LOS ANGELES, CA 90071

Dealer Inquiries Invited • Brochure Available

MONEY BACK GUARANTEE... if not completely satisfied, return it within 30 days for a full refund.

CIRCLE 612 ON READER SERVICE CARD

A+ CLASSIFIED
 DIRECTORY AND MART
 SECTIONS HAVE
 CHANGED THEIR STYLE.

BE SURE AND SEE
 THEIR NEW LOOK IN
 THE MARCH ISSUE.

FOR INFORMATION TO
 ADVERTISE, PLEASE
 CALL:
 KATHRYN CUMBERLANDER
 CLASSIFIED SALES MANAGER
 (212) 503-5115

PROTECT YOUR COPIES OF A+ MAGAZINE

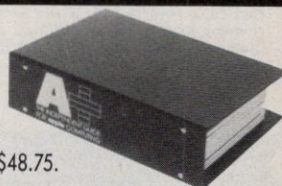
Make your collection of *A+ Magazine* a handsome addition to your office or home—and protect and organize your copies for easy reference!

A+ Magazine Binders and Cases are made of durable, luxury-look leatherette over quality binder board. Custom designed for *A+ Magazine*, every order receives FREE transfer foil to mark dates and volume numbers.

**FOR FAST SERVICE CALL
 TOLL-FREE 1-800-972-5858**

MAGAZINE BINDERS

Hold your issues on individual snap-on rods. \$8.95 each; 3 for \$25.75; 6 for \$48.75.



OPEN BACK CASES

Store your copies for individual reference. \$7.95 each; 3 for \$22.95; 6 for \$43.95.



A+ MAGAZINE

P.O. Box 5120 • Philadelphia, PA 19141

Please send Binders Cases Quantity _____

Payment enclosed \$_____. * Add \$1 per order for postage & handling. (Outside USA, add \$2.50 per unit ordered, US currency only.)

Charge my:
 Amex Visa MC (Minimum order \$10.)

Card No. _____ Exp. Date _____

Mr./Mrs./Ms. _____ please print full name

Address _____

City _____

State _____ Zip _____

*PA residents add 6% sales tax.

ADVERTISING RATES AND INFORMATION

Standard listings consist of a bold lead line (25 characters maximum); 7 lines of body copy (45 characters per line); 4 lines for company name, address and telephone number, \$245 per insertion—3 issue minimum. Additional charge for extra lines and company logos. Prepayment and frequency discounts available. American Express, MasterCard, Visa accepted. Copy subject to publishers approval. Send typewritten or printed copy, reproducible logo art (if applicable) and remittance to Kathryn Cumberland, Classified Sales Manager, Ziff-Davis Publishing Company, One Park Avenue, New York NY 10016. For additional information, assistance, or to place an order by phone, call collect (212) 503-5115.

▶ACCESSORIES/ SUPPLIES

DISCOUNT PRICES!

5 1/4 Disks: 10 for \$3.98, 100 for \$29.00, 1000 for \$270.00. Modems: Novation, Hayes, Smarteam. Apple IIe professional for \$1199.00. Apple IIc for \$749.00. Printers: Star, Epson, Okidata, Panasonic, call for prices. Imagerwriter ribbons: 6 for \$22. Monitors. Software always discounted 30%.
Sy Draft
26130 Greenfield Avenue
Oak Park, MI 48237
1(800) 321-2695/(313) 968-2620

▶COMPUTER INSURANCE

SURE IT'S INSURED?

Insure your computer. Safeware provides full replacement of hardware, media, and purchased software. As little as \$39 a year provides comprehensive coverage. With blanket coverage, no lists of equipment are needed. One phone call does it all! Call 8am to 10pm EST (Sat 9 to 5).
SAFEWARE. The Insurance Agency Inc.
2929 North High Street/P.O. Box 02211
Columbus, OH 43202
800/848-3469 (Nat): 614/262-0559 (OH)

▶HARDWARE/ADD ON BOARDS

APPLE COMPATIBLE CARDS

Z-80/Plus CPM card.....\$29.95/\$35.95
16K/128K RAM (II+).....\$29.95/\$89.95
Disk ctrl./EPROM burner.....\$29.95/\$49.95
80 column card II+/IIe.....\$42.95/\$17.95
Super Ser./II+ Motherbd.....\$59.95/\$129.00
Ext. 80 col. w/64K (IIe).....\$33.95
Par. Grph. prt. card w/cable \$35.95
Music card w/2 speakers.....\$35.95
90 days wrty. \$3 ship; Visa/MC add 4% P.I.E.
P.O. Box 13118
Minneapolis, MN 55414 612-379-9582

▶HARDWARE/ GENERAL

VIDEO LAN LINK SYSTEM®

For Apple II, new MAC computer labs w/color or mono, composite or RGBI monitors. Instructor has complete control of all trainee computer monitors. Instructor can 1) transmit image, 2) receive image, or 3) transmit any trainee image to any/all trainees. Software independent. Increases instructor efficiency and trainee comprehension.
APPLIED COMPUTER SYSTEMS, INC.
3060 Johnstown-Utica Road
Johnstown, OH 43031
1-800-237-LINK

▶HARDWARE/ MONITORS

RGB CARDS • RGB MONITORS BAR CODE LABEL SYSTEM

Apple IIe, IIc, II+, Franklin 1000, 1200, 2000. Cards plug into slot 7. Can be interfaced with II+ 80 col. card or IIe 80 col./RAM cards. Compatible with all RGB monitors. Cable and connector supplied + much more. Color-master—\$99. Kaleidoscope II—\$139. Apple IIc module—\$119. 14 inch HI RES RGB monitor—\$299. Bar code reader—\$199, bar code label systems—\$349.
VIDEO MARKETING
215-343-3000 or Toll Free: 950-1088
wait for tone—835-3629 (touch tone only)

▶HARDWARE/ PERIPHERALS

BEST PRICES AROUND

Laser 128—the IIe compatible with more complete system w/monitor & printer only \$790, w/RGB monitor & FX85 printer—\$1245. Drives from \$135. Low, low prices on software and other accessories. Check with us before you buy. We carry the best brands in hardware. Call or write for quotes or to order.
HEATHCO
1401 Orangewood Dr.
Lakeland, FL 33803
(813) 646-6300

▶HARDWARE/ PERIPHERALS

MOUSETRACER

Use your Mac, IIe, or IIc mouse and draw like the pros! Put cartoons, pictures, maps, etc. on the drawing board. Strap your mouse to the Mousertracer and with your favorite graphics program trace the picture of your choice. Works like a 1:1 drafting board pantograph. Send \$34.95 + \$3 UPS shipping. (CA res add \$2.10 sales tax) to:
BRIMARK INNOVATIONS
9821 Yolanda Ave.
Northridge, CA 91324

▶PUBLICATIONS/ CATALOGUES

BOOKS FOR IIs & MACS

It's hard to find books for Apples at your dealer—after all, dealers sell hardware, not paperware! We have the information you need, including the IIc/IIe, Imagerwriter II, ProDOS Tech Manuals & Inside MAC by Apple. We also have Apple IIgs books. More added regularly. For free info write or send address by modem:
Hieroglyphic Communications
Box 951, Station "B"
London, Ontario, CANADA N6A 5K1
Modems call: (519) 672-7661

IIe and IIGS Owners Unite!

HANK HARRISON's APPLE 16 newsletter keeps you up to the minute on every aspect of APPLE 16 bit computing from a perspective no one else can provide. APPLE 16 is produced for the Librarian, Educator and Family User, by a staff of experts. It covers upgrades, new clubs, networks, teaching aids, bulletin boards, books, hardware/software direct from the Silicon Valley! Institutional discounts. Money-back guarantee plus Hot Line! Internationals welcome! Full year's subscription of \$25.00, to:
THE ARCHIVES
1259 El Camino Real
Menlo Park, California 94025

APPLE II AND IIGS GUIDE

Call NOW to order the new APPLE II AND IIGS GUIDE containing thousands of programs for the APPLE II series and the new APPLE IIGS. Price: \$9.95 plus \$1 S/H. Also available now: Winter issue of the MACGUIDE—listing 1600 packages for the MACINTOSH. Price: \$4.95 plus \$1 S/H. Order software through MENU and the price of either guide is deducted from your order and you'll earn SoftCredit too! Major credit cards accepted.

MENU
1520 South College Avenue
Fort Collins, CO 80524
order line: (800) THE-MENU

▶SOFTWARE/ ACCOUNTING

PROFESSIONAL TIME/BILLING

400 clients, 20 partners, 80 job/40 expense accts., hourly or fixed fee. Prints bills, statements, aged receiv. & more. Free phone support. Runs on II, II+, IIe and clones. Requires CPM, 64K/2 drives. \$149/\$3 shipping. Visa/MC/Amex. Other original software. Call or write for free catalog.
MICRO-ART PROGRAMMERS
614 Alameda Padre Serra
Santa Barbara, CA 93103-2137
(805) 962-0922 (24 Hours)

▶SOFTWARE/ ASTROLOGY

ASTER-PRO

Birth Potentials/Daily Predictions/Compatibility. Best of its kind: astonishing accuracy; technically superior. Send for info. We use printed version for reports to clients. Compiled size 750K. Elaborate Point System rates compatibility & daily quality. APPLE II+/IIe/IIc 64K+.
ASTRORESEARCH
716 McLane Avenue
Morgantown, WV 26505
Phone: 304-292-3008

▶SOFTWARE/ COMMUNICATIONS

GBBS PRO CLEARANCE SALE!

GBBS Pro warehouse clearance. Limited quantities. Retail normally \$99. Clearance special \$79!
Pro-Copy normally \$39.95. Clearance \$24.95! Shipping \$3.00. C.O.D. \$1.90. Mastercard accepted.
Call or write:
Micro Data Products
537 Olathe Street—Suite G
Aurora, CO 80011
(303) 360-6200

▶SOFTWARE/ EDUCATIONAL

MATH COMPETITIONS BY MAIL

Cash prizes awarded in five competition categories for ages 6 to 60. Right-brain math skills are honed by working the basic-math curriculum included in "Math Mastery". Players are ranked locally and nationally. After you use this FREE software, you will be more than happy to pay \$12.95 to register for the by-mail contest. Please send \$3 for postage and handling. Apple II, IIe, IIc.
THE CEREBIC INSTITUTE
Free Software Offer
P.O. Box 9
Milton, North Carolina 27305-009

APPLEWORKS IN SCHOOLS = ??

SCHOOLWORKS These three programs give you 100+ ready-to-use templates! Includes a seating chart, a gradebook, test maker, ledger accounts, sports stats, calendars and more! Not copyprotected so you can use it in your entire school building. **TEACHER/OFFICE/ATHLETIC DIRECTOR \$55/each; \$99 for two; \$125 for all 3.**
K-12 MicroMedia Publishing
6 Arrow Road, Department AC
Ramsey, NJ 07446
800-922-0401

GET A'S THE EASY WAY

STUDYMATE, a fast, fun, efficient way to get A's in foreign language, English vocab, science, history, etc. Quickly & easily enter your school work & **STUDYMATE** tests you, shows percent correct, and retests you on questions answered incorrectly. Foreign language accents. Saves work for later review. **Apple IIc, II GS, IIe (128k), IBM.**
Box 9101 - Jackson Software
Winnetka, IL 60093 Price \$24.95
800-247-8080 ext. 50 Visa/MC/check

GRADE MASTER

Choice of educators everywhere!! A fast efficient "professional" grade management system for K-College teachers. Easy grade entry/change, flexible set-up, professional reports on screen or printer. Brochure, review, and user comments on request. Demo disk \$5. **Apple II+/e/c & IBM.** \$79+\$4 s/h. TX 5.125% tax. VISA MC.
ENCODE (formerly Micro-Vision)
PO BOX 5070
Klingwood, TX 77325
(713) 358-6687

PROGRAM FREE_PASCAL_NEWS;

```
--VAR
... want_free_newsletter : BOOLEAN;
BEGIN
--IF want_free_newsletter THEN BEGIN
.... WRITELN('Palos Computer Concepts');
.... WRITELN('Dept. Z., P.O. Box 560');
.... WRITELN('Palos Park, IL 60464') END;
END.
```

Teachers & Businessmen

AppleWorks templates: **EDUCATION/Grade** calculator & book w/histogram. **Grade cards.** **Midterm/gradereport** \$19.95. **BUSINESS/P&L** statement. **Balance sheet.** **Cash flow.** **Ledgers** for Income, Expenses, Checks, & Petty cash. **Accounts receivable & payable.** **Inventory.** **Payroll.** **Customer data base** \$19.95. **Climatex Corporation**
21601 Pemberville Road
Luckey, Ohio 43443
(419) 833-1930

LOW-COST APPLE II SOFTWARE

Only \$9.95 per disk! 110 disks in 30 areas. By a top producer. Many special for you. 100% guaranteed. 10 day FREE TRIAL. Copyable, listable, modular, modifiable, incredible! Many reviewed "excellent." Special, direct sale, test promotion.
..... FREE CATALOG

AV Systems Inc.
1445 Estrella Dr.
Santa Barbara, CA 93110
805-569-1618

"GRADEWORKS"

A grading system based on **AppleWorks**. **GradeWorks** is fast and very flexible. Some of the system's features are: —on disk info— a complete manual—a real class to practice on—post grades by ID.#—ave. quarter + final grades (weighted)—test grading + scaling. cost \$32.00
Custom grading systems constructed (call)
KATAMA Software
RFD 304 Edgartown, MA 02539
(617) 627-5145 4-8 pm EST.

VISIBLE PASCAL

This easy-to-use system for learning Pascal provides Apple II (64K min.) owners with everything needed to start writing Pascal programs (Apple Pascal and CP/M not required). The visible programming technique shows you exactly what you are doing each step of the way. Only \$59.95.
JOHN WILEY & SONS
WILEY PROFESSIONAL SOFTWARE
605 Third Ave. NY, NY 10158
(212) 850-6788

SOFTWARE/ ENTERTAINMENT

"GYPSY FORTUNE" X-MAS SPECIAL

Amaze family/friends of all ages. Two wishes are made by you! As the gypsy shuffles and deals, you see a pattern of your future unfold on the screen and off the printer. 1st offer. Runs any Apple-IIe or c. Disc/with Doc. Allow 8 day del. \$19.95.
T.M.S.A.,
P.O. Box 9031
Shawnee-Mission, Kansas 66201
Phone (913) 341-2078 (After 6 p.m.)

SOFTWARE/ GAMES

4 High Res Games
FAMILY OF FUN ON ONE DISK.
Shipwreck. Arcade. Ages 4-8.
Lazerlasher. Game paddle arcade. Ages 8-12.
Metal Market. Simulation. Ages 12-Adult.
Farmer's Market. Simulation. Ages 12-Adult. Only \$12!
Gumdrop Software
2128 North Summer St.
Mesa, AZ 85203
(602) 964-1930

SOFTWARE/ GENERAL

QUICK DELIVERY LOW PRICES

Want educational, recreational, or business programs? Try us! Compare our prices. Certificate Maker \$32, Toy Shop \$38, BPI Gen'l Acctng \$240, Managing Yr Money \$120, Trio \$65, 221B Baker St. \$25, Tournament Bridge \$32, Where in the USA is Carmen San Diego \$25. Free educ. &/or gen'l catalog:
Software Shuttle
P.O. Box 316
Dayton, OH 45409-0316
(513) 293-2594

APPLEWORKS TEMPLATES

Business \$27.95. Depreciation sched's, exp. report, costing, CIF, forms, appt. Vacation & proj. sched's, payables, etc. Home \$16.95. Budget tools, organizers, registers, check book, address book, etc. Printable tax form \$9.95. Send check or money order plus \$2 s & h.
Creative Concepts
P.O. Box 401
Steger, IL 60475-0401
(312) 672-5405

SOFTWARE/ GRAPHICS

!! CLIPCATURE !!

Make **NEWSROOM CLIP ART DISKS** from Print Shop graphics, Newsroom photos, hi-res text or pictures! Or, produce **PRINT SHOP GRAPHICS** from clip art, hi-res pictures, or Newsroom photos! Now with 189 pieces of clip art. Charge to MC, VISA at 1-800-628-2828 ext. 863 (orders only), or send \$24.95 + \$2 S/H (WI add 5%) to:
CLIPCATURE A+
477 Windridge Drive
Racine, WI 53402

SOFTWARE/ MEDICAL HEALTH

HOME PHARMACY DATABASE

PMG- a layman's guide to properly using the drugs prescribed by your doctor. Written by a registered pharmacist, **PMG** includes advice on how to best take the medication, common side effects, special considerations, and drug interactions for over 450 trade and generic drug names. 2 disks, manual. \$29.95
PMG Company
13717 Walbrooke Drive
Tampa, FL 33624—813-961-2625

SOFTWARE/ PERSONAL

FAMILY TREES AND RECORDS

FAMILY ALBUM (Apple II's \$50) is the perfect record keeper for your family and its history: genograms (family trees), charts, chronologies of important events, birthday and anniversary reminders, family maps, address book, etc. **MacGenogram** (Mac, \$80) is a Mac Paint like program for easily producing family trees.
Humanware
2908 Nancy Creek RD. N.W.
Atlanta, GA 30327
404-988-9845 (eves only)

SOFTWARE/ PUBLIC DOMAIN

PUBLIC DOMAIN SOFTWARE

CATALOG 2.00 OR 3.00 CAT. & DEMO DISK on demo disk specify category: utility, educational, business, games, or what you might be interested in. If you place an order for a min. of 10 disks you get 2 disks free. Brand-name software is also available. We also have Apple compatible computers and hardware available. Visa and M/C ACCEPTED. PH# 219-563-7650
B & L CONSULTANTS AND SALES,
P.O. Box 461
Wabash, IN 46992

RENT USER GROUP LIBRARIES

APPLE DOS, APPLE CP/M and MACINTOSH user group libraries containing thousands of useful programs available to copy on your own computer! Individual disks priced at \$4.00 each and packed full of programs. Catalog and directory disk available for \$5.00 pp. More info? 24 hour—3 min. recording (619) 727-1015 or call 1-800-527-3744
Public Domain Software Int. Group
2400 Santa Rita
Las Vegas, NV 89104s

SOFTWARE/ REAL ESTATE

PROPERTY MANAGEMENT

Software for rental income producing properties. Provides cash flow analysis, records expenditures on each unit, and accumulates cost for tax purposes. Prints cash flow report and Summary of Operations report. Provides depreciation and amortization schedules and print outs of each report.
TOMAR PRODUCTIONS
P.O. Box 740871, Dept. A
Dallas, TX 75374
(214) 750-1212

SOFTWARE/ SCIENTIFIC

STATISTICS CATALOG!

If you need statistics for Apple II, II+, IIe or IIc, call us. Our catalog contains professional programs for: general statistics, high level Anova, multiple regression quality control, and associated graphics. Write or call now for a free catalog of quality statistics software.
HUMAN SYSTEMS DYNAMICS
9010 Reseda Blvd. Suite 222
Northridge, CA 91324
1-800-451-3030, 1-818-993-8536 in CA

►SOFTWARE/ STATISTICS

STATISTICS/FORECASTING

ELF—The Statistical Package—a general purpose statistical package.

TWG/ARIMA—a univariate Box-Jenkins forecasting package, designed for statisticians. EASI/ARIMA—same as above, for the non-statistician. NOW \$150 each. Call or write for more information..

THE WINCHENDON GROUP, INC.

P.O. Box 10339
Alexandria, VA 22310
(703) 960-2587

STATISTIX™—ONLY \$75!

STATISTIX is a powerful and very easy-to-use interactive statistical system for micros. Used by many major universities, businesses, state governments and research organizations. Please check us out; you'll agree SX is a "best buy"! SATISFACTION GUAR-

ANTEED-For more info:
NH ANALYTICAL SOFTWARE
801 West Iowa Avenue
St. Paul, MN 55117
(612) 488-4436

►SOFTWARE/ STRATEGIC GAMES

BARD'S TALE PLAYERS!

EDITOR and HINTBOOK for Bard's Tale Editor allows you to change name, class, race, exp. gold. Bring the dead back to life. Put hit and spell points to 65000! Strength to 31! Have warriors cast spells! Hintbook has hints and maps for all dungeons (20 pages). Editor \$15.95. Hintbook \$9.95. Visa/MC, ck/mo + \$2.00 s/h.

S&D Software
P.O. Box 223458
Carmel, CA 93922 (408) 649-5592

BRIDGE GAMES!—APPLES/MAC

Tom Throop's Bridge Baron—Winner of 1st Computer Bridge Tournament. Bid and play over 1 million deals—\$49.95. Play Bridge with Sheinwold—test your declarer play on 91 deals designed by bridge author Albert Sheinwold—\$29.95. Play Bridge with Truscott-top expert Dorothy Truscott shows you the secrets of winning declarer play—\$29.95 \$3 s&h

Great Game Products
8804 Chalton Drive
Bethesda, MD 20817—1-800-426-3748

►SOFTWARE/TAXES

DO TAXES WITH APPLEWORKS

If you own AppleWorks, you can use 1040Works to calculate and print your personal tax return without costly tax software. 1040Works turns AppleWorks' spreadsheet into a comprehensive tax package that computes Form 1040; prints IRS-accepted Schedules A,B,C,D,E,F,G,SE,W; calculates depreciation, childcare credit, employee expenses, more. Also organizes tax data. For Apple IIc, 128K IIe; printer recommended. \$23.95. Got IIGS or 256K RAM? 1040Works-X saves steps, computes most returns on one spreadsheet. \$26.95. Both have custom macros for all macro programs. By maker of TAXWORKS, rated easiest 1985 tax program by inCider. In NY add state/local sales tax.

PERSONAL FINANCIAL SERVICES

P.O. Box 1401, Dept. A
Mellville, N.Y. 11747
(516) 261-8652

►SOFTWARE/ UTILITIES

PFS FILE USERS

The "BRIDGE" gives you the ability to extract data from PFS FILE™ to either an ASCII, text file or a DIF FILE. Extracted data can be used with word processors, spreadsheets, for conversion to other data bases (Appleworks™), or for transmission to other computers. All APPLE II's. \$59.95.

SUN MICROSYSTEMS, INC.
P.O. Box 1388
Ft. Lauderdale, FL 33302
(305) 486-6115

EXPANSION RAM ENHANCERS:

Save your ProDOS/RAM Drive on disk between uses. Restore it in SECONDS to EXACTLY how it was. No more wasted start up time! AND single drive copy: 5.25" disks in 1 swap; 3.5" disks in only FOUR swaps with a 256K RAM card! More RAM, fewer swaps. For the II+/e/c with Apple, RamWorks, Z-RAM or compatible card. ONLY \$15!

HeadFirst Software
1662 Browning Avenue
Salt Lake City, Utah 84105

When you find a toll-free number in an ad, make sure you use it! It means you will get faster service. When you call an advertiser's toll-free number, be sure to tell them "I saw your ad in A+ Magazine."

AA

AD INDEX BY PRODUCT CATEGORY

ACCESSORIES

PAGE

CARRYING CASES

Fiberbilt Cases, Inc. 126

DISKS

Precision Data Products 121

TDK Electronics 29

MISCELLANEOUS

Cheatsheet Products, Inc. ... 128

Computer Cover Co. 18

HARDWARE

PAGE

DISK DRIVES/STORAGE DEVICES

Central Point

Software 57

First Class Peripherals 33

INTERFACE CARDS

Applied Engineering .. 14,30,31,

38,39,63,76,79,81,97,99,

101,115

AST Research, Inc. 12,13

Legend Industries Ltd. 64

Micro Systems Research 83

Ohio Kache Systems Corp ... 74

Orange Micro, Inc. 5

SMT, Inc. 136

MISCELLANEOUS

PAGE

Central Point

Software 57

Computer Friends 62

Covox, Inc. 128

Creative Peripherals

Unlimited, Inc. 88

Digital Vision, Inc. 116

Icon, Inc. Cover 3

Kensington Microware Cover 4

Redmond Cable 136

Software Simplified 136

Sun Systems

Remarketing 106

Yam Educational Software 100

MODEMS

MGR Software 128

PRINTERS/PRINTER ACCESSORIES

Dresselhaus Computer

Products 53

Funk Software, Inc. 47

Texprint 120

MAIL ORDER

PAGE

Business Computers of

Peterborough 22,23

Coit Valley Computers 59

Computer Network 28

Conroy-LaPointe, Inc. 114

Jameco Electronics 108

JDR Microdevices 84

Memory Plus Distributors ... 20

PC Network 69

Preferred Computing 21

Programs Plus 16,17

Pro-Tech-Tronics 105

Ribbon Land 92

Silicon Express 111

World of Computers 107

Zimco 122

SOFTWARE

PAGE

BUSINESS

H & E Computronics .. Cover 2

Pinpoint Publishing 42

Public Domain Exchange ... 86

Softsync, Inc. 53

EDUCATIONAL

Broderbund Software,

Inc. 2,3,44

Springboard Software 1

Wenger Corporation 32

ENTERTAINMENT/ STRATEGY

B/T Enterprises 20

Broderbund Software, Inc. 2,3

Compucrafts 110

Electronic Arts 8

EPY X 98

Interlude 93

New World Computing 94

Professor Jones 116

SubLOGIC Corporation ... 4,96

GRAPHICS

Spectral Graphics Software .. 10

LANGUAGES

TML Systems 123

MISCELLANEOUS

Megahaus Corporation 65

National AppleWorks Users

Group 78

Pacific Technology

Systems 128

Software Touch 112

StatSoft 121

UPTIME 27

PAGE

ON-LINE SERVICES

CompuServe 82

Dow Jones News Retrieval . 19

General Electric Information

Services 50

PERSONAL BUSINESS-HOME

Broderbund Software,

Inc. 2,3,73

HowardSoft 11

UTILITIES

Beagle Brothers 70

Central Point

Software 78

Quality Computers 80

Thirdwave Technology, Inc. 58

Utilico Microware 58

WORD PROCESSING/SPELLING CHECKERS

Sensible

Software 24

Word Perfect Corp. 87

INDEX TO ADVERTISERS

READER SERVICE NO.	PAGE
A	
* Applied Engineering	14
* Applied Engineering	30
* Applied Engineering	31
* Applied Engineering	38,39
* Applied Engineering	63
* Applied Engineering	76
* Applied Engineering	79
* Applied Engineering	81
* Applied Engineering	97
* Applied Engineering	99
* Applied Engineering	101
* Applied Engineering	115
* AST Research, Inc.	12,13
B	
148 Beagle Brothers, Inc.	70
* Broderbund Software, Inc.	2,3
* Broderbund Software, Inc.	44
* Broderbund Software, Inc.	73
102 B/T Enterprises	20
* Business Computers of Peterborough	22,23
C	
184 Central Point Software	78
107 Central Point Software	57
* Cheatsheet Products, Inc.	128
105 Coit Valley Computers	59
* CompuCrafts	110
271 CompuServe	82
136 Computer Cover Co	18
195 Computer Friends	62
137 Computer Network	28
129 Conroy-LaPointe, Inc.	114
151 Covox, Inc.	128
159 Creative Peripherals Unlimited, Inc.	88

READER SERVICE NO.	PAGE
D	
170 Digital Vision, Inc.	116
* Dow Jones News Retrieval	19
339 Dresselhaus Computer Products	53
E	
168 Electronic Arts	8
144 EPYX	98
F	
164 Fiberbilt Cases, Inc.	126
111 First Class Peripherals	33
154 Funk Software, Inc.	47
G	
* General Electric Information Services	50
H	
335 H&E Computronics Inc.	Cover 2
* HowardSoft	11
I	
112 Icon, Inc.	Cover 3
177 Interlude	93
J	
279 Jameco Electronics	108
167 JDR Microdevices	84
K	
* Kensington Microware	Cover 4

READER SERVICE NO.	PAGE
L	
287 Legend Industries, Ltd.	64
M	
259 Megahauss Corporation	65
152 Memory Plus Distributors	20
250 MGR Software	128
218 Micro Systems Research	83
N	
180 National AppleWorks Users Group	78
149 New World Computing, Inc.	94
O	
178 Ohio Kache Systems Corp.	74
101 Orange Micro, Inc.	5
P	
199 Pacific Technology Systems	128
315 PC Network	69
239 Pinpoint Publishing	42
228 Precision Data Products	121
* Preferred Computing	21
132 Professor Jones	116
299 Programs Plus	16,17
143 Pro-Tech-Tronics	105
256 Public Domain Exchange	86
Q	
104 Quality Computers	80

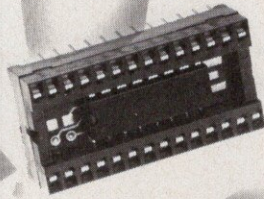
READER SERVICE NO.	PAGE
R	
116 Redmond Cable	136
202 Ribbon Land	92
182 Rolodex Corporation	66
S	
165 Sensible Software, Inc.	24
231 Silicon Express	111
280 SMT, Inc.	136
171 Softsync, Inc.	53
265 Software Simplified	136
173 Software Touch	112
139 Spectral Graphics Software	10
261 Springboard Software	1
207 StatSoft	121
268 SubLOGIC Corp.	4
110 SubLOGIC Corp.	96
103 Sun Systems Remarketing	106
T	
172 TDK Electronics	29
343 Texprint	120
145 Third Wave Technology, Inc.	58
160 TML Systems	123
U	
219 UPTIME	27
190 Utilico Microware	58
W	
123 Wenger Corp, Music Software Div.	32
118 WordPerfect Corp.	87
235 World of Computers	107
Y	
119 Yam Educational Software	100
Z	
126 Zimco	122



GIVE YOUR **APPLE** THE WORKS

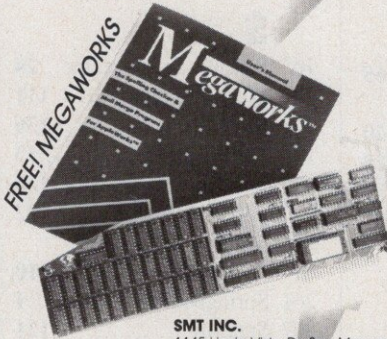
WHEN TIME IS OF THE ESSENCE NO-SLOT CLOCK™

- Real-time clock/calendar for Apple IIe computer
- Uses no slots
- Two 10 year batteries built in
- Installs on Apple IIe motherboard in the 28 pin eprom socket
- Supports leap-year
- Typically accurate to within 2 minutes/year
- 3 year warranty



SMT MEMORY EXPANDER™

- Adds up to 1-Mb of memory
- Self formatting RAM DISK with PRO DOS and PASCAL 1.3
- Uses 400K volume DOS 3.3
- Increases APPLEWORKS version 1.3 up to 1012K desk top
- Slot independent
- Comes with FREE copy of Megaworks
- 3 year warranty



SMT INC.
1145 Linda Vista Dr. San Marcos, CA 92069
619-744-3590 • Outside Calif. 1-800-648-6262

Ask Your Local Dealer

CIRCLE 280 ON READER SERVICE CARD

Coming Soon

Doing Your Taxes with Your Apple II

How to be a Smart Mail-order Shopper

Sound Tools for the IIGs

AppleWorks Bulletin Board

Review:
Smart Money

Game Reviews:
Battlefront
Airheart
Trinity

AppleWorks (TM) Keyboard FlipTemps (TM)

all for **\$9.95**
plus **\$1.00 postage**
& **handling**

*Set has Wordprocessor
Database
Spreadsheet
ProDOS utilities

Why pay for plastic? You will know the program before these double-sided card-board keyboard FlipTemps wear out, and you save nearly 50%...

ORDER FROM:
Software Simplified
1765 Knoxville Street
San Diego, CA 92110

Please send the following:

- | | | |
|---------------------------|----------|-------|
| _____ AppleWorks Sets* | @ \$9.95 | _____ |
| _____ Apple Writer IIe | @ \$4.95 | _____ |
| _____ Flight Simulator II | @ \$4.95 | _____ |
| _____ GATO (Sub game) | @ \$4.95 | _____ |

In California ONLY, add 6% Sales Tax

Postage/Handling AppleWorks \$1.00

Others .55

Total enclosed (Checks/Money orders) \$ _____

A+ 12.86

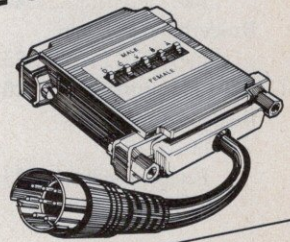
*NOW AVAILABLE.... 14-1/2 HOUR APPLEWORKS Cassette Lessons and Practical problems w/DATA DISK and 150 page MANUALOnly \$151.00 plus 15.00 P & H

CIRCLE 265 ON READER SERVICE CARD

Mac + / II GS UNIVERSAL RS232 CABLE

5 Switches to Interface
MODEMS—PRINTERS
—PLOTTERS

36⁰⁰ SHIPPED
BLUE USA



NEW STANDARD APPLE CABLES

- APPLE IIE IMAGEWRITER II
- APPLE IIE TO DX20/API
- APPLE IIE TO IMAGEWRITER I
- APPLE IIC TO IMAGEWRITER II
- APPLE IIC TO HAYES MODEM
- APPLE IIC TO DX20/API
- APPLE IIC TO IMAGEWRITER II
- MACINTOSH TO DX20/API
- MACINTOSH TO IMAGEWRITER I
- IMAGewriter II UNTERMINATED
- MACINTOSH + TO IMAGEWRITER I

- MACINTOSH + TO IMAGEWRITER II
- APPLE MAC + 18" ADAPTER
- MACINTOSH + TO LASER PRINTER
- MACINTOSH + TO HAYES

29⁰⁰ SHIPPED
BLUE USA

**REDMOND
CABLE**

REDMOND CABLE CORP.
206-882-2009

FOR THE DEALER NEAREST YOU

CIRCLE 116 ON READER SERVICE CARD

READER SERVICE CARD

Use this card to get more information about advertised products.



Void after April 30, 1987

101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190
191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250
251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310
311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340
341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370
371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400
401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430
431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460
461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490
491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520
521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550
551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580
581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610
611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640

Please indicate which of the following microcomputers you currently own and/or plan to buy in the next 6 months.

	(1.) Own	(2.) Plan to Buy
Apple II GS	A	H
Apple IIc	B	I
Apple IIe	C	J
Apple II+	D	K
Apple II	E	L
Other (specify)	F	M
None	G	N

Please indicate which of the following peripherals you plan to buy in the next 6 months.

	(3.) Plan to Buy 1-3 Months	(4.) Plan to Buy 4-6 Months
Printer	T	Z
Modem	U	1
Disk Drive—Hard	V	2
Disk Drive—Floppy	W	3
Monitor—Black & White	X	4
Monitor—Color	Y	5

PLEASE PRINT CLEARLY—Use only one card per person

Name _____ Phone No. (____) _____
 Company _____ Title _____
 Address _____ Apt. _____
 City _____ State _____ Zip _____
 (Zip code must be included to insure delivery)

4. Please send me one year (12 issues) of A+ for \$19.97 and bill me—I'll save 44% off the single copy price!

A+ 02872

READER SERVICE CARD

Use this card to get more information about advertised products.



Void after April 30, 1987

101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190
191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250
251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310
311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340
341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370
371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400
401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430
431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460
461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490
491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520
521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550
551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580
581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610
611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640

Please indicate which of the following microcomputers you currently own and/or plan to buy in the next 6 months.

	(1.) Own	(2.) Plan to Buy
Apple II GS	A	H
Apple IIc	B	I
Apple IIe	C	J
Apple II+	D	K
Apple II	E	L
Other (specify)	F	M
None	G	N

Please indicate which of the following peripherals you plan to buy in the next 6 months.

	(3.) Plan to Buy 1-3 Months	(4.) Plan to Buy 4-6 Months
Printer	T	Z
Modem	U	1
Disk Drive—Hard	V	2
Disk Drive—Floppy	W	3
Monitor—Black & White	X	4
Monitor—Color	Y	5

PLEASE PRINT CLEARLY—Use only one card per person

Name _____ Phone No. (____) _____
 Company _____ Title _____
 Address _____ Apt. _____
 City _____ State _____ Zip _____
 (Zip code must be included to insure delivery)

4. Please send me one year (12 issues) of A+ for \$19.97 and bill me—I'll save 44% off the single copy price!

A+ 02871



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

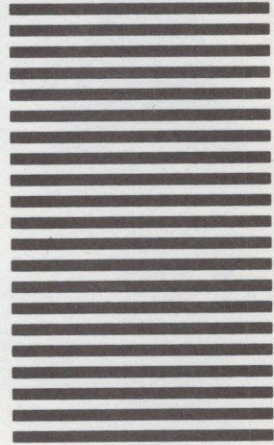
FIRST CLASS PERMIT NO. 27346 PHILADELPHIA, PA

POSTAGE WILL BE PAID BY ADDRESSEE



The #1 Apple II Magazine

P.O. Box 40317
Philadelphia, PA 19106-9931



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

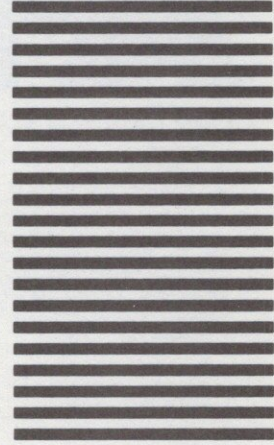
FIRST CLASS PERMIT NO. 27346 PHILADELPHIA, PA

POSTAGE WILL BE PAID BY ADDRESSEE



The #1 Apple II Magazine

P.O. Box 40317
Philadelphia, PA 19106-9931





Achieve the next dimension in computer excellence. Experience **MAXX™**.

Imagine sitting in the cockpit. Hands on the yoke. Diving. Spinning. You pull out. Bank to the left and slide across the screen. The control tower passes on the right.

Maxx™ lets you experience the thrill of flight. At home. Or in the office. Wherever you decide. Icon is pleased

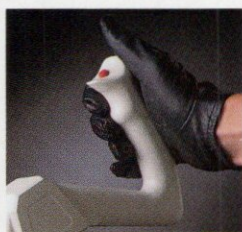
to announce Maxx™. The first in a series of Computer Interface Peripherals (CIPs). CIPs bring real-time cockpit simulation to the computer.



Maxx™ is positioned front center and allows easy keyboard access.

First, the keyboard.

Whether your interest is in F-16 jets, Cessnas, auto racing, tank operations or



A contour handle provides the "feel" of a real yoke.

space flight, Maxx™ excels. Maxx™ is currently compatible with IBM's PC, XT and AT models through the fifteen-pin game port. And with Apple

Computer's IIc, IIe and II GS series through the nine-pin game port.

Then, the mouse.

Designed to the specifications of the traditional aircraft control yoke, Maxx™ looks, feels and performs realistically.

Strategically placed buttons are located atop each arm of the yoke. And a centrally located slide throttle controls airspeed.

Maxx™ is easy to use. Boot-up the selected software disk, calibrate Maxx™

to the system and experience desk-bound reality.

Maxx™ comes fully assembled, ready to use. A true plug-and-play Computer Interface Peripheral (CIP).

And now, MAXX™

Flight maneuvers are a breeze with the "feather-touch" of Maxx™. Action buttons are strategically placed.



For more information, or to order, call 1-(206) 451-9082 or mail \$129.95 plus \$5.00 for shipping and handling to Icon Incorporated, 1611-116th Avenue NE, Bellevue, Washington 98004.



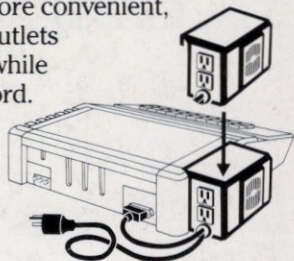
Available in two colors—
original Apple Beige and
new Apple Platinum.

MORE THAN 1/4 MILLION APPLE II'S SAVED

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

System Saver organizes your power needs.

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



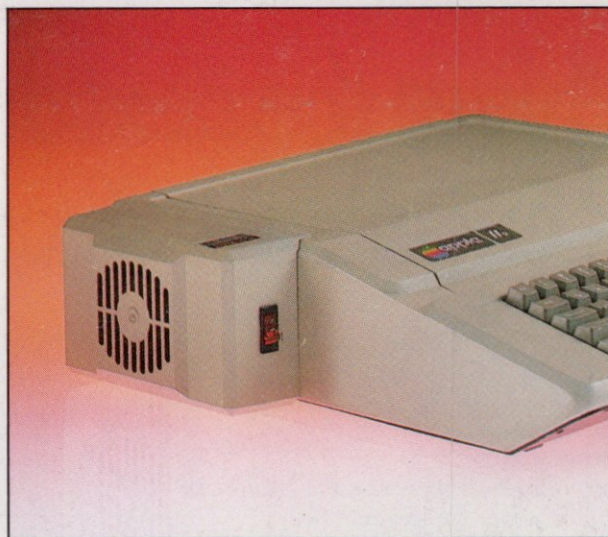
System Saver solves power line problems.

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

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

System Saver keeps your Apple cool.

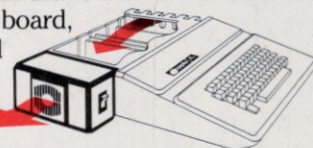
Peripheral cards added to your Apple not only generate heat, they block any natural air flow through the computer. The resulting high temperature conditions can potentially shorten the lives of both your Apple and your peripheral cards.



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

More than 1/4 million Apple owners think of System Saver as the piece Apple forgot. And 1/4 million well-protected Apples agree.

For a dealer near you, or to speak to a Kensington sales representative, call toll free (800) 535-4242
In NY (212) 475-5200.



KENSINGTON™