THE APPLE II MAGAZINE

inCider

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Sensational IIgs Graphics
p. 128

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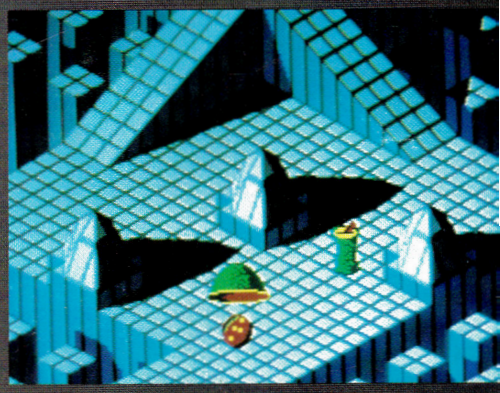
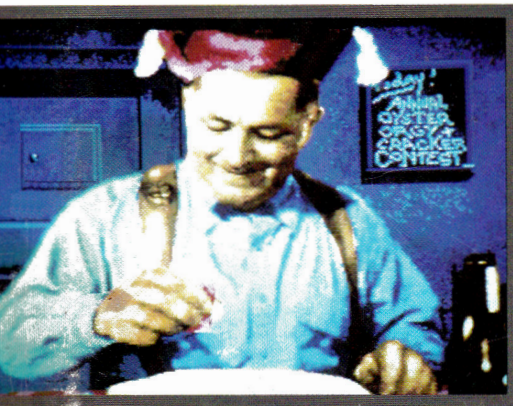
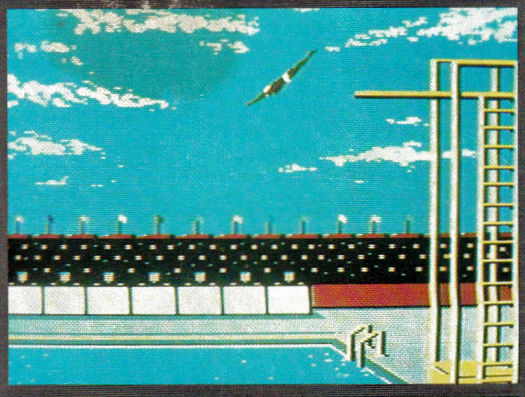
GAMES!

The Ultimate Guide—550 Listed



















ALSO IN THIS ISSUE:

- *Music Products—From Novice to Pro*
- *TimeOut Series Reviewed p. 22*

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WRO

For everyone who ever wished their Apple II could turn into a Mac-Intosh, we've got some great news.

It's called GEOS. And it turns any Apple IIe, IIc or compatible into a ProDOS-compatible, mouse-driven, icon-loaded, graphical operating powerhouse that packs all this power into one package: A desktop file manager, four applications, three utility programs, five desk accessories, six fonts and an interrupt management card.

GEOS (Graphic Environment Operating System) opens your Apple to an infinite number of graphically-oriented applications. Like writing, painting, desktop publishing, calculating —in fact, GEOS can do just about anything a Mac can do.

The kernel at the core of your Apple.

What changes your Apple at its very core is the herculean GEOS kernel, which supports printer drivers, input drivers and proportionally-spaced fonts. It also supports pull-down-menus. Icons. Dialogue boxes. Cutting and pasting data within and between applications. And switching directly from one application to another.

It supports peripherals, desk accessories—in short, it supports just about everything you'd ever want to do with a computer.

And all this without missing a beat. That's because the interrupt management card makes sure you never miss a key stroke, no matter how fast your fingers fly.

Everything's controlled from the deskTop.

The GEOS deskTop lets you control and manipulate virtually everything from icons to RAM disks. And the way you control everything is very simple:

Point and click.

When GEOS offers you options, you just point to your answers and click your mouse or joystick.

You want to copy a file? Point and click.

You want to print a file? Point and click.

You want to fill delete a file? Point and click, and drop it in the waste basket.

The deskTop also keeps you organized. Art, documents—everything is stored and filed on the GEOS deskTop. View files as icons or text. Even sort files by type, name, date or size.

And you can keep yourself organized on up to four different disk devices: 5¼", 3½" hard disks and RAM disks. All at the same time or in any combination.

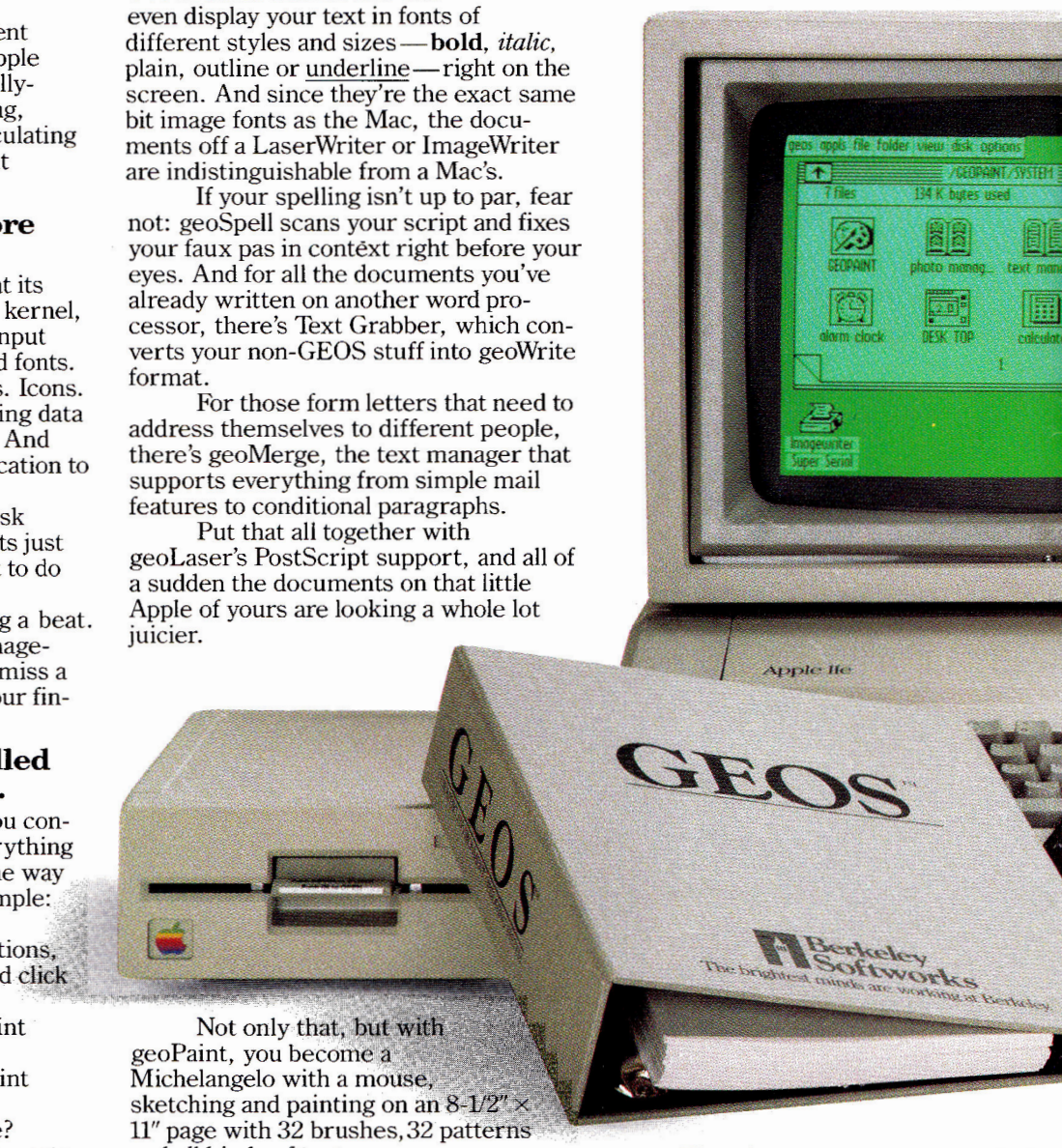
A few bits off the old Mac.

But if you really want to see Mac-like stuff, open up geoWrite 2.1. The "What You See Is What You Get" word processor that lets you center, justify, search and replace text. You can move blocks of copy. Cut and paste. Use headers and footers and even display your text in fonts of different styles and sizes—**bold**, *italic*, plain, outline or underline—right on the screen. And since they're the exact same bit image fonts as the Mac, the documents off a LaserWriter or ImageWriter are indistinguishable from a Mac's.

If your spelling isn't up to par, fear not: geoSpell scans your script and fixes your faux pas in context right before your eyes. And for all the documents you've already written on another word processor, there's Text Grabber, which converts your non-GEOS stuff into geoWrite format.

For those form letters that need to address themselves to different people, there's geoMerge, the text manager that supports everything from simple mail features to conditional paragraphs.

Put that all together with geoLaser's PostScript support, and all of a sudden the documents on that little Apple of yours are looking a whole lot juicier.



Not only that, but with geoPaint, you become a Michelangelo with a mouse, sketching and painting on an 8-1/2" × 11" page with 32 brushes, 32 patterns and all kinds of textures.

So you can fill in that obtuse rhomboid with an air-brushed geometric pattern in a lighter shade of grey. And in case you ever make a mistake, the "undo" feature undoes the very last command you entered.

You can invert, mirror and rotate images. Zoom in to edit pixel by pixel, or preview the entire page. Insert pictures into your geoWrite documents. Or save them in your GEOS Photo Album for use later.

There's even a set of pop-up desk accessories for that helping hand in any application. There's an alarm clock that keeps you punctual. A notepad that keeps your memos. And a calculator that keeps your accountant honest.

Polish up your Apple with GEOS.

There are even more GEOS applications on the way.

Spreadsheets,

Be
So

The brightest minds

Apple IIc, IIe, IIgs are trademarks of Apple, Inc. GEOS, geoWrite, geoPaint, geoLaser, Text Grabber, geoSpell, geoMerge and Berkeley Softworks are tradenames of Berkeley Softworks. AppleWorks, WordPerfect and MultiScribe are tradenames of companies other than Berkeley Softworks.

ONG.

Just load up your Apple II with GEOS, look them straight in the eye, and say, "Mine."

GEOS™ for 128K, 80 column Apple II computers.

- True graphical operating system.
- Data file compatibility with GEOS applications for other systems, such as Commodore C64 and C128.
- Dialogue boxes.
- Proportional fonts in 5 styles.
- Supports variety of printer interface cards, input devices (such as mouse or joystick), hardware clock cards, printers and disk drives.
- Keyboard shortcuts.



With GEOS, any Apple IIe, IIc or compatible becomes a menu/icon driven powerhouse.*

1. deskTop™

The graphic interface from which you operate the powerful GEOS system.

- Graphic representation of disk catalog & GEOS operations.
- Supports ProDOS files (list, copy, run, etc.).
- Supports hierarchical file structure (directories): Create, copy and move directories.
- View files in either icon or text mode.
- Automatically sorts files alphabetically or by size, type or date.
- Open, copy or delete files in seconds: Copy or delete entire directories in one step. Select several files at once to perform multi-file operations.
- Formats, verifies and erases disks.
- Simultaneously supports combinations of up to 4 disk devices: 5¼" drives, 3½" drives, hard drives and RAM drives.
- Applications and desk accessories stored in the "system folder" are listed in drop down menus, and can be run from any directory.
- Double-clicking data file automatically searches for parent application on each disk.

2. geoWrite 2.1™

All the GEOS-compatible tools that a writer needs to make professional documents.

- "What You See Is What You Get" orientation.
- Point and click text selection: Perform moves, copies, deletions and changes on blocks of text.
- Supports LaserWriter through geoLaser.
- Multiple proportional fonts in a variety of point sizes same bit images as the Mac.
- Variable styles (**bold**, *italic*, outline, underline).
- Cut, copy and paste text or graphics from other programs, like geoPaint.
- Left, right and full justification.
- Adjustable margins from 0.25" to 8.25".
- Single, 1½" and double spacing.
- Search and replace text.
- Text and decimal tabs.
- Headers and footers, auto page numbering, date stamping.
- Create page breaks.
- Keyboard shortcuts.
- Set initial page number.

3. geoSpell™

- Find and correct misspelled words in any geoWrite document.
- Misspelled words are displayed in context in the document window.
- Displays words in dictionary closest to misspelled word and prompts user for action.
- Over 28,000 word geoDictionary.
- Create personal dictionaries for specialized vocabularies.
- Automatically scans geoDictionary and personal dictionary.
- Single or all occurrence replace options.
- Edit and update personal dictionaries at any time.
- Ability to scan the geoDictionary and the personal dictionary independent of the geoWrite document.

4. Text Grabber™

- Convert existing word processing documents to the GEOS environment from other word processing programs, such as AppleWorks, WordPerfect and MultiScribe.
- Reformat new files with ease.
- Files from other word processors are ported with formatting commands intact.
- After converting files into geoWrite documents, you can change fonts, formats, styles and paste in graphics.

5. geoMerge™

- Create personalized form letters, merge names and addresses or conditionally include whole paragraphs.
- Print merged documents directly to the printer or create geoWrite files.
- Merge data can be entered manually, typed into a geoWrite file, or be created by other GEOS applications, such as geoDex and geoFile.

6. geoPaint™

- Create charts, diagrams or full page images up to 8½" × 11".
- Zoom in for detail work.
- Cut, copy and paste images to and from other GEOS applications/documents.
- Preview entire page.
- Keyboard shortcuts.
- 14 separate graphic tools:
  Scroll to an adjacent area in your picture, or use window tool. Select any area of the page and: Move, Copy, Clear, Invert, Rotate, Mirror (horizontally and vertically). Pattern Fill: 32 distinctive painting patterns. Stop pattern fill at any time. Spray Paint: Gradually paints the current pattern for shading effects. Ruler: Measure in inches or pixels. Line: Create separate or connected lines. Brush: 32 different brushes to choose from, each brush paints in the current pattern. Pencil Eraser: Erase a small section or the whole screen. Text: Display text in a variety of GEOS fonts (bold, underline, italics, outline, inverted). Edit text before pasting into picture. Rectangles: Draw rectangles open or filled with the current pattern. Ability to constrain rectangle to a square. Ellipses: Draw ellipses open or filled with the current pattern. Ability to constrain ellipse to a circle. Undo: Undo the last command.

7. Desk Accessories

- Available from within any application.
- Notepad.
- Calculator.
- Alarm Clock.
- Photo Manager (scrapbook for collecting pictures).
- Text Manager (scrapbook for collecting text).

8. geoLaser™

- Produce near-typeset quality output on an Apple LaserWriter.
- Create multi-column and windowed pages with the overlay print option.

databases, desktop publishers — you name it. All of them importing and exporting to and from each other, so that you can manage everything with one integrated system.

So the next time someone asks you which Apple is the one that's famous for its mouse, icons and desktop publishing, don't stammer. Don't hesitate. Don't even blink.

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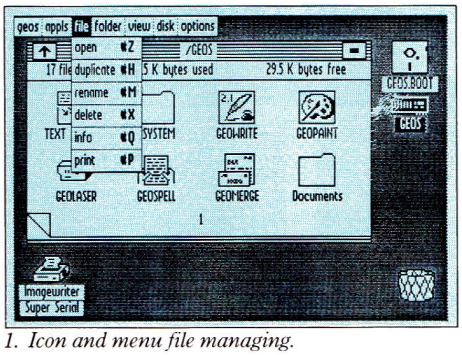
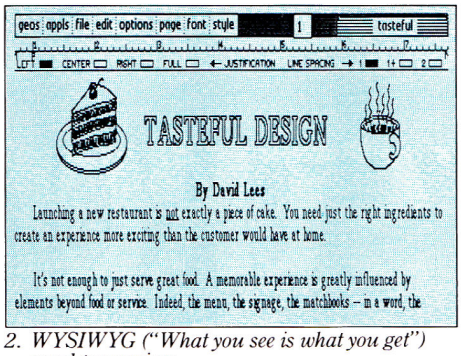
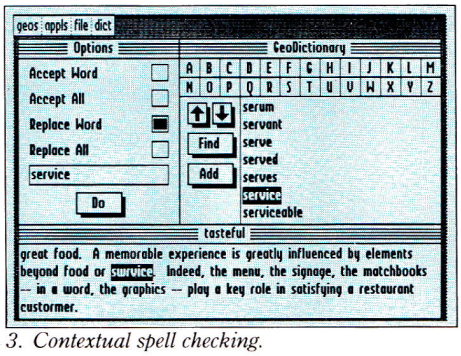


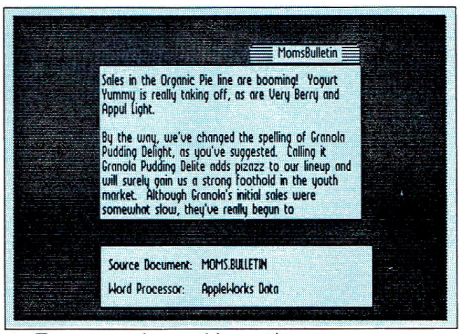
1. Icon and menu file managing.



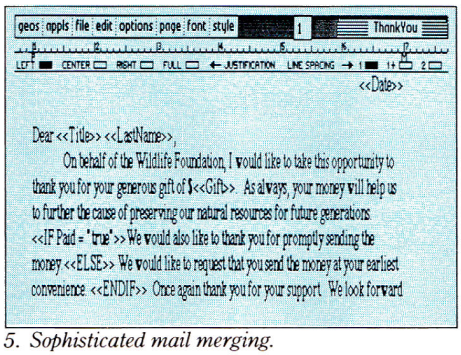
2. WYSIWYG ("What you see is what you get") word processing.



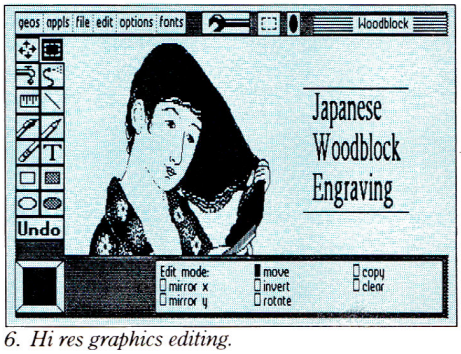
3. Contextual spell checking.



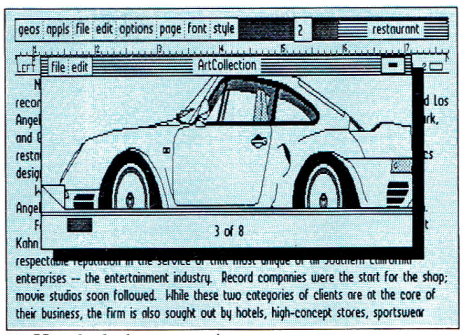
4. Text conversion and importing.



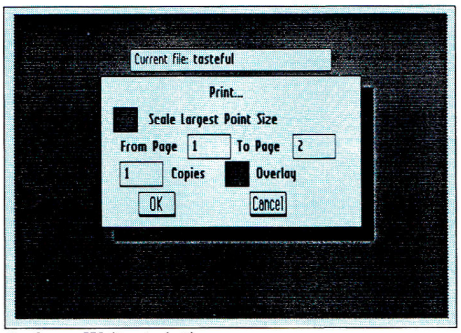
5. Sophisticated mail merging.



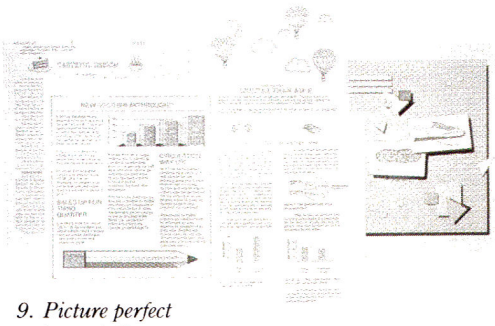
6. Hi res graphics editing.



7. Handy desk accessories.



8. LaserWriter printing.



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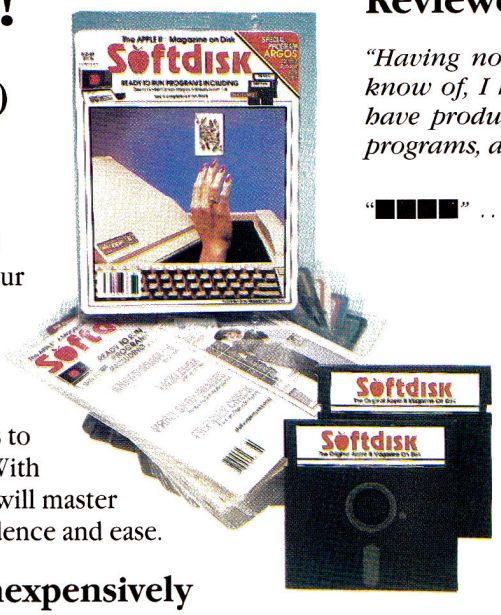

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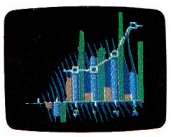
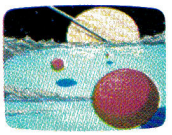
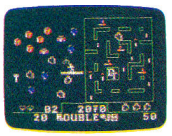

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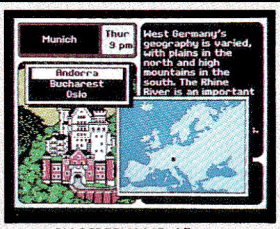

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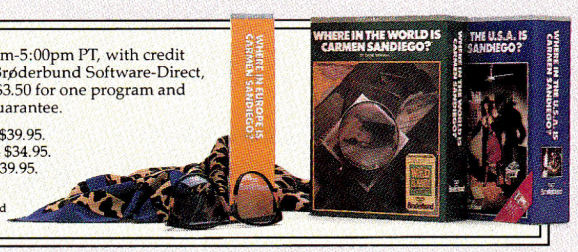

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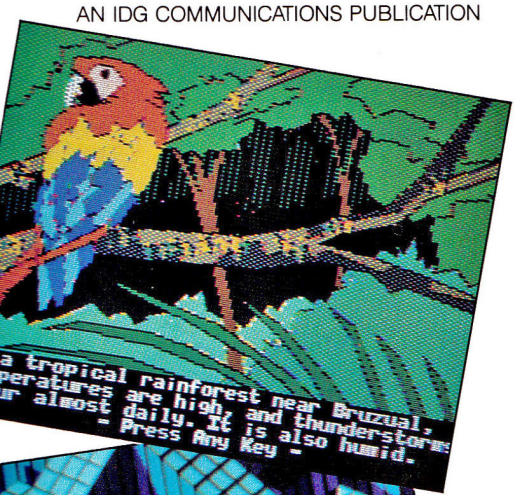

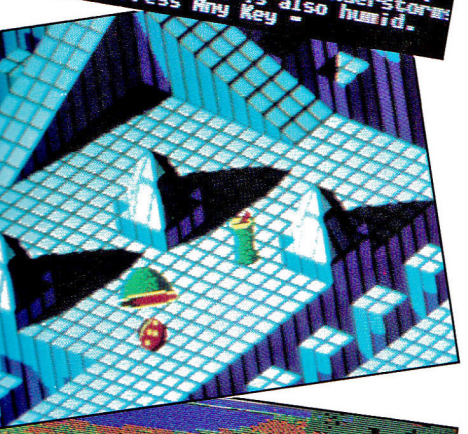





ON THE COVER

40 The Wonderful World of Games

What's your pleasure? Adventure, fantasy, mystery, sports? Board games, strategy games, war games, arcade games? Whatever your preferences in computer entertainment, *inCider*'s buyer's guide tells you what you need to know.

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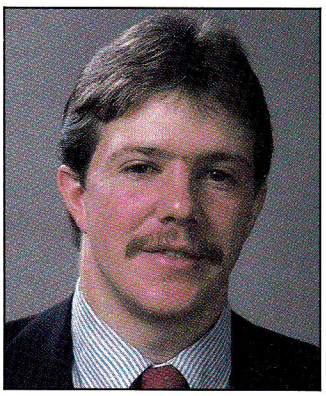
Why We Play Games

by Dan Muse, Editor in Chief



"Apple II games aren't just for teenaged boys anymore."

Life's not all fun and games. That adage holds true for Apple II computers as well. But although few people buy personal computers for the fun of it, most can't resist buying at least a couple of games.

From the 20 pages we devote to games this month, it's obvious that we think entertainment software is important. Games are significant, and will grow in significance, for three reasons. They're entertaining, they're not intimidating for beginners, and many are educational.

I'll go out a limb here and say that entertainment is probably the biggest reason why people buy entertainment software. Their variety and their level of sophistication make games appealing to a larger segment of computer users. Apple II games aren't just for teenaged boys anymore. The quality and realism of Apple II games have improved dramatically since the days of endless Pac-Man look-alikes and adventures that required you to constantly type "Go North" or "Hit dwarf with stick."

There'll always be a certain segment of the computer-buying public that enjoys playing fantasy games and shoot-'em-up arcade games—just as a certain group was caught up in the Dungeons and Dragons or Space Invaders syndrome. But games that succeed in the future will be ones that combine a person's special interests with computer technology.

You won't catch me playing a war game, but I spend more hours than I should playing basketball and baseball games. The software doesn't replace the fun of playing or watching the real thing—it just adds another dimension, and another medium through which to enjoy sports.

And since games are fun, they represent a great way for beginners to get familiar with computers. For example, San Fancisco 49ers Keith Fahnhorst, Keena Turner, and Eric Wright were addicted to Mean 18, an Apple IIGS golf simulation from Accolade (see "Games 49ers Play," p. 62), before they jumped into AppleWorks and DeluxePaint.

It's interesting to see how different people on the *inCider* staff choose their games. Review Editor Lafe Low, a devoted scuba diver, ski racer, and all-around daredevil, loves skiing games, flight simulators, submarine battles, and so on. Paul Statt leans towards games that have an educational side, whether it's world politics, geography, or trivia. Maybe it's the former teacher in him, or maybe he just has a lot to learn.

There's a fine line between entertainment programs that educate and educational programs that entertain. In fact, in preparing our "Game Guide" for this issue (p. 42), one of the biggest problems we encountered was attempting to distinguish entertainment software from educational software. What we found is that dozens of programs fall into a new category of software called "edutainment." (We take no responsibility for coining that phrase.)

Combining fun and knowledge this way has great potential for education in both the home and the classroom. Computers are not inherently fun to use. Programs that entertain while educating have a better chance of holding a child's attention—something that has never been easy.

Edutainment software's benefit is threefold: It keeps kids entertained, it teaches them about particular subjects, and it teaches them how to use a computer.

Don't expect every computer program to be fun. There's a time to work and and a time to play, but, fortunately, if you own an Apple II you're covered on both sides.

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"Beagle Bros' TimeOut series puts every enhancement you could dream of right inside AppleWorks."
Paul Statt, inCider

"TimeOut DeskTools does its work at blinding speed . . . Beagle Bros has done its homework...the breadth and quality of this opening salvo in the AppleWorks enhancement wars bodes well."
Charles Rubin, A+

"TimeOut Graph works seamlessly; if you didn't know better, you'd swear it was part of AppleWorks...I'm very impressed with TimeOut."
Owen Linzmayer, Nibble

"I personally find this series very exciting...The entire series of programs belongs inside of every serious AppleWorks user's repertoire!"
Marc Apfelstadt, Call-APPLE

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Lee Hayward, TAWUG

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Warren Williams, NAUG AW Forum

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Tom Weishaar, Open-Apple

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Gregg Keizer, Compute!'s Apple

"It is rare a program impresses me as much as the TimeOut series did. After installing the programs and seeing the speed, all I could say was WOW. As far as I am concerned, if you use AppleWorks you need TimeOut. Period!"
Jay Wilbur, Uptime

"TimeOut 'fits' AppleWorks like a glove and in no time you get the feeling that it 'belongs' with AppleWorks...TimeOut SideSpread is terrific...TimeOut FileMaster is indispensibe."
Ib Thorsteinsson, Robert Grist and Lorne Walton, Apples B.C. News



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LETTERS

MECA Speaks

I was extremely disappointed that your article on personal-finance and investment software ("Investment Software That Pays Off," January 1988, p. 42) failed to mention Managing Your Money by Andrew Tobias. As you mentioned 20 different programs with functions ranging from portfolio, budget, and checkbook management to real-estate planning, I feel you made a major oversight.

Managing Your Money is a complete, integrated program, featuring every personal-finance capability—budget and checkbook management, tax planning, life-insurance and retirement planning, mortgage refinancing, and even complex portfolio management. The latest version (3.0) lets you transfer data to AppleWorks.

In addition, the $149.95 program fully supports the new tax laws. It also offers improved loan handling, the option to save rental-property analysis, and full editing of all archive transactions, and can generate more reports for net worth. Managing Your Money, which *inCider* listed previously among its top six personal programs, runs on the Apple IIe, IIc, and IIGS (128K).

Dan Schley
President
MECA Ventures, Inc.
355 Riverside Avenue
Westport, CT 06880

"Investment Software" focused on packages designed primarily for investment purposes. We agree that Managing Your Money is one of the top budget-and-finance programs available. —*eds.*

Cleaning Disks

In the sidebar "Cleaning Your Drive Heads" (December 1987, p. 81), Paul Hamilton implies he wrote his 60-line BASIC program because he hadn't heard of a better way to exercise the disk drive. I believe computers are supposed to save time, so I put a cleaning disk into the drive and boot the system. After 30 seconds, I reset.

Gary McCallum's argument against using both sides of a disk is persuasive ("Keep Your System Clean," December 1987, p. 78). However, I'm a junior-high-school computer coordinator and have 20 computers to support. While we don't pay full retail price for our disks, 20 extra copies of every program take a significant amount of money and storage space.

I've been using double-sided disks for more than three years with no trouble, despite abnormally heavy use. I've never spoken to anyone who was convinced that using both sides of the disk promotes disk failure or data loss, and knowing that many commercial publishers use both sides is even more persuasive.

Bud Myers
200 Western Avenue
Apartment G
Hampden, ME 04444

I have a problem with the program DiskClean ("Keep Your System Clean," December 1987, p. 81). The article says to lengthen or shorten the engagement of the drive head. How do I do that?

Also, there's a typing error in line 610, which currently reads:

```
HTAB C: PRINT C$;: INPUT "":A$
```

It should be:

```
HTAB C: PRINT C$;: INPUT "";A$
```

Type a semicolon instead of a colon.

Patrick Nguyen
6 Massow Lane
Windsor, CT 06095

Lines 620 and 750 in the program listing refer to the lengthening or shortening of the time. You can change T = 18 and T = 39 to extend the time. Several readers mentioned a problem with DiskClean, and changing line 610, as you suggested, solves it. Thanks for your observation. —*eds.*

Typewriter Interface

How do I interface my Apple IIc with my Smith-Corona XD 6500 portable typewriter? The XD 6500's manual states that the typewriter is compatible with computers—it requires a Smith-Corona Messenger Module, and the computer must have an RS-232-C serial or Centronix-compatible parallel interface. But my Apple IIc's operator's manual states that the computer is designed to work only with serial printers.

What interface cables will I have to purchase to connect my Apple's 5-pin connector to my Smith-Corona 9-pin DB connector and Messenger Module?

CW3 Chuck Gehring
P.O. Box 1896
G Co. 1st AVN. REGT.
APO NY 09250

For unusual connection problems such as this, try contacting Redmond Cable, 17371-A1 N.E. 67th Court, Redmond, WA 98052, (206) 882-2009. —*eds.*

Clock Queries

I work mostly with AppleWorks 2.0 on my Apple IIe system with 128K of memory. I recently purchased SMT's No-Slot Clock. Although it dates and time-stamps all files automatically, I'm disappointed it doesn't display the date and time on all AppleWorks screens. Is there a patch to do this?

Paul R. Levesque
9 Glad Street
Assonet, MA 02702

Contact SMT, Inc., 1145 Linda Vista Drive, San Marcus, CA 92069, (619) 744-3599. Dan Pickett advises us that SMT will send an update and disk to registered owners. —eds.

I use an Apple IIGS and AppleWorks 2.0. When I boot up the system it asks me to type the date. Can I change the program to accept the date from the internal clock? Also, AppleWorks asks me to press the spacebar while it loads. Can I delete this?

When AppleWorks preloads itself to the memory-expansion card, it apparently doesn't load completely. When I print or calculate a document, AppleWorks accesses the disk drive again. Can I load it all into RAM? I have plenty of room in RAM, but only one drive has a data disk. I'd like to prevent disk swapping.

Jim Hencken
6951 Battle Creek Road
Fort Worth, TX 76116

Check inCider*'s March AppleWorks section (p. 96) for a patch. Also, JEM Software (P.O. Box 20920, El Cajon, CA 92021) solves the problem with PatchMania for $17.50 plus $2.50 shipping and handling.*

Regarding your second question, your RAM disk is too big: There's not enough free RAM for AppleWorks to load completely. You need to use the Control Panel to set the free RAM to at least 128K. —eds.

---

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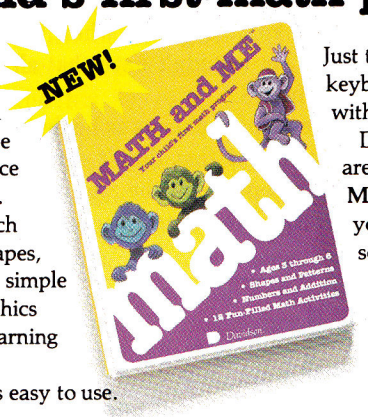

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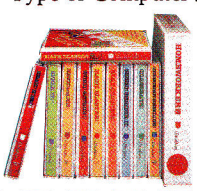

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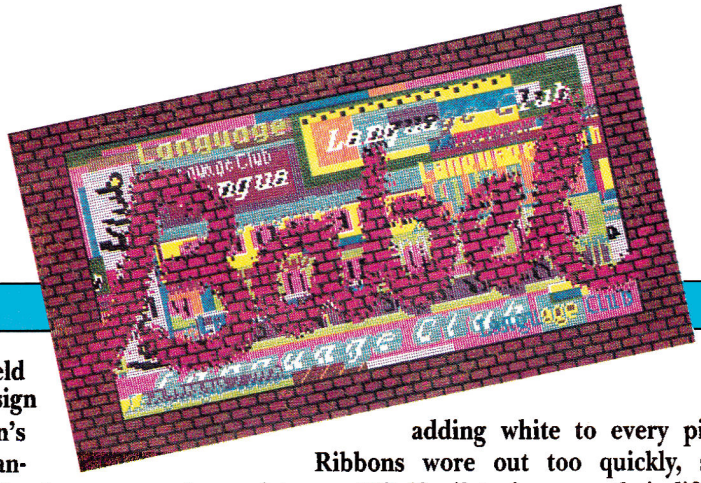


Ask Colin Mansfield how he came to design an album cover with his Apple IIGS and Activision's Paintworks, and you'll get a typically understated answer. "I've been a musician for years," he replies, "and my wife has been an artist and musician for years."

Mansfield, a synthesizer player from Minneapolis, Minnesota, has been moving from performance to the production end of the music business. Specifically, he produces albums, right down to creating the covers, for a band called Language Club.

As an Apple IIe owner, he was experimenting with Broderbund's Dazzle Draw when Apple released the GS. He bought one of the 16-bit machines immediately, along with a copy of Paintworks. "It all came together when the GS came out," Mansfield says. "We wouldn't have that album cover in that form without the GS."

Mansfield encountered plenty of problems as he designed Language Club's album cover, but that didn't deter him. Printed colors didn't always reproduce the way they appeared on screen, so he learned to control the palette by adding white to every picture. Ribbons wore out too quickly, so he learned to use WD-40 oil to increase their lifespan. Because Mansfield's early version of Paintworks crashed with alarming regularity, he learned to save his data more often. "There are still bugs in these things," he says. "Try to fix it if you can and work around it if you can't." (Since he completed this project, Mansfield has switched from Paintworks to DeluxePaint II from Electronic Arts because it offers more features.)

The result of Mansfield's efforts was the album cover shown above. He combined pictures of the band with background taken from old television shows about archaeology, then transferred them to the GS via a videocassette recorder and AST's VisionPlus digitizer. Once they were captured, he worked with the color scheme to get the effect he wanted.

Reflecting on his own experience, Mansfield offers a word of advice to aspiring artists, computer or otherwise: "Just try and try and try to get it right." —*P.O'D.*



FREE SOFTWARE

Like that headline? Most people do. But for parents at schools that use the LogoWriter word-processing system from Logo Computer Systems, Inc. (LCSI, Montreal, Quebec, Canada), free software isn't bait and switch, it's a reality.

For a one-time fee of $150, a school can make unlimited copies of LogoWriter to send home with their students. The kids can do their homework, and their parents can see what the kids actually do with computers, as well as do a little work themselves.

"The community has responded enthusiastically to the home-use option," says Betty Schwartz, assistant superintendant of schools for the Ladue School District in St. Louis, Missouri. "After all, to them it's free software."

Parents respond to LogoWriter because it's free, because they can see what their kids are doing in school, and because LogoWriter is an innovative program that almost anyone can enjoy: It combines programming (in the elegant Logo language) and graphics with word processing. **—P.S.**

APPLEFEST NEWS

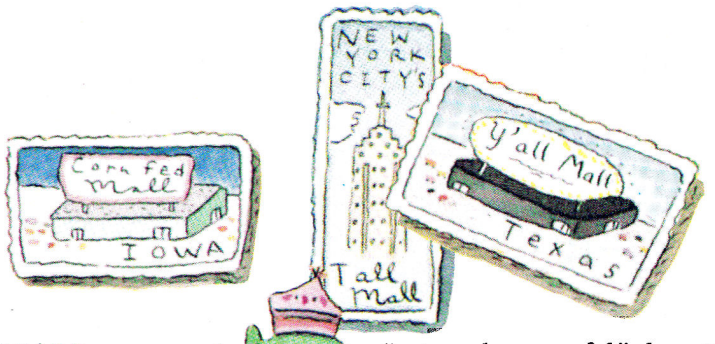
AppleFest comes to the East Coast this month—to the Hynes Auditorium and Convention Center in Boston on May 20–22, with thousands of Apple II users, hundreds of Apple IIs, and scores of new products.

You can also catch an intensive day-long AppleWorks Workshop. Three sessions are offered: AppleWorks basics, AppleWorks for educators, and AppleWorks in desktop publishing. Each day costs $95, which includes a free lunch, templates, and printed references.

Be sure to stop by *inCider*'s booth (#322) and take a chance on winning hundreds of software and hardware products, or test your skill in our second (and greatly improved) Apple Trivia Tournament. **—P.S.**

CORRECTION

David Hewitson of Ronan Electronics says, "Neither I nor Ronan Electronics ever had any involvement with any entity called Zip Technology." *inCider* also regrets an inaccuracy in reporting the size and performance of the Rocket Chip prototype (News Line, March 1988, p. 18): It was only a little larger than a IIc and ran six times as fast.



MALL WONDERS



"Mall marketing programs provide a forum in which consumers can learn about personal computers in a non-intimidating, non-sales environment," says Susie Schwab of Apple Computer. Last year's Apple Open House was "extremely successful," she notes. This year, Apple's coming to a shopping mall near you as a part of the "Museum of unNatural History" tour, sponsored by the rock-music television network MTV.

Apple will show off its computers in the show's "Long Live Rock" and "Products for Better Living" exhibits. The products are straightforward: Apple computers for home, school, and office. But rock 'n' roll Apples?

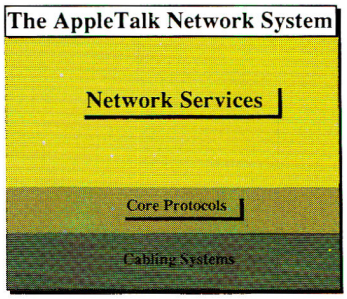
"Professional and amateur musicians can easily compose music on Apple II and Macintosh computers," says Schwab. "[The show's] a multimillion-dollar interactive display of music, fashion, and technology" that will showcase Apple computers. **—P.S.**

THE LINES ARE OPEN

The long-awaited AppleTalk network has arrived. Schools with IIes and GSs in their classrooms and Macintosh or MS-DOS machines in the office can open up the lines of communication. New and updated networking products from Apple include the AppleShare file server (version 2.0), $799; print server, $299; Aristotle menu-management software, $199; workstation card for individual IIes, $249 each; and workstation installer kits for the IIGS, $99 each.

The AppleShare file server allows for simultaneous file access by multiple users, so students and teachers can share information. The AppleShare print server allows for both LaserWriter and Imagewriter print spooling and will support multiple printers.

The basic system configuration of the AppleTalk network requires a dedicated Mac as a file server and print server. This machine can then be cabled to other Macs or MS-DOS machines and a LaserWriter in the administrative office. Apple IIes and GSs in classrooms can be connected to the system as workstations from up to 1000 feet away. Other classrooms, computer labs, or office areas can be linked within 1000 feet of a network bridge. **—L.L.**



APPLE BITS

■Trio, Softsync's (New York, NY) integrated package for the Apple II, should be available for the GS by late August. The new version reportedly features network capability and some other integrated goodies.

■Sharon Pikul, media technical coordinator for the Tri-County Educational Center in Channahon, Illinois, says it's $40–$50 *cheaper* to buy Apple's IIGS and use the AppleTalk local-area network than it is to use IIes and set them up with all the necessary network hardware and software.

■Looking for an investment as far from Wall Street as possible? Roger Wagner Publishing (San Diego, CA) "sold a royalty interest to investors in MouseWrite, much the same way as is done in a Broadway play," according to Roger Wagner. Selling stock is "costly, complicated, and offers an uncertain return to investors," he adds.

■DataPak (Sherman Oaks, CA) has established quite an upgrade policy for GraphicWriter: It has stripped off copy protection and will send you GraphicWriter 2.0 free if you're a registered owner.

■Electronic Arts (San Mateo, CA) promises "Software for Life": If you own an EA product (or one from an affiliated label—14 at last count) that runs on an 8-bit computer such as the Apple IIc or IIe, you can buy the same product for the 16-bit version—say, for the Apple IIGS—for half-price.

■The 70,000 students at Britain's Open University, the largest "university of the air" in the world, will be studying UCSD Pascal in programming classes, according to Pecan Software Systems (Brooklyn, NY), which will supply 20,000 copies of Pecan Pascal. Its advantage? Pecan runs on almost any mini or microcomputer.

■Don't be surprised if you call Corvus (San Jose, CA) and Corvus doesn't answer the phone: The company has been bought out by Control Data of Minneapolis, Minnesota.

APPLE CLINIC

by William Kennedy, Ph.D.,
Technical Editor

Apple Clinic is a forum for discussing and answering your questions and concerns about Apple II hardware and software. Address your correspondence to Apple Clinic, inCider, *80 Elm Street, Peterborough, NH 03458. Because of the volume of letters, most won't appear in print, but expect a response from Dr. Kennedy via postcard.*

Unplugged

Is it true that you shouldn't plug in and unplug accessories or peripherals while your computer is on? If so, how can I switch my IIc's joystick and mouse without problems? How can I ensure that the computer recognizes the switch? For example, if the joystick's connected when I boot up AppleWorks with Super MacroWorks (a Beagle Bros program that lets you use AppleWorks with a mouse) installed, AppleWorks won't recognize the mouse after the switch. Also, can a joystick hang up AppleWorks?

Lawrence Niekamp
Citrus Heights, CA

It's a good rule of thumb not to connect and disconnect accessories or peripherals to and from an active (powered) port on a computer. You're almost certain to fry something expensive, maybe even your computer, just by disturbing a peripheral card plugged into one of the bus-expansion slots while your Apple is on.

Then again, such rules are made to be broken. Most external peripherals, loosely defined as anything that plugs into the back (not inside) of the Apple, have protected circuitry: The transient surges and spikes of current introduced when "pulling the plug" usually won't harm anything. So it's probably okay to plug in a printer cable, or a different joystick, or the monitor cable your cat mistook as a piece of yarn.

You create more damage turning the computer off and on again to change a peripheral connection. Computers don't much care for dramatic changes in current such as that introduced when you first turn on the power. That's why I strongly recommend using a soft reboot (PR#6, for example) whenever possible.

Your Apple's ability to recognize a change in peripherals depends on the software. Most peripherals require their own specific drivers and host software routines. In most applications, you can select and activate these device-specific drivers only at bootup time; programmers are loathe to implement them thereafter. The best you can do is try switching devices and see if it works.

Finally, yes, a joystick with a "fire" button #1 stuck in the on position will thoroughly confuse AppleWorks. Your machine's apple keys, which AppleWorks uses extensively, work exactly like the joystick fire buttons. (If you have a joystick and AppleWorks, try using "firebutton-S" to save a file.) Just unplug that errant device and all should be well.

Printer Buffers

We use a variety of text/graphics programs, including The Print Shop, Kidwriter, and Monsters and Make Believe, to motivate and teach creative writing to handicapped children.

We're fortunate to have three Apple IIcs, but because it takes so long to print valuable hardcopies of the children's work, we use one computer solely with our ImageWriter II. Is it possible to speed up printing so that the students have ample opportunity and time to compose their work? Would a printer buffer help?

Rebecca Ann Penso
L.A. Unified School District
Los Angeles, CA

I can't think of any steps to speed up your printing other than to make sure the serial-communications data-transmission rate between the ImageWriter II and your Apple is set to the maximum of 9600 baud. (Use the IIc System Utilities program to set the serial port, and make sure your ImageWriter II's DIP switches SW-1 and SW-2 are both closed.)

Even so, increasing the baud rate won't help much, because the slow step is the actual printing. A single line of graphics consists of thousands of dots, each requiring a mechanical pin to physically "punch" ink off the ribbon onto the paper. That's a slow process compared with electronic output devices such your monitor, on which millions of phosphorescent dots are excited ("punched") every 30th of a second.

While you can't speed up actual printing, a print buffer will help free the computer connected to your printer. A buffer collects the print data as fast as your Apple can transmit it, then feeds those data out at a slower rate to the print mechanism. Since your Apple no longer has to wait to send data, it can go on to perform other tasks—letting you create another picture, for example.

Apple Computer (20525 Mariani Avenue, Cupertino, CA 95014, 408-996-1010) manufacturers a 32K buffer that plugs directly into the ImageWriter II's expansion slot. Similarly, Orange Micro's ImageBuffer (1400 North Lakeview Avenue, Anaheim, CA 92807, 714-779-2772) comes with 64K on board and is expandable to 128K. Either one should satisfy your needs.

Finally, try to stagger your printouts so that you don't have a backlog at the end of the day.

Abandoned Cats

I recently sold my Apple IIe and purchased a IIGS. It's a great machine, but I'm having trouble setting up my modem and communications software. The Novation AppleCat II modem and Commware program always worked well together in my IIe, so I assume they're not damaged. My dealer assured me that the modem would work in the IIGS.

So far, I've tried different slots and reconfigured the software in a number of ways, but as soon as I auto-dial a number, the screen fills with garbage and the pro-

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M! MACKEN



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gram locks up. What are my options, other than buying a new modem or software?

David Sanchez
South San Francisco, CA

Sorry, David, the AppleCat II is the culprit: Novation designed it for use in the Apple II Plus or IIe, so it won't operate properly in the IIGS. Because Novation no longer manufactures the AppleCat II, it doesn't plan to modify the product for the IIGS.

More Files Reincarnate

My hobby for the past couple of years has been reincarnating files from bad ProDOS and AppleWorks disks. Tom Weishaar at *Open-Apple* has been referring people to me for some time now.

I've recovered files of all sizes—from a few kilobytes in length to an AppleWorks database file with several thousand records segmented on three disks. I've also stumbled onto a limitation in the row size for an AppleWorks speadsheet that prevents you from reloading a file saved to disk. Apple knows about it, but I haven't seen it published anywhere.

I'd like readers to know about my service. I'm a hobbyist who's not trying to get rich on file-recovery work—I do it for enjoyment and education.

Pete Johnson
P.O. Box 84
New London, MN 56273

Thanks, Pete. Clinic readers who need to recover damaged files but haven't the time or patience to use a "zap" program (see "Files Reincarnate," Apple Clinic, February 1988, p. 23), or don't know someone to help them out, can now find comfort. I leave it to you to dicker about recovery arrangements and cost.

Now, Pete, just what is that limitation in the AppleWorks row size you found?

Quickies

To obtain 80-column printed listings of your BASIC programs on an ImageWriter II, type the following sequence of keystrokes, ignoring the spaces: PR#1 Control-I 80N Escape-D spacebar Control-@, then press Return. *Control-I* means press the I key while holding down the control key; perform a similar step for *Control-@*. Remember, don't hit the spacebar, except for the one spot in the sequence where it's indicated.

—Arthur Rothstein, Plymouth Metting, PA

To boot from an external UniDisk, enter this sequence from the system monitor: 300:A2 20 A0 01 64 03 64 3C A9 60 4C 0A C6, followed by 300g.

—Peter Bryant, Zephyr Cove, NV

Applesoft Program Typing Proofer

Tired of the frustrating hours you spend trying to find those typos you made when entering *inCider* freeware? Well, no more! Type in and SAVE to disk the ASOFT PROGRAM CODER shown in the accompanying **Program listing**. DO NOT type the bracketed numbers that appear at the end of each line; they're the proof values you'll use later.

Go ahead and RUN, then LIST the CODER program. The highlighted numbers at the end of each LISTed line should match the bracketed numbers in the listing. If so, BSAVE ASOFT.PROOFER,A$300,L$CF and, for later programming sessions, simply BRUN ASOFT.PROOFER. It'll operate under both DOS 3.3 and ProDOS. The proofer disconnects, however, whenever you change the output vectors—with the PR#0 command, for example. To re-install the proofer, just CALL 768.

The proofer isn't perfect. It also counts spaces, so if your proof number is off by a multiple of 32, your program line has some extra spaces. That's not usually a problem, though.

You already know how to use the proofer. If the highlighted number you see at the end of a LISTed line matches the published one, you can be fairly well assured you typed it correctly. Otherwise, edit or retype the line until the numbers match.

The proofer won't kill all your Applesoft bugs, but it will take a lot of sweat out of typing *inCider* freeware. Guaranteed.□

—W.K.

Program listing. *Applesoft typing proofer.*

```
10  REM  ASOFT PROOFER CODER  [1571]
20  FOR I = 0 TO 207: READ N  [1095]
30  POKE 768 + I,N: REM  PROGRAM  [1579]
40  NEXT I: REM  HEX $300-$3CF  [1224]
50  CALL 768: END : REM  PROOFER INSTALLED!  [2087]
100  DATA  162,60,160,3,173,0,191,201,76,208  [1916]
110  DATA  20,173,48,190,141,206,3,173,49,190  [1987]
120  DATA  141,207,3,142,48,190,140,49,190,208  [2076]
130  DATA  18,173,83,170,141,206,3,173,84,170  [1976]
140  DATA  141,207,3,142,83,170,140,84,170,169  [2096]
150  DATA  0,141,58,3,141,59,3,96,0,0  [1617]
160  DATA  201,141,240,3,76,202,3,134,70,132  [1994]
170  DATA  71,186,138,105,7,170,189,0,1,201  [1911]
180  DATA  214,208,7,189,255,0,201,229,240,30  [2114]
190  DATA  189,253,0,201,40,208,6,169,152,201  [2059]
200  DATA  141,208,17,189,255,0,201,13,240,86  [2072]
210  DATA  169,0,141,58,3,141,59,3,240,76  [1889]
220  DATA  173,58,3,13,59,3,240,25,32,87  [1916]
230  DATA  219,32,87,219,165,50,72,41,63,133  [2064]
240  DATA  50,174,58,3,173,59,3,32,36,237  [1990]
250  DATA  104,133,50,160,0,140,58,3,140,59  [2041]
260  DATA  3,177,155,200,17,155,240,28,200,177  [1959]
270  DATA  155,200,24,113,155,208,9,200,177,155  [1984]
280  DATA  240,14,24,109,58,3,141,58,3,144  [1778]
290  DATA  242,238,59,3,176,237,166,70,164,71  [1961]
300  DATA  169,141,141,98,3,76,240,253  [1617]
```



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Beagle Bros Tackles AppleWorks

TIMEOUT

Beagle Bros Inc., 6215 Ferris Square, Suite 100, San Diego, CA 92121, (619) 296-6400

AppleWorks add-ons; AppleWorks version 2.0 required (will support subsequent versions), extra memory recommended (RAM disk, UniDisk, or hard drive)

AppleWorks has accomplished something no other software package in the Apple II world has: An entire industry has arisen to provide various add-ons and utilities designed to enhance its capabilities. Some work well, some don't.

Beagle Bros has long been a source of excellent programs and utilities for Apple II users. It has now entered the AppleWorks-add-on ring with a full line of contenders. The TimeOut series of pop-up utilities and accessories covers just about everything else you'd want to do with AppleWorks. From macros to fonts to spell checking to sideways spreadsheets, one or more TimeOut add-ons can customize your AppleWorks as much or as little as you see fit.

For the most part, TimeOut's prices are comparable to those of similar packages from Pinpoint and other manufacturers. Pinpoint now bundles its desk accessories with its SpellCheck spelling checker and its KeyPlayer macro program for $149. Pinpoint's Document Checker sells for $69 by itself. TimeOut QuickSpell, DeskTools, and UltraMacros would sell for $179.85 together. TimeOut Graph is priced at $89.95, while Pinpoint's Graphic Edge is $89. TimeOut SideSpread sells for $49.95, while Sideways from Funk Software is $69.95.

GETTING THERE

To get started with any TimeOut module, you first add the TimeOut installation routine to your AppleWorks Startup disk. From there, you copy individual applications to other disks, as many or as few as you need.

inCider's Ratings

Excellent—remarkable, a must buy	■■■■■
Very good—impressive and recommended	■■■■
Good—average, solid performance	■■■
Fair—flawed but adequate	■■
Poor—unacceptable or unusable	■

TimeOut applications aren't the easiest accessories to install. The documentation seems to be leading in the right direction, but things get a little confusing when it comes to copying individual fonts. The manual's tutorial and reference sections are helpful, but installation instructions are sketchy. Be sure to read the word-processor file called Notes on your TimeOut disk: It'll contain the latest documentation updates.

Once you've installed your TimeOut applications, getting at them is a snap. When you're in AppleWorks, press Open apple-Escape and you'll get the TimeOut menu with a list of the TimeOut accessories you've added. From there, you can call up the TimeOut application of your choice.

A large memory-expansion board, a 3½-inch disk drive, or a hard drive will help you get the most from TimeOut. For instance, SuperFonts lets you use up to 64 different type styles per document, and they take up a lot of memory; UltraMacros lets you keep as many different files of macros as you need. You'll probably want to use more than one TimeOut application, too.

There isn't a whole lot to say about the TimeOut series—and that's one of the best compliments it can get. Here's what *inCider*'s editors think.



ThunderChopper

Introducing ThunderChopper, the new standard of excellence in helicopter simulation! ThunderChopper combines SubLOGIC graphics technology with strategies and tactics by Colonel Jack Rosenow, USAF (Ret.). This simulator truly was a labor of love for the Colonel:

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"ThunderChopper is the most realistic helicopter simulation you'll ever fly. Try ThunderChopper - the excellence comes through."

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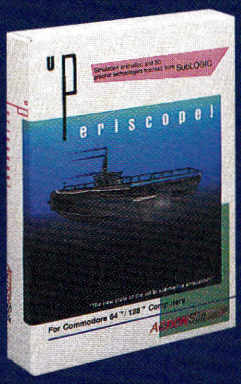

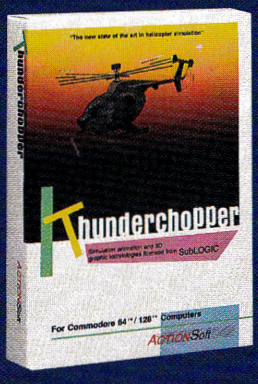



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TIMEOUT DESKTOOLS

AppleWorks-enhancement utilities
$49.95
Rating: ■■■■

The "desk accessories" concept is rather simple: Let your Apple help with those little clerical tasks you usually do manually or with the traditional desk-bound accoutrements. The usefulness of a particular desk accessory or tool, therefore, is directly related to how often you'll need it and how much easier the task becomes when you do it on a computer.

By that criterion, the degree of usefulness you'll derive from Beagle Bros' TimeOut DeskTools, a collection of AppleWorks accessories created by a variety of developers, ranges from essential to dubious. DeskTools includes a calculator, calendar, case converter, data converter, clock, dialer, envelope addresser, file encrypter, notepad, page previewer, puzzle, and word counter.

INSTALLATION AND ACCESS

Like the other TimeOut packages, the DeskTools module comes on both 3½- and 5¼-inch disks. Boot the BASIC STARTUP program from the TimeOut disk: It's an installation utility that modifies your AppleWorks Startup disk. DeskTools accessories are compatible with a variety of other enhancements you may have installed. Read the Notes file that comes on the installation disk to determine compatibility with your version of AppleWorks.

Actually installing DeskTools on your copy of AppleWorks takes only a few minutes. But take some extra time and read the documentation carefully so that you can decide which DeskTools you want to use and where you can find them (disk slot/drive or ProDOS path). One particularly attractive installation feature is the AppleWorks patch that sends you to the main menu when you press Control-Reset instead of to the system monitor—without losing your data, no less.

TimeOut's individual DeskTools are easy to access within AppleWorks: Just press Open apple-Escape and use the arrow keys and Return to select one from a menu of available tools. The tools' screens are all nondestructive; that is, they restore the original screen's contents when finished.

UTILITIES AND CALCULATOR

The utilities DeskTool, which comes with every TimeOut module, lets you select any of a number of file-management options. Once you've installed your TimeOut add-on, you aren't necessarily out of the drawer yet: You may need to configure it. (Consult your manual for details.) Moreover, you can load some or all modules into memory manually for quick access, assuming you have the memory available, or you can dump them from memory if you don't need them anymore. You can even specify that a particular accessory load into memory automatically when you first start up AppleWorks. You can also rename your modules.

The calculator DeskTool has many of the features you might find on a real calculator—even memory and a square-root function. It's particularly useful (and indeed worth the price of the whole package) for anyone who doesn't like to fuss

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AUGUST 20, 2087

Nothing could be worse than this god-forsaken, radioactive desert.

More Sniperdroids! All tracking me with them death glares. And them Uzis. They're weird trigger-twitchin' folks. I suspect it's them poisoning the water.

Or maybe it's those Leather Thugs. Heck, I don't know anymore. I heard they have a bunch of civilians cut off east of Ranger Center, which is where I'm headed. Hope not. They want me dead. Like every other mutant this side of Vegas.

The worst part is, I'm getting to be as bad as they are. You wouldn't believe some of the ways I've learned to kill. I hang out in sewers, and my best friend is a MAC 17 submachine gun.

Gramps talked about life before the nuclear war. All I know is I don't want others living this way. Gotta rebuild this desert right. Gotta make it so you can sleep with your eyes closed.



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Circle 138 on Reader Service Card.

with an AppleWorks spreadsheet just to compute a simple running total.

The calculator also has a "tape" to which you can print your calculations for later review. Unfortunately, you can print only to the "on-screen" tape, not to your real printer. You can edit tape entries, but such changes are notational only; changing a number in a series of calculations on the tape doesn't alter subsequent calculations.

There's one additional minor flaw in the calculator: While you press Escape to exit any other DeskTool, you have to press the O key or use the arrow keys to "turn off" the calculator manually.

CALENDAR

You can't reach into your back pocket while strolling from appointment to appointment and check your schedule with this calendar—but that's about the only real difference between the TimeOut electronic calendar and the pocket variety. In fact, the TimeOut calendar extends beyond most print versions—to December 31, 1999.

CASE CONVERTER

You can capitalize the whole of the word *dubious*, render it again in lowercase, capitalize just the *d*, or capitalize the *d* only if it starts a sentence—all at the stroke of a key. Unfortunately, as the word *dubious* goes, so goes your entire document. This one isn't very useful for most AppleWorks applications.

CLOCK

I originally reserved TimeOut's clock for the "dubious use" award: There seem to be all too many clocks around these days as it is. "Dubious," that is, until I spent several frustrated moments desperately seeking a watch on top of my meticulously unkempt desk. The DeskTool clock saved me—just in time for a meeting with the boss.

DIALER

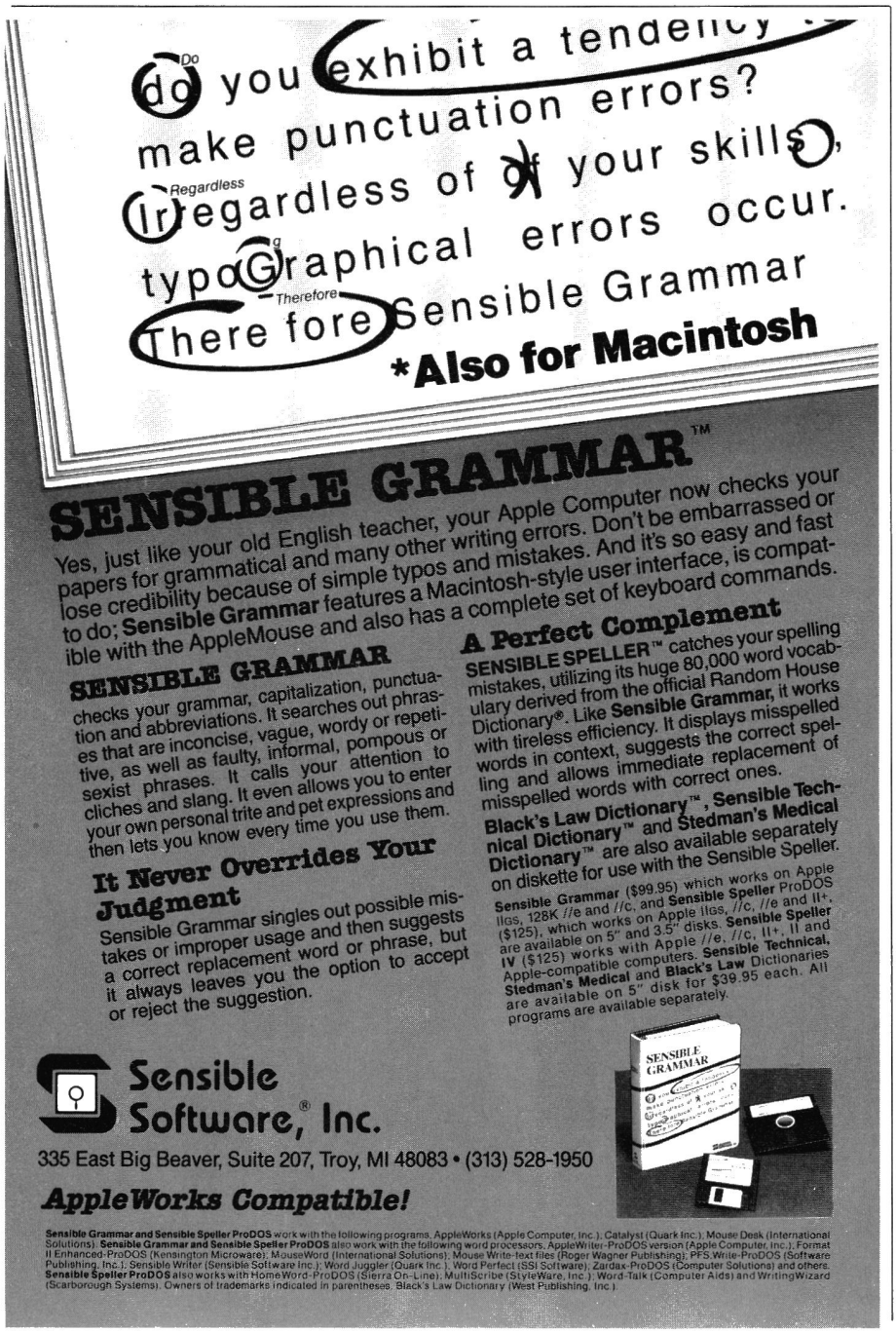
Those of you who don't have a modem, or those who do but can't have a phone connected to the same line, skip this one. The same goes for those of you fortunate enough to have a dial/redial option on your desk phone.

If you've read this far, tread even more carefully: The dialer option is guaranteed to crash your system if you don't configure it properly. Even then, you'll become dialer-shy fast after being (seemingly inevitably) burned.

The stronghearted may find it useful, though, to have this DeskTool dial the phone. You can choose to redial the last call made or one from a "quick" list of ten previously recorded phone numbers.

DATA CONVERTER

The data converter is a terrific utility to splice database or spreadsheet information into a word-processor document. Just capture a section of information in the clipboard and invoke the data converter.



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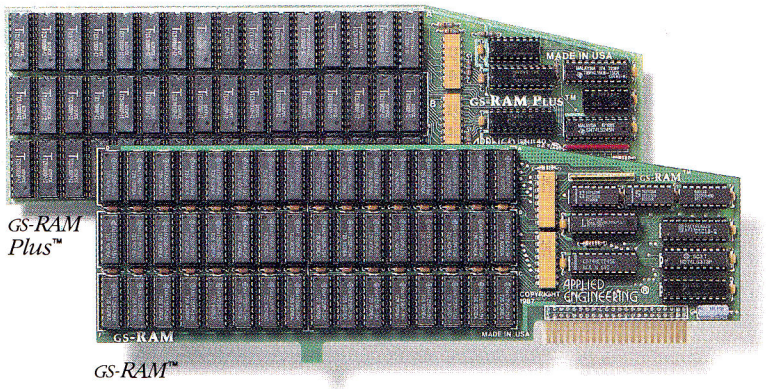

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Making AppleWorks Even Better

Applied Engineering's Expander program eliminates AppleWorks internal memory limits allowing it to recognize up to 8 megabytes of desktop workspace. You can increase the limits from only 7,250 lines to 22,600 lines in the word processor and from 6,350 records to 22,600 records in the database. The Expander allows all of AppleWorks, including print functions, to automatically load into RAM. The clipboard size will increase from 255 to 2,042 lines maximum. GS-RAM will automatically segment larger files so you can save them onto multiple floppies. And GS-RAM provides a built-in print buffer that allows you to continue working in AppleWorks while your printer is still processing text. You can even load Pinpoint or MacroWorks and your favorite spelling checker into RAM for instant response.

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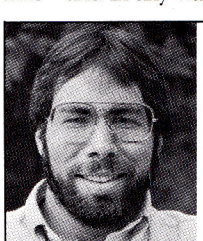

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FILE ENCRYPTER

This is the stuff from which an earlier generation's Dick Tracy decoder is made. Seriously, the ability to encrypt documents is important to some users, and this encrypter uses one of the best schemes currently available. To encrypt your current AppleWorks document, spreadsheet, or database, you have to select and then enter again a "key" one to ten characters long. You can then save the resulting mish-mash of characters and symbols to disk, telecommunicate it, or just leave it on screen until after lunch. You must duplicate that exact key to decode your encrypted document. Fortunately, Beagle Bros will recover forgotten keys for just $10.

ENVELOPE ADDRESSER

Here's the essential DeskTool if there ever was one. You select forwarding and return addresses from your current document and position them on a screen-rendered "envelope." Then, presto, print—no more wasted time or envelopes.

NOTEPAD

It's a common practice to jot notes and ideas on whatever is handy, then promptly lose that bit of wisdom. TimeOut's notepad DeskTool eliminates that loss—as long as you remember to read your notes once in a while.

PAGE PREVIEW

The page-preview DeskTool lets you examine the appearance of your word-processor document. This utility operates just as if you intend to print the document, although it shows you the complete document, not portions of it, as AppleWorks normally allows. The program then displays each document page as a high-resolution graphic. Text appears as black lines on a white page; the effect is similar to squinting at an actual, printed page about five feet away.

PUZZLE

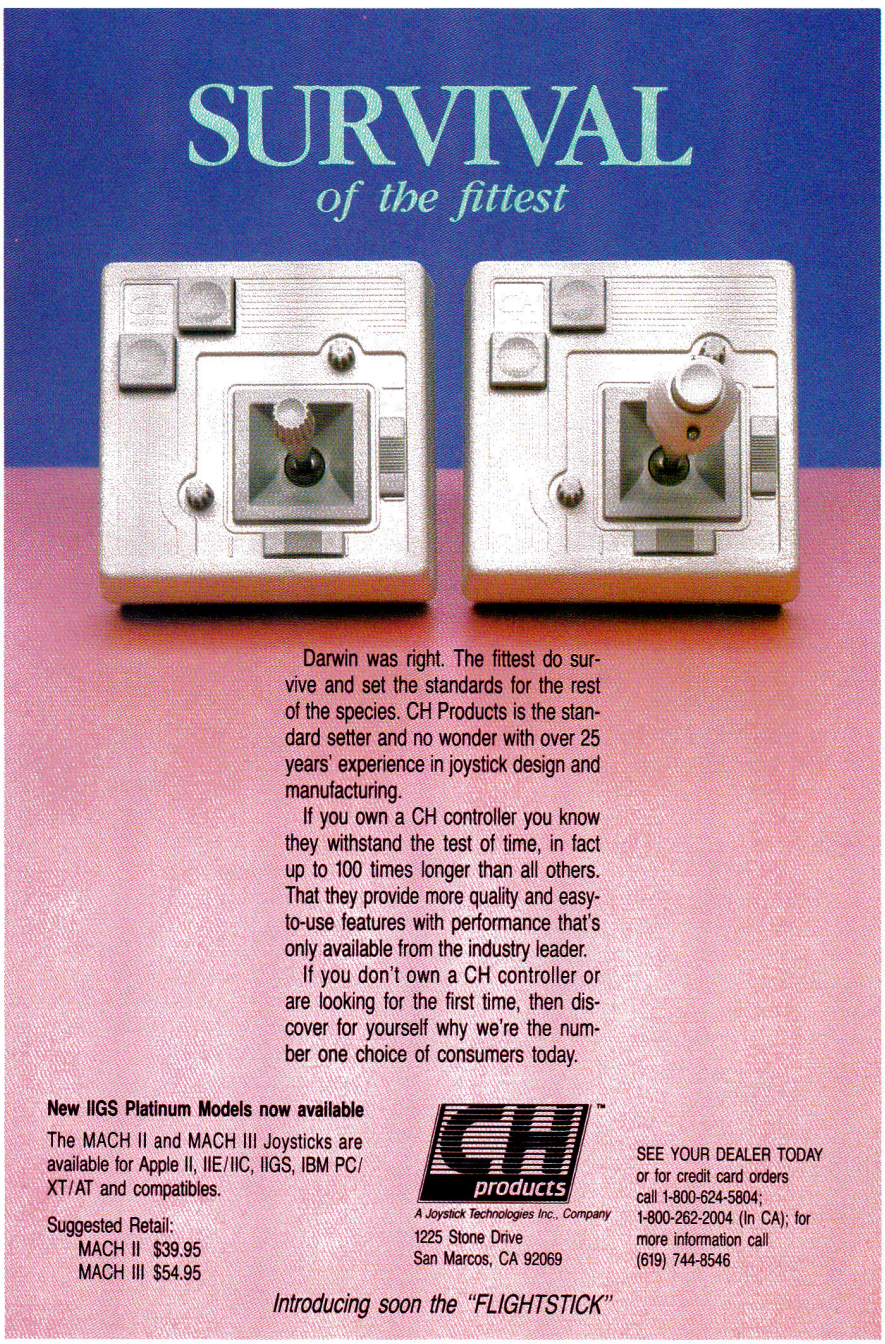
What collection of desk accessories would be complete without the simple "reorder the numbers" puzzle made popular on the original Macintosh? Not at all necessary, but a nice addition.

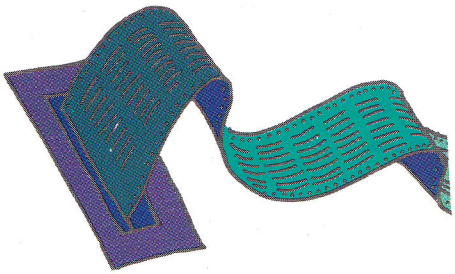
WORD COUNT

A word counter rounds out the current TimeOut DeskTool lineup. Most dictionary applications produce a similar count of letters, words, number of lines, and average word size. But this DeskTool is much more accessible and easier to use. Schoolchildren and magazine editors will find it particularly helpful when the assignment specifies a word limit. (Do I have 1000 words yet?)

All in all, the TimeOut DeskTools package is an inexpensive yet indispensable enhancement for AppleWorks.■

William Kennedy, Ph.D.
inCider *staff*





TIMEOUT SIDESPREAD

Sideways-printing utility
$49.95
Rating: ■■■

If your AppleWorks spreadsheets are longer than three or four columns across, you're probably tired of taping them all together. Beagle Bros' TimeOut SideSpread lets you retire your Scotch tape once and for all.

As with the other seven applications in the TimeOut series, SideSpread runs within AppleWorks; that is, you actually patch your AppleWorks disk. For the most part, that's an advantage, because you can print long spreadsheets without leaving AppleWorks to run another program. The only disadvantage is that the installation process is more confusing than it should be. While the documentation is generally good, clearer instructions are needed.

SideSpread is best suited for use with a 3½-inch disk drive, a hard disk, or a RAM disk. Otherwise, you have to switch disks when you want to call up SideSpread. This is only a minor inconvenience, but many of us have been spoiled by RAM disks and the 800K limit of the UniDisk 3.5. The ability to load SideSpread and other TimeOut applications to a hard disk, a 3½-inch disk, or a RAM disk and then forget about them is more civilized than swapping 5¼-inch floppies.

Loading SideSpread on a 3½-inch disk is simple: Just use Copy II Plus, the ProDOS User's Disk, or another utility to copy it to the AppleWorks disk. You can then use the "load to memory" option from the Utilities application on your TimeOut disk to load SideSpread to a RAM disk. If you're adding SideSpread to another TimeOut disk, such as TimeOut Graph or FileMaster, make sure that TO.UTILITIES is on that disk. If it isn't, copy it from your SideSpread disk when you copy TO.SIDESPREAD and TO.CLIPBOARD.

Once installed, SideSpread works as advertised. It offers basic options in page-setup and print-quality modes. "Tall adjusted" lets you select an alternative print density, and "reduce 50 percent," as you would expect, shrinks the print by half. Choose from three levels of print quality: high, standard, and draft.

Working with TimeOut fonts, you can print in a combination of 16 typefaces and point sizes: Monaco in 6, 9, 10, 12, 14, 18, 20, or 24 point, or Courier in 9, 10, 12, 14, 18, 20, 24, or 28 point.

The manual offers a good tip for using various fonts and point sizes combined with 50-percent reduction to improve the quality of your printout. If, for example, you want 10-point Courier, select Courier in 20 point and reduce it.

If you don't use the AppleWorks spreadsheet often, the ability to print your budgets, business plans, gradebooks, and so on sideways may not seem like a big deal. But if you use the AppleWorks spreadsheet to any extent, TimeOut SideSpread is a must.■

Dan Muse
inCider *staff*

FILEMASTER, GRAPH, QUICKSPELL

File-maintenance utility, spreadsheet grapher, spelling checker
$49.95 (FileMaster), $89.95 (Graph), $69.95 (QuickSpell)
Rating: ■■■■ (FileMaster)
■■■ (Graph)
■■■ (QuickSpell)

QuickSpell, Graph, and FileMaster, like the rest of the TimeOut series, are well-designed add-ons that can make your life with AppleWorks much easier. Once installed, they're simple and handy to use.

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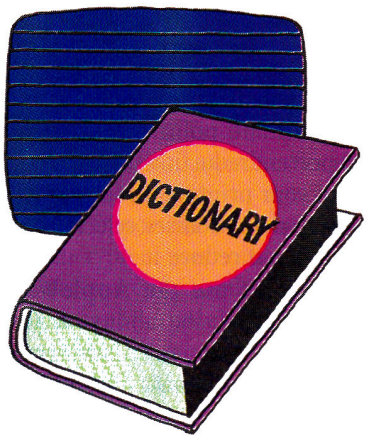


CHECK THAT SPELLING

When you load QuickSpell, the program immediately scans your current AppleWorks file and brings up a list of suspect words. You can pick out certain words to correct or replace or add to the custom dictionary instead of being forced to look at suggested spellings for every word. Since personal and trade names will be unfamiliar to the program, this feature can be a big time saver: You can pick words to ignore or to add to the dictionary, then correct the spelling of more common words.

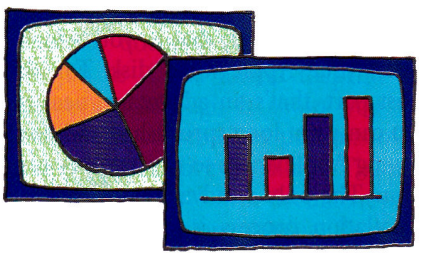
QuickSpell may seem cumbersome at first, because of the extra time you'll need to first decide which words to correct or replace, then to select a new spelling. As you become more familiar with the program, however, you'll appreciate its flexibility more and more.

All software is a compromise between ease of use and power. That compromise is especially apparent with utility programs. If the software is easy to use, you won't have to make many choices. Later, as you become more proficient, you'll find yourself frustrated by the things you can't do. QuickSpell's strongest feature is the flexibility it gives you; it's well worth the small amount of extra time you'll spend getting familiar with the program.

QuickSpell does have one problem: It's got more words than you'll ever need. A request for suggested spellings can get you 400 words, including many that bear little relation to the word you're trying to spell. For example, QuickSpell highlighted the partial word *Niners* from the phrase *San Francisco Forty-Niners* and included *Nicaragua* and *nonexempt* in its list of suggested spellings.

CHARTING YOUR DATA

TimeOut Graph turns your AppleWorks spreadsheets into graphs—pie, exploding pie, bar, and so on. It works quickly enough to keep even the most impatient number crunchers satisfied.





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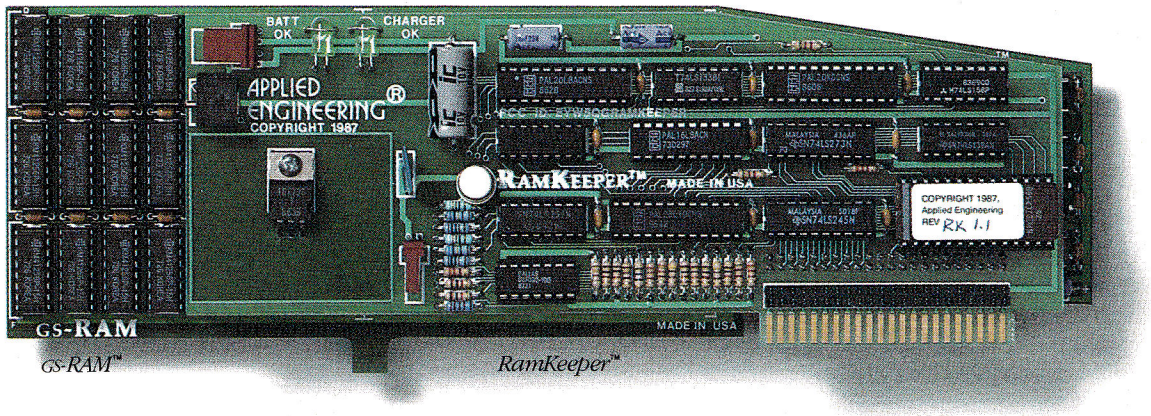
For the "Instant On" Apple IIGS.



GS-RAM™ *RamKeeper™*

Permanent Storage with an "Electronic Hard Disk"

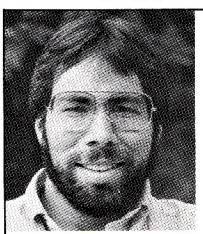
Now when you turn on your IIGS your favorite program can appear on screen in just a few seconds! With RamKeeper, your IIGS memory card will retain stored programs and stored data while your IIGS is turned off. RamKeeper allows you to divide your IIGS memory into part "electronic hard disk" and part RAM for your programs workspace—in almost any way you want and at anytime you want. GS-RAM, GS-RAM Plus, Apple IIGS memory card and most other IIGS memory cards are compatible with RamKeeper.

Supports Up to Two IIGS Memory Cards at the Same Time

If you bought your IIGS with Apple's memory card and later wished you had the GS-RAM, no problem. RamKeeper will support both cards plugged into RamKeeper simultaneously!

How it Works

Just unplug your IIGS memory card from your computer, plug your IIGS memory card into RamKeeper, plug RamKeeper into the IIGS memory slot. If you have another IIGS memory card, an additional card socket on RamKeeper will accommodate your second card. That's all there is to it!



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Steve Wozniak, the creator of Apple Computer

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- Can support up to two IIGS memory cards simultaneously
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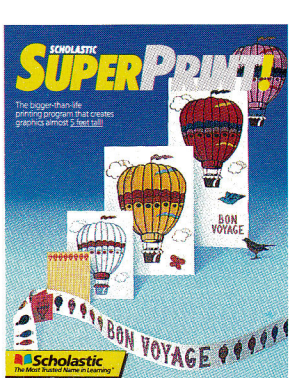

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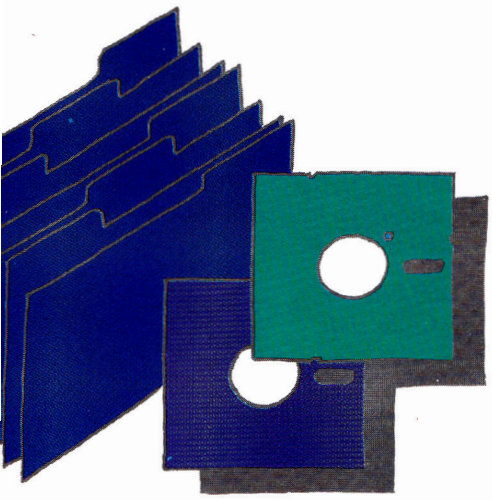
SuperPrint works with your Apple 128K and most dot matrix printers. MS DOS version available January '88.

Circle 171 on Reader Service Card.

Actual size 25½" × 55"





Be prepared, however, to spend some time experimenting if you're not already familiar with graphing programs. The manual doesn't really explain the axes and how your data and your labels are related to them. It provides a single example, which you'll have to adapt by trial and error. Plan to spend a hour getting acquainted with TimeOut Graph before you really need to produce a picture.

Once you understand what you're trying to do, you'll make graphs very quickly. Graph is a particularly handy tool for clarifying and illustrating the numbers with which you're working.

The pie chart offers an especially nice feature: It automatically calculates each piece of the pie's percentage of the total. When graphing expenses, for example, it can be useful to see the percentage each line item takes up. You can also shade pie charts to make them look more professional.

Graph does have several drawbacks, however. First, it doesn't print in color. Second, when you produce a graph that contains a number of small segments, the labels for those segments overlap and the words are indecipherable. The problem is particularly bad with pie charts.

Beagle Bros had only two suggestions for correcting the problem. The technical-support people advised changing the order of the numbers in the spreadsheet and regraphing. The manual recommends lumping all small items together in one large category called "miscellaneous." Unfortunately, both solutions require extra work and risk distortion of the information to be graphed.

A future version of Graph should solve the problem, according to the technical-support representative to whom I spoke. A new edition will assign a pattern to each piece of the pie, then provide a key in one corner of the screen to show which pattern represents which label.

Graph is definitely worth having, despite its minor drawbacks. Because it's so easy, you'll find yourself using it often, even when you'll be the only one looking at the graphs.

HOUSEKEEPING

FileMaster can be as basic or as sophisticated as you want it to be. At its easiest, it lets you perform file "housekeeping" tasks without ever leaving AppleWorks. FileMaster lets you copy and compare files and disks, format disks, lock and unlock files, and create subdirectories. It sounds simple, and it is. It's also very handy to have.

For example, if you have to interrupt your work to copy a disk, you can do it without ever leaving AppleWorks. You won't have to waste time saving files and exiting the program, only to have to reboot the program and reopen the files a few minutes later.

Advanced AppleWorks users can also put FileMaster to good use. Those who get frustrated when AppleWorks asks, "Are you sure you want to do this?" whenever they attempt to delete a file or exit the program can use FileMaster to create an "expert mode." In expert mode, you'll never have to face such questions again.

FileMaster also lets you back up your files more easily. By using the "clear backup bit" option, you can select files to recopy to your backup list and avoid wasting time copying untouched files. Features like these guarantee you'll come to rely on FileMaster and use it often.■

Pat O'Dell
inCider *staff*

TIMEOUT SUPERFONTS

Fonts and print formatting for AppleWorks
$79.95
Rating: ■■■

If you want to jazz up your printouts with a variety of fonts (typefaces) and type sizes, there's more than one way to do it. You could do all your word processing with a graphics-based program such as MultiScribe from StyleWare, or Writer's Choice Elite from Activision—or you can soup up your tried-and-true, trusty AppleWorks with Beagle Bros' SuperFonts.

FUN WITH FONTS

Up to 64 load-font commands per document call up different typefaces so that you can prepare them for use in your printout. Once they're loaded, you can issue an unlimited number of change-font commands, which indicate the styles you want to use. You use load-font commands just once at the beginning of a document; you can use as many change-font commands as you like anywhere in a document.

TimeOut's type styles include boldface, italic, underline, shadow, outline, subscript, superscript, and inverse, in 6-point size (quite small—1/12-inch capitals) to 127-point size (1¾-inch capitals). TimeOut's typefaces are the usual Apple IIGS/Macintosh fonts, which include such standards as Helvetica and Times. With this selection of fonts and style options, you can create some classy-looking documents directly from AppleWorks.

PICTURE THAT

Besides loading your document with fonts, you can also add up to 64 different pictures, providing they're hi-res or double-hi-res, stored in standard Apple format. TimeOut's load-picture commands work like the load-font commands at the beginning of a document. You position pictures within your document with put-picture commands. SuperFonts also includes standard print-formatting commands, including right and left justification, centering, and tabs.

After you've created a masterpiece of embellishment, you're ready to "pub-

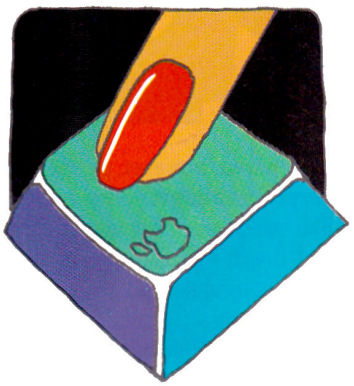


lish." Print to your screen first to get an idea of what it's going to look like, then choose print quality (high quality, standard, or draft), tall adjusted text or standard, and 50-percent reduction or standard size.

As we noted at the beginning of this review, SuperFonts, like other graphics-based programs, takes up a good deal of memory—especially when combined with other TimeOut applications. To avoid a lot of time-consuming, frustrating disk swapping, make your TimeOut applications memory resident or run them from a RAM disk.

Doctoring up your word-processor files with all sorts of fonts and type styles can produce some snazzy-looking letters and posters. A note to first-time font fanatics though: If you go wild with lots of different fonts, your document will end up looking like a 19th-century advertisement for saddle soap. Be creative, but be discerning.■

Lafe Low
inCider *staff*



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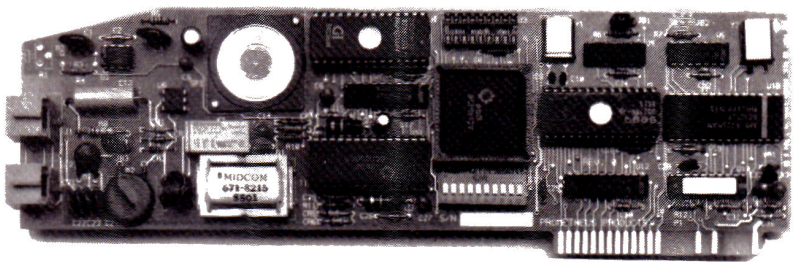

Introducing The ProModem 2400A From Prometheus Products

The new ProModem 2400A is an intelligent internal modem for the Apple II, IIe, and IIGS personal computers.

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TIMEOUT ULTRAMACROS

AppleWorks macro utility
$59.95
Rating: ■■■■

Beagle Bros' TimeOut UltraMacros save time even before you buy them: You don't have to decide whether you want Super MacroWorks from Beagle Bros or AutoWorks from The Software Touch. Authors Alan Bird (AutoWorks) and Randy Brandt (Super MacroWorks) have joined forces at the new Beagle Bros to write the last word in macro programs for AppleWorks: UltraMacros.

A macro, short for "macroinstruction," makes your Apple do what you probably thought it could do in the first place: A macro makes the machine do your work for you. It's a single computer instruction that stands for a series of instructions.

STREAMLINING COMMANDS

AppleWorks' handy menu interface, which saves you trouble by always presenting you with a list of options, together with its ability to keep 12 separate files on the "Desktop" in random-access memory (RAM), makes AppleWorks a natural for macros. You pay for AppleWorks' ease of use with your time; you need lots of keystrokes to finish the job. UltraMacros

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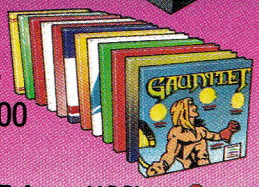

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comes to your rescue by "automating" those keystrokes.

You'll also understand AppleWorks' need for macros if you've ever tried to, say, copy material from a database file to a word-processor file for a report. Some integrated software does this in a single step; AppleWorks makes you take several steps. Maybe I should say *crawl*. First type Open apple-P to print. Hit Return to get a report format, use the arrow keys to select one, and hit Reurn again. Use Open apple-R to select the records you want to print. Go through menus of selection rules, then press Escape when you finish. Type Open apple-P to print. Use the arrow keys to select "to the clipboard (for the word processor)" and hit Return.

You're done—sort of. When you want to add the information to your word-processor file, you need two more keystrokes (Open apple-M and F for "from the clipboard") to move it.

It's the kind of keystroking with which AppleWorks fans are familiar, but it's a pain in the neck if you have to do it more than once, as I often do. So I wrote a macro. Writing a macro with UltraMacros is a remarkably simple task: Just type Open apple-X and pick a letter—say, A, although you could pick any symbol on the keyboard. Do what needs to be done, do it just once, and when you finish type Control-@. You've recorded a macro: Every time you type Solid apple-A now, AppleWorks will remember what you did the first time and do it again. Solid apple-A is a *recorded* macro.

UltraMacros also lets you *compile* macros, a process that's similar to writing a computer program. But don't be scared. You compile macros with a unique programming language in an AppleWorks word-processor file. It's a language with a straightforward syntax and an uncomplicated vocabulary: Almost all the commands available are straight AppleWorks commands. You might write a macro that looks like this:

```
start
A:<adb><OA-P><rtn><rtn>
<OA-R><rtn><rtn>Beagle Bros
<rtn><esc><OA-P>C
<rtn><SA-'><rtn>!
```

This one prints to the clipboard all database records whose first category is "Beagle Bros." If you can "read" that macro, you'll have no trouble compiling your own. The advantage of compiling your macros instead of recording them—in addition to the subtle pleasure of writing a computer program—is that you can save your file of compiled macros to disk when you turn the machine off. Now you can use those macros when you need them, without typing in the code again or repeating the actual keystrokes.

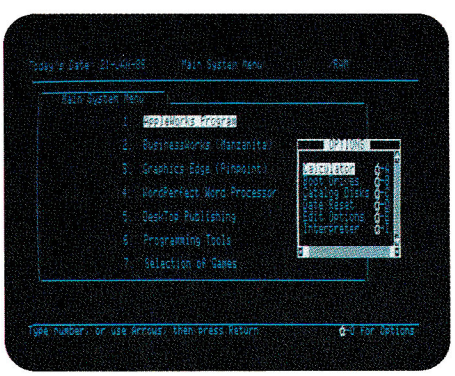
RUMBLINGS

There was a lot of grumbling around the office the day the TimeOut series arrived. Many people complained it was impossible to install TimeOut and its applications; I guess few of us had ever tried to install Pinpoint desk accessories. TimeOut has the advantage over Pinpoint, because once you modify your AppleWorks Startup disk with TimeOut and set up a disk for your TimeOut applications, you can add as many as you like just by copying some files to the TimeOut applications disk. You have to install Pinpoint again—that is, remodify your Startup disk—every time you add another desk accessory.

Everything you need to know is there, and Beagle Bros does have free phone support as well as an electronic bulletin-board system (BBS). In fact, Beagle Bros told us that so many callers were confused by installation problems that the company made some changes for the better in subsequent versions. That's the last word in customer support.■

Paul Statt
inCider *staff*

INTERFACE ™ **ProDOS PROGRAM SELECTOR**



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INTERFACE, the user-friendly ProDos program selector, lets you switch effortlessly from program to program without typing clumsy pathnames. Unlike other selector programs , INTERFACE allows you to format each folder by changing the flap options and placing the target program anywhere within the frame-based menus. These features, and MORE, give the user total control over the selector program, and its familiar AppleWorks folder format makes switching to another program FEEL LIKE YOU NEVER LEFT APPLEWORKS at all!! Loaded with features, absolutely NO PROGRAMMING KNOWLEDGE required, INTERFACE is a must for hard disk and RAM disk users.

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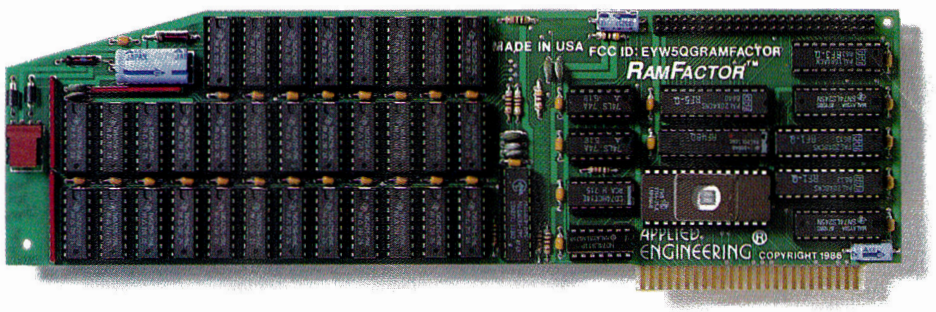


RamFactor is automatically recognized as additional workspace memory by AppleWorks 1.3 and 2.0. In addition, RamFactor's memory can be used for creating the ultimate in program speed—a lightning-fast RAMdisk for the Apple IIGS, IIe, II+, Franklin and Laser 128. A RAMdisk does not depend on the slow moving parts of a conventional floppy drive. RAMdisks eliminate wear and tear on your disk drive plus your programs run up to 20 times faster! When a program is in RAM, your computer won't have to search for it in the mechanical disk drive during program operation. With RamFactor, you can have up to 9 seperate simultaneous RAMdisks—even in different operating systems! Now you can instantly switch from one program to another or even switch from AppleWorks to DOS 3.3 to CP/AM to Apple Pascal 1.3 to ProDOS.

Apple Memory Expansion Card Compatible

RamFactor is 100% Apple Memory Expansion Card compatible. This means that software designed for Apple's card is automatically compatible with RamFactor. Thousands of software programs—including AppleWorks, Pinpoint, MacroWorks, MultiScribe, and Managing Your Money—can take advantage of the speed and performance RamFactor provides. But with Apple's card, you can have only one RAMdrive partition instead of the 9 simultaneous RAMdrives that RamFactor offers. And that's only part of the story . . .

2.0 AppleWorks Power

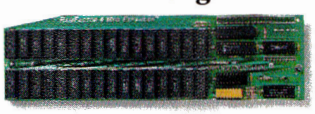
Other slot 1-7 cards can give AppleWorks a larger desktop, but that's the end of their story. RamFactor provides many more powerful functions. It's the only slot 1-7 card that increases AppleWorks 2.0 internal limits by increasing the maximum number of records in the database to 22,600, increasing the maximum number of lines permitted in the word processor to 22,600, and expanding the clipboard size to 2,250 lines maximum. 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 a ProDOS clock. RamFactor will automatically segment large files so they can be saved on multiple 5¼" and 3½" floppies or a hard disk. All this performance is available for the Apple IIe, Laser 128, Franklin or 64K Apple II Plus when used with an 80 column card. No other standard slot card comes close to enhancing AppleWorks so much.

The "Electronic Hard Disk"



RamCharger is an optional battery back-up device, (about the size of a disk drive), that can plug into a connector on RamFactor. With RamCharger added to RamFactor, your program will appear almost instantaneously when you turn on your computer. RamCharger contains LED's that let you know RamFactor's reserve power status. Since RamCharger has its own built-in power supply, it can retain RamFactor's memory indefinitely. Plus, RamCharger's battery will continue backing up RamFactor's memory for up to 10 hours during power failures. An optional "Y" cable is also available that allows one RamCharger to power two fully expanded RamFactors.

If 1 MEG Isn't Enough



A 4 MEG RamFactor Expander can be plugged into the expansion port on RamFactor for up to 5 MEG's total. RamFactor Expander uses standard 1 MEG chips and can be expanded in 1 MEG increments. With the addition of RamCharger, both RamFactor and the expander will provide up to 5 MEG's of lightning-fast battery backed storage.

Features

- Compatible with Apple IIGS, IIe, II+, Franklin and Laser 128
- 256K to 1 MEG on main board with 256K memory chips; expansion port supports up to 5 MEG with Expander option
- 100% Apple Memory Expansion Card compatible
- RamCharger battery back-up option available for permanent storage
- Reduces power strain to internal power supply with RamCharger option
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- Allows Apple II+ to run AppleWorks 2.0 without buying additional software
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(Allows one RamCharger to power two RamFactors.)

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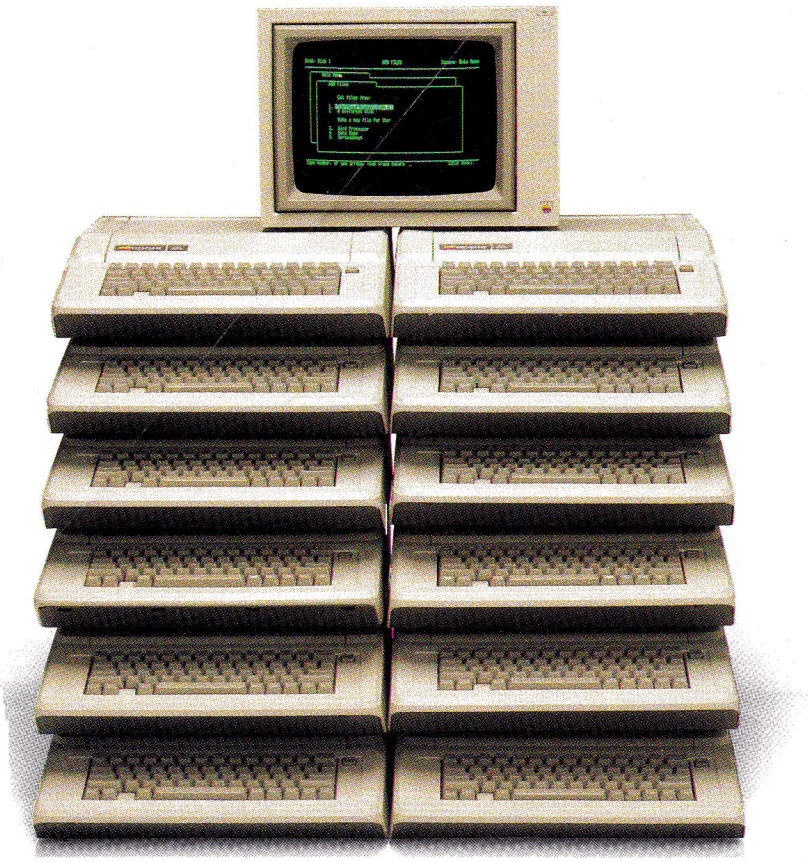




It takes this many IIe's to store as much as this IIe.

Add up to 3 MEG memory with the RamWorks® III expansion board.

You command vast power with RamWorks III — up to 12 times more memory than your IIe came with.

You work faster, more efficiently. Your IIe does things it could never do before.

Memory intensive software like AppleWorks runs faster. You can put Pinpoint or MacroWorks *and* your spelling checker into RAM at the same time for instant response. And you can work with massive files without constantly going back to your disk drive.

Run AppleWorks 20 times faster.

With 512K or larger RamWorks, *all* of AppleWorks (including printer routines) automatically loads into RAM.

The result? AppleWorks runs up to 20 times faster. You don't waste time accessing the program disk drive. You switch instantly from word processing to spreadsheets to database. Anytime. And without wear on disk drives.

No other expansion board, not even Apple's, gets so much out of AppleWorks.

RamWorks III gives you a huge AppleWorks desktop — 366K with the 512K RamWorks III and on up to 2251K with the 3 MEG RamWorks III (even after *all* of AppleWorks automatically loads in memory).

RamWorks eliminates AppleWork's internal memory limits. While AppleWorks 2.0 makes up to 6,350 database records available, you get up to 22,600 with RamWorks. Instead of AppleWorks' 7,250 word processing lines, you get up to 22,600 lines. And Clipboard capacity zooms from AppleWorks' 255 lines to 2042 lines.

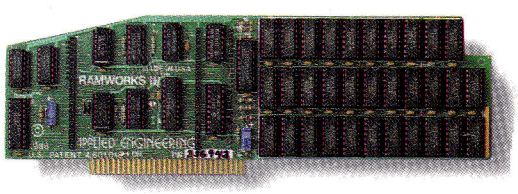
RamWorks boards include an AppleWorks print buffer — up to 125K in the 512K model — so you can keep working while your printer is printing. Also, you don't have to buy a separate print buffer, a savings of up to $250.00.

Autosegments large files.

RamWorks automatically segments large files so they can be saved on two or more disks. When you need to work with the file, you simply load it in the same sequence you saved it.

Add up to 3 MEG without using a single expansion slot.

RamWorks III, even when it's carrying its full 3 MEG of new memory, fits in your IIe's auxiliary slot. Your valuable expansion Slots 1 through 7 are free for other peripheral cards.



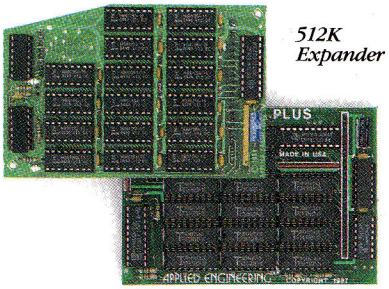
RamWorks III expansion board

If you don't need all of that power now, you can start with as little as 64K. It's easy to add memory to the expandable RamWorks III board as your needs grow.

You can go to 1 MEG on the main board using standard RAMs. That's

more memory than most people ever use. (1 MEG is about 500 pages of text.)

For even more power, snap an Applied 512K, 1 MEG or 2 MEG expander card into the RamWorks III low profile connector. The expander card won't interfere with Slot 1.



512K Expander

2 MEG plus Expander

Recover your investment in the wrong card.

Most of it anyway.

If you bought some one else's RAM card — one that's not recognized by your programs — RamWorks III can help recoup your loss. Pull the memory chips off your old card and plug them into RamWorks III.

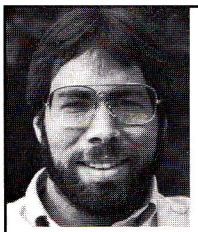
Truly compatible.

RamWorks III is compatible with more off-the-shelf software than any other RAM card. It is recognized by all memory intensive programs.

Its power enhances AppleWorks, Pinpoint, Tax Preparer, Sensible Speller, ProFILER, Managing Your Money, SuperCalc 3a, VIP Professional and many, many more ... even software written specifically for Apple cards.

RamWorks III is compatible with most hardware add-ons like ProFile and Sider hard disks.

Of course, RamWorks III is fully compatible with all IIe's — enhanced or unenhanced, American or European.



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

Steve Wozniak, the creator of Apple Computer.

Easy to install and use.

RamWorks III quickly plugs into your IIe's auxiliary slot. You get memory expansion and super-sharp 80 column text (U.S. Patent 4601018).

RamWorks III comes with everything you need to get up and running. The easy-to-understand manual shows you how to get the most from your new memory. The two accompanying 5¼" disks include a graphics utility program, AppleWorks enhancement program, ProDOS and DOS 3.3 RamDrive™ and other useful utility software.

Superior color graphics, more readable text.

The ColorLink™ RGB option gives brilliant, sharp graphics and text.

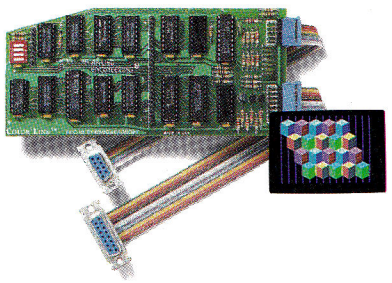
It meets all Apple standards for RGB output control. So it's compatible with more off-the-shelf software.

You can use Apple or IBM RGB monitors. ColorLink provides Apple standard analog and IBM standard digital RGB outputs (cables included).

ColorLink offers four text colors so you can use the one that's easiest on your eyes (others offer only green).

The ColorLink option plugs into the back of RamWorks III. It doesn't interfere with Slot 1.

You can order ColorLink with your RamWorks III board or add it later.



ColorLink® RGB option. IBM digital output cable. Apple analog output cable.

Optional 16 bit power.

You can explore powerful programming possibilities with Applied's optional 65C816 card. It's capable of linearally addressing more than 1 MEG.

It connects to RamWorks III's built-in CPU port. Instead of using another slot, Applied's 65C816 card simply replaces the 65C02. It maintains complete 8-bit compatibility.

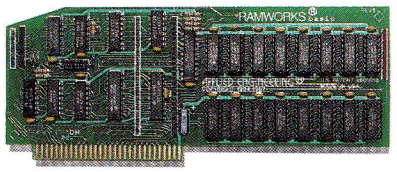
The RamWorks basic® alternative.

Need power but not all the capabilities of RamWorks III? Look at RamWorks basic. It has the same performance features as RamWorks III, it's attractively priced and it's available with up to 512K memory.

Backed by the leader.

All RamWorks boards are backed by Applied Engineering's 15 day money back guarantee. And by our 5 year, hassle-free warranty.

Applied Engineering has been designing and building Apple enhancements for over 8 years. We invented large RAM cards for the Apple. Today, our innovative technology leads the



RamWorks basic® expansion board.

field. We sell more Apple enhancements than any one else, including Apple Computer. So you know we'll be around to solve problems and answer questions.

Order now.

See your dealer now. Or call Applied Engineering at 214-241-6060 between 9am and 11pm CST 7 days. Or send your check or money order to Applied Engineering. MasterCard, VISA and C.O.D. welcome.

RamWorks basic with 64K	$ 149
RamWorks basic with 256K	$ 179
RamWorks basic with 512K	$ 239
RamWorks III with 64K	$ 179
RamWorks III with 256K	$ 199
RamWorks III with 512K	$ 259
RamWorks III with 1 MEG	$ 379
RamWorks III with 1.5 MEG	$ 539
RamWorks III with 3 MEG	$1399
512K Expander	$ 219
2 MEG Plus Expander with 1 MEG	$ 599
2 MEG Plus Expander with 2 MEG	$1049
65C816 16 Bit Card	$ 159
ColorLink RGB Option	$ 129
Optional Software:	
Pinpoint with RAM Enhancement Software	$ 79
VIP Professional, Enhanced IIe version	$ 199

Prices subject to change without notice. Texas residents add 7% sales tax. Add $10.00 if outside the U.S.A.

Applied Engineering

The Apple enhancement experts.

P. O. Box 798, Carrollton, TX 75006

(214) 241-6060

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Why MultiScribe GS 3.0 is the Best Word Processor for Your Apple IIGS.

1. MultiScribe GS™ 3.0 is the fastest, most powerful WYSIWYG word processor for the Apple® IIGS™.
What you see on the MultiScribe GS screen *is what you get* when you print out–no confusing control codes on-screen, no unexpected formatting problems when you print.

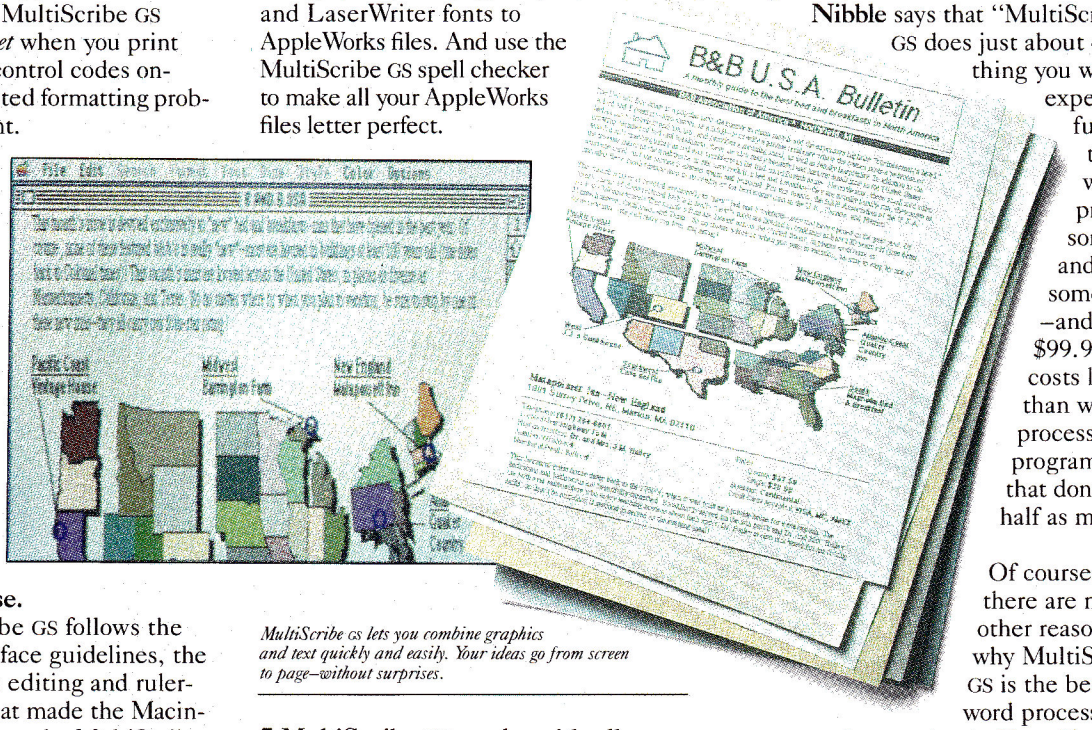
2. MultiScribe GS was written especially for the Apple IIGS.
So you get a word processor that will grow as your GS grows and work with new GS software and hardware enhancements.

3. MultiScribe GS is much easier to learn and use.
Because MultiScribe GS follows the famous Apple Interface guidelines, the same cut-and-paste editing and ruler-based formatting that made the Macintosh™ revolutionary make MultiScribe GS easier to learn and use than old-fashioned text word processors.

4. MultiScribe GS produces the best printouts of any GS word processor.
MultiScribe GS comes with an exclusive print driver that makes your ImageWriter printouts look better than anything you can create with any other GS word processor. And it prints beautifully on the LaserWriter, too.

5. MultiScribe GS now has the best on-line spell checking and thesaurus ever available on an Apple II.
MultiScribe GS 3.0 features the 80,000-word Merriam-Webster/Proximity spell checker and thesaurus. An on-line spell checker that checks for misspellings in your documents and suggests a list of possible alternative spellings for each misspelled word. And a thesaurus that uses 40,000 meaning-based entry points to generate *over 470,000* true synonyms.

6. MultiScribe GS reads AppleWorks files directly.
Add graphics, fancy type styles, and LaserWriter fonts to AppleWorks files. And use the MultiScribe GS spell checker to make all your AppleWorks files letter perfect.



MultiScribe GS lets you combine graphics and text quickly and easily. Your ideas go from screen to page–without surprises.

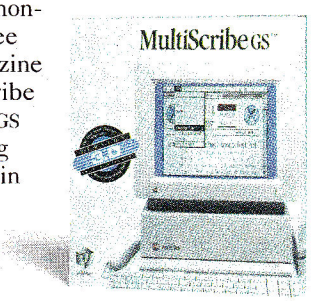
7. MultiScribe GS works with all major IIGS graphics programs.
MultiScribe GS is compatible with every major GS graphics program–including TopDraw™, PaintWorks Gold™, Deluxe Paint II™, and 8/16 Paint™. No other program supports all these different graphic formats.

8. MultiScribe GS offers more graphics options than any other word processor.
With built-in structured drawing, you can draw lines, boxes, hollow and filled ovals, circles, and rectangles. Place graphics behind or in front of text. Use colored shapes to highlight reversed-out text. Place boxes around paragraphs and use lines to create rules and borders.

9. MultiScribe GS has complete keyboard commands.
Cursor movement, scrolling, text editing, and deleting can all be done with or without a mouse–giving you the best of both worlds.

10. "MultiScribe GS gives you the most bang for your buck"* (inCider magazine).
Nibble says that "MultiScribe GS does just about everything you would expect a full-featured word processor to do, and then some"† –and at $99.95, it costs less than word processing programs that don't do half as much.

Of course, there are many other reasons why MultiScribe GS is the best word processor for your Apple IIGS. To find out more, just call 800/233-4088 (in Texas call 713/668-0743). Or ask your dealer for a demonstration. And see why **A+** magazine called MultiScribe GS "the first IIGS word processing program to attain real stature."**



MultiScribe GS
Word power made easy.

StyleWare, Inc.
5250 Gulfton Suite 2E
Houston, TX 77081

512K Apple IIGS Required • 768K Recommended.

*inCider, November, 1987, **A+, December, 1987, †Nibble, October, 1987

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THE WONDERFUL WORLD OF GAMES

compiled by Paul Statt, Senior Editor; Lafe Low, Review Editor; Pat O'Dell, Associate Editor; and Peg Brown, Editorial Assistant



They're here . . . more than 550 games currently available for Apple II computers. Board games and sports, Pac-Man and Zork, Vanna White and Dr. Ruth, chivalry and wizardry: We tried to track down games for Mom, Dad, all the kids, *and* whacky uncle Larry. If you can't find the game you're looking for, check the following suggestions:

- Some "older" games—Pac-Man, for example, formerly from Atari—are still available from The Menu (P.O. Box MENU, Pittsburgh, PA 15241, 412-746-MENU).
- Some games, notably the Eamon series of text adventures, are available in the "public domain" only. Eamon's a series of *100* text adventures, last time we counted, listed in the February 1988 Boston Computer Society catalogue (One Center Plaza, Boston, MA 02108, 617-367-8080). The entire Eamon collection costs just $225 for members, $425 for nonmembers. BCS sells many other games at rock-bottom prices; your local user group may, as well.
- SoftDisk (P.O. Box 30008, Shreveport, LA 71130, 318-868-7247, 800-831-2694) and UpTime (The Travers Block, 174 Bellevue Avenue, Newport, RI 02840, 401-847-2455), the "magazines on disk," include a number of games in each monthly issue.
- Some "educational games" are more fun than others. Sometimes we decided that a piece of software favored education over entertainment; sometimes the software developer decided for us. For instance, we included Where in the World Is Carmen Sandiego? (Broderbund Software) and left out The Other Side (Tom Snyder Productions). If you speak a foreign language, you might find certain "educational" programs from Gessler Publishing entertaining (900 Broadway, New York, NY 10003, 212-673-3113).

On page 64 we've gathered some software that's hot off the presses. And if you've ever wondered how guys who play games for a living relax at home, turn to page 62 and read about the games some of the San Francisco 49ers play. The names and addresses of the creative companies that'd be happy to sell you any one of these games are on page 54.

We created our guide to games with the AppleWorks database manager. Would you like a list of Apple II games that's always up to date? Do you use AppleWorks? Send us a check for $10 to cover our costs and we'll send you our AppleWorks database file. We use it all the time—when we're not busy playing games.■

Top to bottom, Accolade's Mean 18, Cinemaware's Three Stooges, Electronic Arts' Marble Madness, Polarware's Spy's Adventures in South America.

THE GAMES GUIDE

		Compatible Apple Models	Memory Requirement	Hardware Requirements	Price
TEXT-ONLY GAMES					
Text Adult Games					
* MA	Dr. Ruth's Computer Game of Good Sex	+,e,c,GS	64K		$29.95
Text Adventure Games					
EA	Amnesia	+,e,c,GS	64K		44.95
AM	Birth of the Phoenix	+,e,c	64K		22.00
IF	Border Zone	e,c,GS	128K		39.95
IF	Bureaucracy	e,c,GS	128K		39.95
IF	Cutthroats	e,c,GS	48K		39.95
SD	Elfhelm's Bane	+,e,c,GS	64K		9.99
FB	Guild of Thieves	e,c	N/A		39.95
IF	Hollywood Hijinx	e,c,GS	48K		39.95
IF	Infidel	e,c,GS	48K		14.95
FB	Jinxter	e,c	N/A		39.95
IF	Lurking Horror, The	e,c,GS	48K		39.95
IF	Mind Forever Voyaging	e,c,GS	48K		14.95
MS	Mist, The	+,e,c,GS	64K		9.95
FB	Pawn, The	e,c	N/A		39.95
MI	Romantic Encounters at the Dome	+,e,c,GS	64K		39.95
IF	Seastalker	e,c,GS	48K		14.95
AV	Time Traveler	+,e,c,GS	48K		9.95
IF	Trinity	e,c,GS	128K		14.95
SD	Ulysses and the Golden Fleece	+,e,c,GS	64K		9.99
MS	View to a Kill, A	+,e,c,GS	64K		9.95
MS	Voodoo Island	+,e,c,GS	64K		9.95
SD	Wizard and the Princess	+,e,c,GS	64K		9.99
Text Fantasy Games					
IF	Beyond Zork	e,c,GS	128K		49.95
IF	Beyond Zork (GS)	GS	128K		49.95
AV	Dungeon of Danger	+,e,c,GS	48K		9.95
IF	Enchanter	e,c,GS	48K		29.95
IF	Enchanter Trilogy	e,c,GS	48K		59.95
MS	Forbidden Castle	+,e,c,GS	64K		9.95
IF	Sorcerer	e,c,GS	48K		44.95
IF	Spellbreaker	e,c,GS	48K		49.95
ST	Usurper: Minds of Qyntarr	+,e,c,GS	48K		39.95
IF	Wishbringer	e,c,GS	48K		14.95
IF	Zork I	e,c,GS	48K		14.95
IF	Zork II	e,c,GS	48K		14.95
IF	Zork III	e,c,GS	48K		14.95
IF	Zork Trilogy (I,II,III)	e,c,GS	48K		49.95
Text Mystery Games					
IF	Ballyhoo	e,c,GS	48K		39.95
IF	Deadline	e,c,GS	48K		14.95
IF	Moonmist	e,c,GS	48K		39.95
IF	Sherlock: The Riddle of the Crown Jewels	e,c,GS	128K		39.95
IF	Sherlock: The Riddle of the Crown Jewels (GS)	GS	128K		39.95
IF	Suspect	e,c,GS	48K		39.95
IF	Suspended	e,c,GS	48K		14.95
IF	Witness	e,c,GS	48K		14.95
Text Romance Games					
IF	Plundered Hearts	e,c,GS	48K		39.95

** Abbreviations denote manufacturers and vendors. See accompanying Company Address list for names.*

Key

8	80-column card	K/M	keyboard or mouse
C	color monitor	M	mouse
D	3½-inch disk	N	new ROM
H	hard disk	N/A	information not available
J	joystick	O	paddle
J/M	joystick or mouse	P	printer
		T	modem

		Compatible Apple Models	Memory Requirement	Hardware Requirements	Price
Text Science-Fiction Games					
IF	Hitchhiker's Guide to the Galaxy	e,c,GS	48K		14.95
IF	Leather Goddesses of Phobos	e,c,GS	48K		39.95
SD	Mission Asteroid	+,e,c,GS	64K		9.99
IF	Planetfall	e,c,GS	48K		14.95
SM	Star Trek: The Kobayashi Alternative	+,e,c,GS	64K		29.95
SM	Star Trek: The Promethean Prophecy	+,e,c,GS	64K		39.95
IF	Starcross	e,c,GS	48K		14.95
IF	Stationfall	e,c,GS	48K		39.95
Text Sports Games					
LH	Three in One Football	+,e,c,GS	64K		39.99
LH	Basketball: The Pro Game	+,e,c,GS	64K		39.99
LH	Final Four College Basketball	+,e,c,GS	64K		39.99
LH	Full Count Baseball	+,e,c,GS	64K		39.99
Text Word-Play Games					
SP	Alphabet Zoo	+,e	48K	J	29.95
MY	Anagram Word Games Series	+,e,c,GS	16K		90.00
NA	Compute Pursuit	+,e,c,GS	48K		35.00
MY	Crypto Word Game	+,e,c,GS	16K		15.00
IF	Nord and Bert Couldn't Make Head or Tail of It	e,c,GS	128K		39.95
SI	Pandemonium	+,e,c,GS	48K		39.95
SC	Party Quiz	+,e,c	48K		29.95
MS	Quink	+,e,c,GS	48K		9.95
MS	Racter	e,c,GS	128K		44.95
VARIETY PACKS					
PO	Arcade Album	+,e,c,GS	48K		8.95
BB	Beagle Bag	+,e,c,GS	64K		29.50
AS	Best of Bishop	+,e,c,GS	64K		9.95
SD	Classic Games	+,e,c,GS	64K		9.99
AB	Five Great Games	+,e,c,GS	48K	J	19.95
AB	Five More Great Games	+,e,c,GS	48K	J	19.95
ZP	Gamepak	+,e,c,GS	64K		24.95
SW	Software Golden Oldies	e,c,GS	64K		14.95
AV	Strategy	+,e,c,GS	48K		19.95
AO	Triple Pack	+,e,c,GS	64K	C	19.95
MIXED TEXT AND GRAPHICS					
Action Adventure Games					
MK	Adventure Alpha	+,c,e,GS	48K		34.95
MU	Beyond Castle Wolfenstein	+,e,c,GS	48K		13.98



Islands of Beta, Deathlord, Wasteland (see New Games)

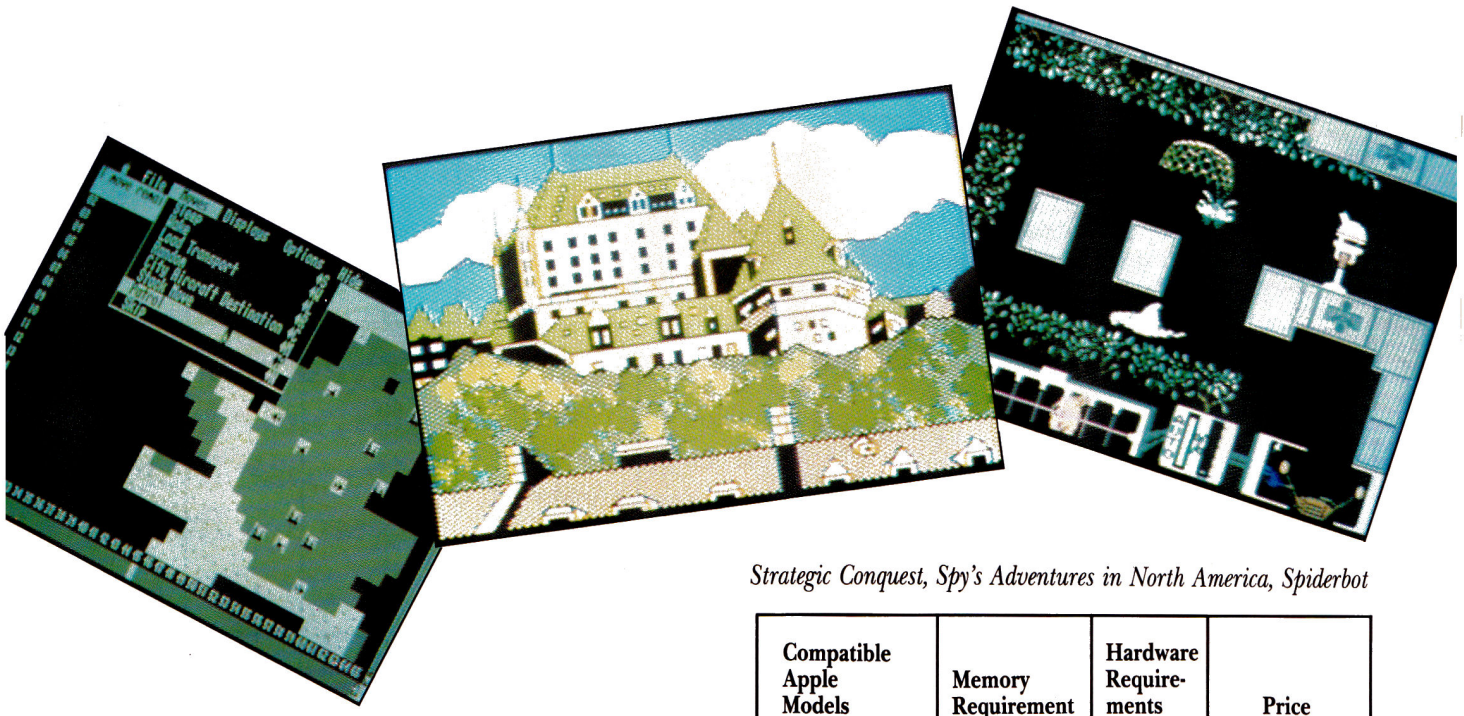


King's Quest, Faery Tale Adventure, Tower of Myraglen

		Compatible Apple Models	Memory Requirement	Hardware Requirements	Price
Action Adventure Games cont.					
BR	Captain Goodnight	+,e,c,GS	64K	J	14.95
MU	Castle Wolfenstein	+,e,c,GS	48K		11.98
DS	Goonies	+,e,c,GS	64K	J	39.95
AV	High Adventures	+,e,c,GS	48K		19.95
MK	Islands of Beta	+,c,e,GS	48K		34.95
FB	Jewels of Darkness	e,c	N/A		24.95
MK	Lantern D'Gamma	+,c,e,GS	48K		34.95
AI	Last Ninja	e,c	128K	J	34.95
AI	Last Ninja (GS)	GS	512K	J	39.95
Fantasy Role-Playing Games					
EA	Bard's Tale	+,e,c,GS	64K		44.95
EA	Bard's Tale (GS)	GS	512K		49.95
EA	Bard's Tale II	+,e,c,GS	64K		44.95
EA	Bard's Tale III	N/A	N/A	N/A	N/A
NW	Might and Magic Book One	e,c	64K		49.95
SS	Phantasie	+,e,c,GS	48K		39.95
SS	Phantasie II	+,e,c,GS	48K		39.95
SS	Phantasie III: The Wrath of Nikademus	+,e,c,GS	48K		39.95
OR	Ultima I	+,e,c,GS	64K		39.95
OR	Ultima III: Exodus	+,e,c,GS	48K		39.95
OR	Ultima IV: Quest of the Avatar	+,e,c,GS	64K		59.95
OR	Ultima V: Warriors of Destiny	+,e,c,GS	64K		59.95
ST	Wizardry I: Proving Ground of the Mad Overlord	+,e,c,GS	48K		49.95
ST	Wizardry II: Night of Diamonds	+,e,c,GS	48K		39.95
ST	Wizardry III: Legacy of Llylgamyn	+,e,c,GS	48K		49.95
ST	Wizardry IV: The Return of Werdna	+,e,c,GS	64K		59.95
Fantasy Adventure Games					
EA	Adventure Construction Set	+,e,c,GS	64K		14.95
SP	Adventure Creator	e,c	64K		9.95
EA	Age of Adventure	+,e,c,GS	64K		14.95
DS	Alternate Reality: The City	+,e,c,GS	64K		29.95
DS	Alternate Reality: The Dungeon	+,e,c,GS	64K		39.95
MA	Beast War	+,e,c,GS	64K		25.00
SP	Below the Root	+,e,c	48K	J	14.95
QA	Beneath Apple Manor	+,c,e,GS	48K		29.95
SO	Black Caldron	e,c	128K		39.95
DS	Black Magic	+,e,c,GS	64K		19.95
MU	Caverns of Freitog	+,e,c,GS	48K		11.98
PO	Coveted Mirror	+,e,c,GS	64K		17.95
PO	Crimson Crown	+,e,c,GS	64K		17.95
ST	Crypt of Medea	+,e,c,GS	48K		9.95
DS	Dark Lord	+,e,c,GS	64K		19.95
MA	Darkhorn	+,e,c,GS	64K		30.00
EA	Deathlord	+,e,c,GS	64K		49.95

		Compatible Apple Models	Memory Requirement	Hardware Require-ments	Price
MS	Defender of the Crown	GS	768K		49.95
SH	Dondra: A New Beginning	+,e,c,GS	48K		39.95
AM	Elysian Fields	+,e,c,GS	64K		39.95
SS	Eternal Dagger	+,e,c,GS	48K		39.95
PO	Expedition Amazon	+,e,c,GS	48K		8.95
MI	Faery Tale Adventure	GS	512K	C,M	49.95
AW	Fellowship of the Ring	e,c,GS	64K		39.95
AM	Fraktured Faeble	+,e,c,GS	64K		34.95
SS	Gemstone Warrior	+,e,c,GS	64K	O	14.95
AW	Hobbit Software Adventure	e,c,GS	64K		34.95
EW	Journey into Darkness	+,e,c,GS	64K		12.95
SO	King's Quest	e,c	128K		49.95
SO	King's Quest (GS)	GS	512K	N	49.95
SO	King's Quest II	e,c	128K		49.95
SO	King's Quest II (GS)	GS	512K	N	49.95
SO	King's Quest III	e,c	128K		49.95
SO	King's Quest III (GS)	GS	512K	N	49.95
AM	Kukulcan	+,e,c,GS	64K		39.95
EA	Legacy of the Ancients	+,e,c	64K		39.95
AM	Lucifer's Realm	+,e,c,GS	64K		34.95
MA	Maxwell Manor	+,e,c,GS	64K		25.00
OR	Moebius	+,e,c,GS	64K		59.95
DS	Never Ending Story	+,e,c,GS	64K		29.95
SS	Questron	+,e,c,GS	64K		14.95
SS	Realms of Darkness	+,e,c,GS	48K		39.95
SS	Rings of Zilfin	+,e,c,GS	48K		39.95
AV	Ruins of Keledoor	+,e,c,GS	48K		29.95
DS	Saracen	+,e,c,GS	64K		19.95
MS	Scott Adams Adventureland	+,e,c,GS	64K		9.95
EA	Seven Cities of Gold	+,e,c,GS	64K		19.95
SS	Shard of Spring	+,e,c,GS	64K		39.95
AM	Sherwood Forest	+,e,c,GS	64K		34.95
MS	Sinbad and the Throne of the Falcon	GS	1M		49.95
AV	Swords & Sorcery	+,e,c,GS	48K		9.95
PO	Talisman	e,c,GS	128K		19.95
EX	Temple of Apshai Trilogy	e,c,GS	64K		19.95
PB	Tower of Myraglen	GS	512K	K/M	54.95
PO	Transylvania	+,e,c,GS	64K		17.95
PR	Twilight's Ransom	+,e,c,GS	256K		34.95
PR	Wizard Wars	+,e,c,GS	N/A		39.95
SS	Wizard's Crown	+,e,c,GS	48K		39.95
SO	Wrath of Denethenor	+,e,c,GS	64K		24.95
PO	Xyphus	+,e,c,GS	48K		8.95
IF	ZorkQuest: Assault on Egreth	e,c,GS	128K		12.00
Humorous Adventure Games					
IF	Gammaforce in Pit of a Thousand Screams	e,c,GS	128K		12.00
IF	Lane Mastadon vs. The Blubbermen	e,c,GS	128K		12.00
SO	Leisure Suit Larry & the Land of the Lounge Lizards	e,c	128K		39.95
SO	Leisure Suit Larry & the Land of the Lounge Lizards (GS)	GS	512K	N	39.95
Games Based on Literature					
SP	Alice in Wonderland	+,e,c	64K	J	14.95
SO	Mixed-Up Mother Goose	e,c	128K		29.95
SO	Mixed-Up Mother Goose (GS)	GS	512K	N	29.95
BA	Pride and Prejudice	+,e,c	48K		34.95
SP	Swiss Family Robinson	+,e,c	48K		14.95
SP	Treasure Island	+,e,c	64K		14.95
SP	Wizard of Oz	+,e,c	64K		14.95
Mysteries					
TD	221B Baker Street	+,e,c,GS	64K		34.95
DS	221B Baker Street Case Disks	+,e,c,GS	64K		14.95
RH	Alpine Adventure	+,e,c	48K		29.95
MS	Felony!	+,e,c,GS	48K		9.95
SH	Intrigue!	+,e,c,GS	48K		29.95

		Compatible Apple Models	Memory Requirement	Hardware Requirements	Price
Mysteries cont.					
AC	Killed Until Dead	+,e,c,GS	64K		14.95
EX	L.A. Crackdown	e,c,GS	128K		39.95
EA	Make Your Own Murder Party	+,e,c	64K	P	14.95
LF	Maniac Mansion	e,c	128K	J	34.95
AM	Masquerade	+,e,c,GS	64K		34.95
MS	Murder by the Dozen	+,e,c,GS	48K		9.95
SO	Police Quest	GS	512K	N	49.95
Science-Fiction Games					
OR	2400 A.D.	+,e,c,GS	64K		39.95
SP	Amazon	+,e,c	64K		14.95
OR	Autoduel	+,e,c,GS	64K	J	49.95
BA	Berserker Raids	+,e,c	48K		34.95
BV	Dream Zone	GS	512K	M	49.95
SS	Imperium Galactum	+,e,c,GS	48K		39.95
EX	Omnicron Conspiracy	e,c,GS	64K		39.95
PO	Oo-Topos	+,e,c,GS	64K		17.95
SG	Reach for the Stars	+,e,c,GS	64K		45.00
SS	Roadwar 2000	+,e,c,GS	48K		39.95
SS	Roadwar Europa	+,e,c,GS	48K		39.95
DS	Rubicon Alliance	+,e,c,GS	64K		19.95
MS	SDI	GS	1M		49.95
FB	Silicon Dreams	e,c	N/A		24.95
SO	Space Quest	e,c	128K		49.95
SO	Space Quest (GS)	GS	512K	N	49.95
EX	Spiderbot	e,c,GS	64K		19.95
IN	Star Fleet I	e,c,GS	64K		49.95
IN	Star Fleet II	e,c,GS	64K		59.95
MC	Star Saga I: Beyond the Boundary	+,c,e,GS	48K	N/A	N/A
CE	Super Martian	+,e,c,GS	64K		9.95
BA	Wings Out of Shadow	+,e,c	48K		34.95
Travel Adventure Games					
PO	Spy's Adventures in Europe, The	+,e,c,GS	64K		17.95
PO	Spy's Adventures in North America, The	+,e,c,GS	64K		17.95
PO	Spy's Adventures in South America, The	+,e,c,GS	64K		17.95
BL	Ticket to London	e,c,GS	128K		39.95
BL	Ticket to Paris	e,c,GS	128K		39.95
BL	Ticket to Spain	e,c,GS	128K		39.95
BL	Ticket to Washington	e,c,GS	128K		44.95
BR	Where in Europe Is Carmen Sandiego?	+,c,e,GS	64K		44.95
BR	Where in the USA Is Carmen Sandiego?	+,c,e,GS	64K		44.95
BR	Where in the World Is Carmen Sandiego?	+,c,e,GS	64K		39.95
Western-Adventure Games					
DS	Gunslinger	+,e,c,GS	48K		29.95
AC	Law of the West	+,e,c,GS	64K	J	14.95
DS	Zorro	+,e,c,GS	64K		39.95
Games from the Comics					
SD	Fantastic Four	+,e,c,GS	64K		9.99
SD	Hulk, The	+,e,c,GS	64K		9.99
SD	Spiderman	+,e,c,GS	64K		9.99
Board Games					
IF	Fooblitzky	e,c,GS	128K		14.95
Funny-Situation Games					
AI	Little Computer People	+,e,c	64K		14.95
Military-Strategy Games					
MS	Balance of Power	+,e,c,GS	128K	C	44.95
SS	Baltic 1985	+,e,c,GS	48K		34.95
SS	Battalion Commander	+,e,c,GS	64K		14.95
SS	Battle Cruiser	+,e,c,GS	48K		59.95
SS	Battle Group	+,e,c,GS	48K		59.95



Strategic Conquest, Spy's Adventures in North America, Spiderbot

		Compatible Apple Models	Memory Requirement	Hardware Requirements	Price
SS	Battle of Antietam	+,e,c,GS	48K		49.95
SG	Battlefront	+,e,c,GS	64K		40.00
SG	Battles in Normandy	+,e,c,GS	64K		40.00
DS	Bismarck	+,e,c,GS	64K		34.95
GG	Blue Powder Grey Smoke	+,e,c,GS	64K		49.95
SS	Broadsides	+,e,c,GS	48K		39.95
SG	Carriers at War	+,e,c,GS	64K		50.00
SS	Colonial Conquest	+,e,c,GS	64K		39.95
SS	Computer Ambush	+,e,c,GS	48K		59.95
MP	Conflict in Vietnam	+,e,c,GS	64K	J,C	39.95
MP	Crusade in Europe	+,e,c,GS	64K	J,C	39.95
MP	Decision in the Desert	+,e,c,GS	64K	J,C	39.95
SG	Decisive Battles of the Civil War	+,c,e,GS	64K		40.00
MA	Dreadnoughts	+,e,c,GS	64K		30.00
IN	Empire	e,c,GS	128K		49.95
SG	Europe Ablaze	+,e,c,GS	64K		50.00
SS	Field of Fire	+,e,c,GS	48K		39.95
SS	Gettysburg: The Turning Point	+,e,c,GS	64K		59.95
DS	Global Commander	+,e,c,GS	64K		29.95
MA	Guderian	+,e,c,GS	64K		30.00
MA	Gulf Strike	+,e,c,GS	64K		30.00
SG	Halls of Montezuma	+,e,c,GS	64K		40.00
GG	High Seas	+,e,c,GS	64K		49.95
SS	Kampfgruppe	+,e,c,GS	48K		59.95
SS	Knights of the Desert	+,e,c,GS	48K		39.95
MA	Legionnaire	+,e,c,GS	64K		30.00
SS	Mech Brigade	+,e,c,GS	48K		59.95
MA	Mission on Thunderhead	+,e,c,GS	64K		25.00
SS	NAM	+,e,c,GS	48K		39.95
MP	NATO Commander	+,e,c	64K	J,C	34.95
SS	North Atlantic '86	+,e,c,GS	48K		59.95
SS	Norway 1985	+,e,c,GS	48K		34.95
OR	Ogre	+,e,c,GS	64K		29.95
SS	Panzer Grenadier	+,e,c,GS	48K		39.95
SS	Panzer Strike!	+,e,c,GS	64K		49.95
SS	Rebel Charge at Chickamauga	+,e,c,GS	48K		49.95
SS	Reforger '88	+,e,c,GS	48K		14.95
SG	Russia: The Great War in the East	+,e,c,GS	64K		40.00
SS	Shiloh: Grant's Trial in the West	+,e,c,GS	48K		39.95
SS	Sons of Liberty	+,e,c,GS	64K		39.95
PB	Strategic Conquest II	e,c,GS	128K		49.95
MA	TAC (Tactical Armor Command)	+,e,c,GS	64K		30.00
DS	Theatre Europe	+,e,c,GS	64K		34.95
SS	U.S.A.A.F.	+,e,c,GS	48K		59.95

		Compatible Apple Models	Memory Requirement	Hardware Requirements	Price
Military-Strategy Games cont.					
MA	Under Fire	+,e,c,GS	64K		59.95
MA	Under Fire Extended Capability	+,e,c,GS			25.00
MA	Under Fire Campaign Disk	+,e,c,GS			25.00
SS	War in Russia	+,e,c,GS	48K		79.95
SS	War in the South Pacific	+,e,c,GS	64K		59.95
SS	Warship	+,e,c,GS	48K		59.95
Nonmilitary Strategy Games					
AB	Air Traffic Controller	+,e,c,GS	48K	J	19.95
BT	Baron	+,e,c,GS	64K		49.95
IS	Black/Kayles	+,e,c,GS	48K	C	25.00
IS	Cube/Candles	+,e,c,GS	48K	C	25.00
AB	Design Your Own Train	+,e,c,GS	64K		49.95
IS	Digit Grid	+,e,c,GS	48K	C	25.00
EA	Earth Orbit Stations	+,e,c	64K		34.95
AV	Executive Games	+,e,c,GS	48K		19.95
AI	Hacker	+,e,c,GS	64K	J	14.95
AI	Hacker II: The Doomsday Papers	+,e,c	64K	J	14.95
AI	Hacker II: The Doomsday Papers (GS)	GS	512K	J	19.95
IS	Jinx	+,e,c,GS	48K	C	25.00
NA	Jury Trial II	+,e,c,GS	48K		49.00
IS	Matchsticks	+,e,c,GS	48K	C	25.00
DV	Milky Way Merchant	+,e,c,GS	48K		35.00
BT	Millionaire	+,e,c,GS	64K		49.95
BT	Millionaire II	+,e,c,GS	128K		49.95
BK	Millionwaire	+,e,c,GS	48K		34.95
SP	Nine Princes in Amber	+,e,c,GS	64K		14.95
SP	Perry Mason	+,e,c	64K		14.95
MP	Pirates	e,c,GS	128K	J,C	39.95
SS	President Elect	+,e,c,GS	48K		24.95
AC	Project: Space Station	+,e,c,GS	64K		14.95
BL	R.S.V.P.	e,c,GS	128K		39.95
SP	Railroad Tycoon	+,e,c	48K		9.95
IS	Ribbons	+,e,c,GS	48K	C	25.00
MU	Robot War	+,e,c,GS	48K		15.98
WR	Run for It	+,e,c,GS	48K		39.95
SS	Six-Gun Shootout	+,e,c,GS	48K		14.95
BT	Squire	+,e,c,GS	64K		49.95
AV	Star Lanes Trading	+,e,c,GS	48K		9.95
IS	Traffic Jam/Chain Reaction	+,e,c,GS	48K	C	25.00
BT	Tycoon	+,e,c,GS	64K		49.95
SH	Wilderness	+,e,c,GS	48K		29.95



Fire Power, Pinball Wizard, Beach Landing

GRAPHICS GAMES

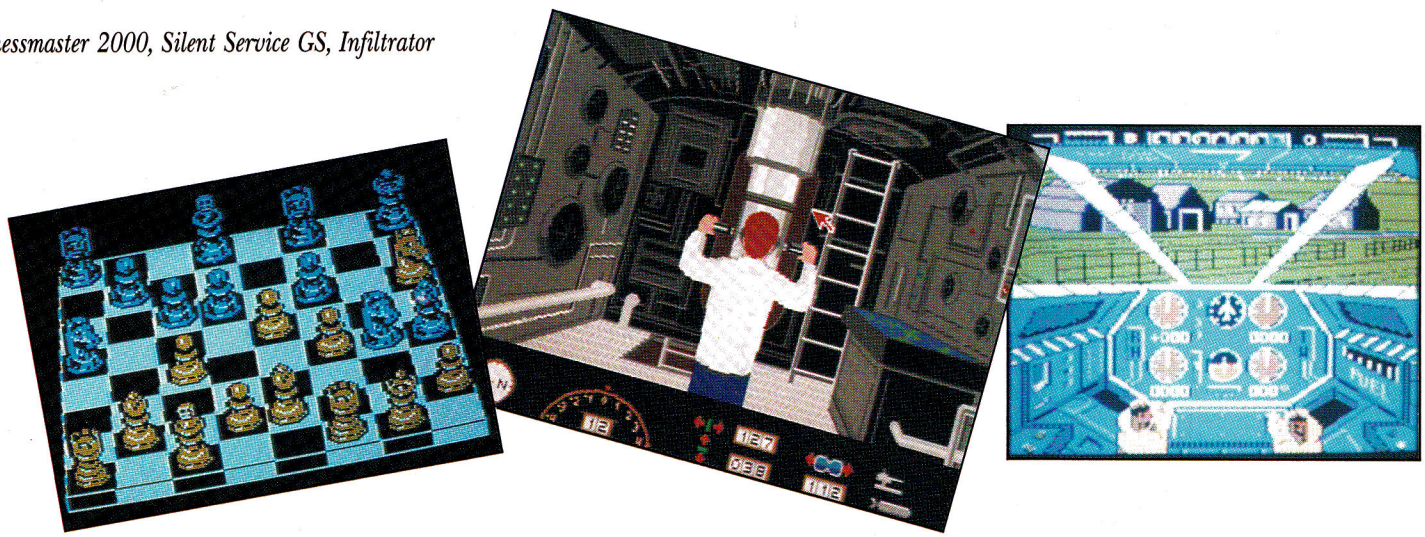
Arcade Games

		Compatible Apple Models	Memory Requirement	Hardware Requirements	Price
BR	Airheart	+,e,c,GS	128K	J,8	34.95
PB	Alien Mind	GS	512K	K/M	54.95
AI	Aliens: The Computer Game	e,c,GS	64K	J	34.95
SD	Android Invasion	+,e,c,GS	64K		9.99
EX	Arctic Antics: Spy vs. Spy III	e,c,GS	64K		19.95
EA	Arctic Fox	+,e,c,GS	64K		39.95
MS	Bad Street Brawler	N/A	N/A	N/A	N/A
WR	Beach Landing	+,e,c,GS	48K		39.95
AB	Beyond Pinball	+,e,c,GS	48K	J	24.95
AC	Bubble Ghost	GS	256	K/M	34.95
PB	Cavern Cobra	GS	768K	K/M	49.95
EX	Coil Cop	e,c,GS	64K		19.95
DE	Commando	e,c,GS	64K		34.95
MA	Computer Class Struggle	+,e,c,GS	64K		30.00
AV	Cosmic Contests	+,e,c,GS	48K		19.95
BR	David's Midnight Magic	+,e,c,GS	48K	J	14.95
AB	Death Race '82	+,e,c,GS	48K	J	19.95
EX	Death Sword	e,c,GS	64K		19.95
MS	Dig Dug	+,e,c,GS	64K		9.95
AO	Echelon	+,e,c,GS	64K	C	44.95
MS	Eliminator	+,e,c,GS	64K		9.95
FB	Elite	e,c	N/A		24.95
WR	Fat City	+,e,c,GS	48K		39.95
MI	Fire Power	GS	512K	C,J	24.95
SD	Frogger	+,e,c,GS	64K		9.99
EX	G.I. Joe	e,c,GS	64K		19.95
ST	Galactic Attack	+,e,c,GS	48K		9.95
MS	Galaxian	+,e,c,GS	48K		9.95
MS	Gauntlet	e,c	128K	N/A	39.95
MS	Gauntlet (GS)	GS	N/A	N/A	39.95
AI	Ghostbusters	+,e,c	48K	J	14.95
BB	I.O. Silver	+,e,c,GS	64K		29.95
DE	Ikari Warriors	e,c,GS	64K		34.95
EX	Impossible Mission II	e,c,GS	64K		39.95
MS	Into the Eagle's Nest	N/A	N/A	N/A	34.95
BR	Lode Runner	+,e,c,GS	48K		34.95
EA	Marble Madness	e,c,GS	128K	J	34.95
EA	Marble Madness (GS)	GS	512K	J	34.95
PO	Minit Man	+,e,c,GS	48K		8.95
SD	Monster Panic	+,e,c,GS	64K		9.99
EX	Movie Monster Game	e,c,GS	64K		19.95
SL	Night Mission Pinball	+,c,e	48K		34.95
AV	Nightmare	+,e,c,GS	48K		19.95
MS	Pac-Man	+,e,c,GS	64K		9.95
MS	Paperboy	e,c,GS	N/A	N/A	39.95
AS	Photar	+,e,c,GS	64K		9.95
PO	Pie Man	+,e,c,GS	48K		8.95
EA	Pinball Construction Set	+,e,c,GS	48K	J	14.95
AV	Pinball Games	+,e,c,GS	48K		19.95
AC	Pinball Wizard	GS	256K		44.95
AI	Rampage	e,c,GS	128K		34.95
SD	Raven-Seven	+,e,c,GS	64K		9.99
EA	Realm of Impossibility	+,e,c,GS	64K		14.95
ST	Rescue Raiders	+,e,c,GS	48K		9.95
EX	Road Warrior	e,c,GS	64K		19.95
PB	Sea Strike	GS	512K	K/M	39.95
AV	Shoot 'Em Up!	+,e,c,GS	48K		19.95
EA	Skyfox	+,e,c	64K	J	14.95
AV	Space Wars	+,e,c,GS	48K		19.95
AC	Spy vs. Spy	+,e,c,GS	48K	J	14.95
FB	Star Glider	e,c	N/A		44.95
ST	Star Maze	+,e,c,GS	48K		9.95
AS	Star Mines	+,e,c,GS	64K		9.95
EA	Super Boulderdash	+,e,c	64K		14.95
PO	Sword of Kadash	+,e,c,GS	48K		8.95

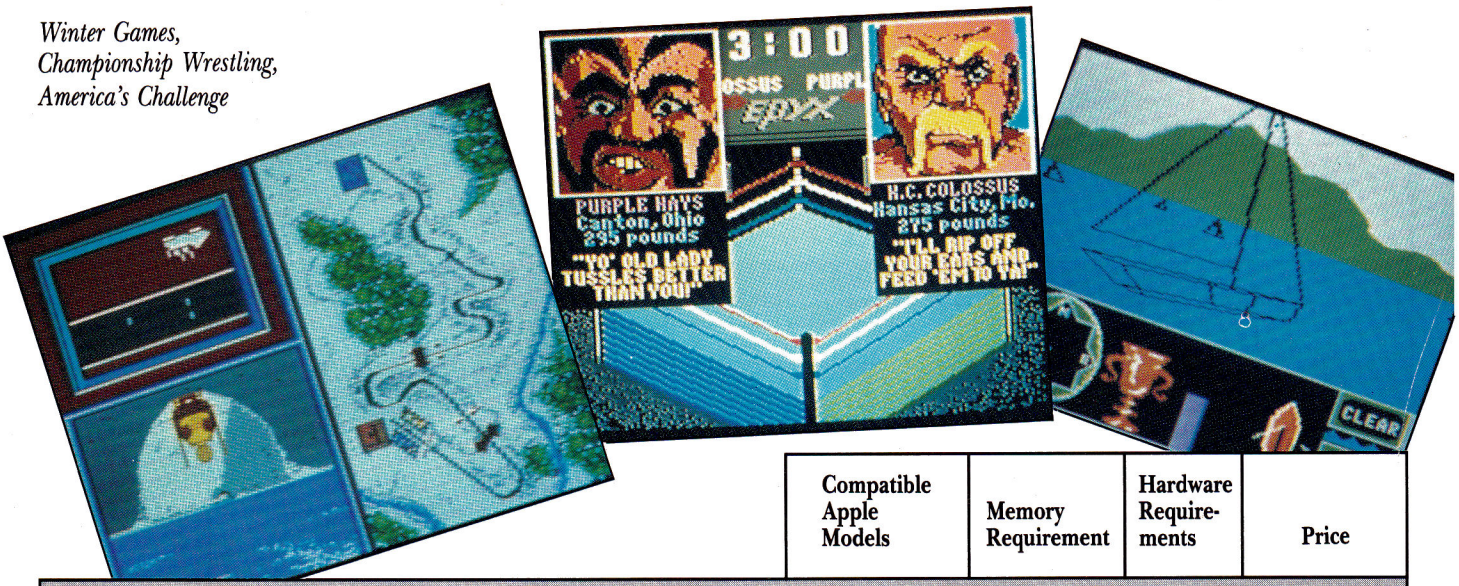
		Compatible Apple Models	Memory Requirement	Hardware Requirements	Price
Arcade Games cont.					
SO	Thexder	GS	512K		34.95
MU	Titan Empire	+,e,c,GS	48K		13.98
MS	Uridium	+,e,c,GS	64K	J	29.95
MS	Xevious	+,e,c,GS	64K	J	29.95
AB	Zero Gravity Pinball	+,e,c,GS	48K	J	19.95
Humorous Adventure Games					
AC	Accolade Comics	+,e,c,GS	64K		34.95
Puzzle Games					
DS	Crosscheck	+,e,c,GS	64K		29.95
MS	Crossword Magic	e,c,GS	128K		49.95
AS	Crosswords	+,e,c,GS	64K		9.95
SP	Facemaker Golden Edition	+,e,c	64K		39.95
SK	First Encounters	+,e,c,GS	64K		29.95
IS	Jigsaw	+,e,c,GS	48K	C	25.00
MK	Tangrams Puzzler	+,c,e,GS	48K		34.95
RH	THWARP!	+,e,c	48K		29.95
Vehicle Simulations					
SO	3-D Helicopter Simulator	GS	512K		34.95
SS	50 Mission Crush	+,e,c	48K		14.95
SS	B-24	+,e,c,GS	64K		34.95
BR	Choplifter	+,e,c,GS	48K	J	14.95
EA	Chuck Yeager's Advanced Flight Simulator	+,e,c,GS	64K		39.95
ST	Deep Space: Operation Copernicus	+,e,c,GS	64K	J	39.95
EX	Destroyer	e,c,GS	128K		39.95
EX	Destroyer (GS)	GS	512K		39.95
MP	F-15 Strike Eagle	+,e,c,GS	64K	J	34.95
SL	Flight Simulator II	+,e,c,GS	48K		49.95
SH	Nato	e,c	128K		14.95
AI	Great American Cross-Country Road Race	+,e,c	64K	J	14.95
CS	Huey	+,e,c,GS	128K		19.95
MS	Infiltrator	+,e,c,GS	64K	J	29.95
MS	Infiltrator II	+,e,c,GS	64K	J	34.95
SL	Jet	+,e,c	64K		39.95
WR	Old Ironsides	+,e,c,GS	48K		39.95
EA	P.H.M. Pegasus	+,e,c,GS	64K		34.95
BS	Quarter Mile	+,e,c,GS	64K		45.00
MS	Railroad Works	+,e,c,GS	48K		9.95
AB	Run Your Own Train	+,e,c,GS	64K		34.95
MS	Sea Dragon	+,e,c,GS	64K		9.95
MP	Silent Service	+,e,c,GS	64K	C,J	34.95
MP	Silent Service (GS)	GS	256K	D,J	39.95
MP	Solo Flight	+,e,c,GS	64K	J	24.95
GG	Stellus	+,e,c,GS	64K		34.95
EA	Strike Fleet	e,c	64K		29.95
EX	Sub Battle Simulator	e,c,GS	128K		39.95
EX	Sub Battle Simulator (GS)	GS	512K		39.95
AC	Test Drive	+,e,c,GS	64K		34.95
AT	Thunderchopper	+,e,c,GS	64K		29.95
DS	Tomahawk	+,e,c,GS	64K	J	29.95
GS	Top Fuel Eliminator	e,c	128K		29.95
BR	Wings of Fury	+,e,c,GS	128K	J	34.95
Graphics "Board" Games					
EA	Archon	+,e,c,GS	64K	J	14.95
EA	Archon II: Adept	+,e,c,GS	64K	J	14.95
EA	Lords of Conquest	+,e,c,GS	64K	C	14.95
AI	Shanghai	e,c	64K	J	34.95
AI	Shanghai (GS)	GS	512K	M	44.95
Graphics Simulations of Board Games					
AV	Backgammon	+,e,c,GS	48K		19.95
OD	Checkers 2.1	+,e,c,GS	48K		49.95
WR	Chivalry	+,e,c,GS	48K		49.95

		Compatible Apple Models	Memory Requirement	Hardware Requirements	Price
ZP	Desdemona	+,e,c,GS	64K		19.95
OD	Odin	+,e,c,GS	48K		49.95
IN	Quizam	e,c,GS	64K		29.95
LG	Scrabble	e,c	N/A	N/A	N/A
Graphics Gambling Games					
AS	Apple 21	+,e,c,GS	64K		9.95
AP	Beating the House at Blackjack	+,e,c,GS	64K		34.95
MI	BlackJack Academy	GS	512K	C	39.95
SI	Blackjack Strategy	+,e,c,GS	48K		69.95
AP	Championship Poker	+,e,c,GS	64K		34.95
AS	Craps	+,e,c,GS	64K		9.95
AS	Draw Poker	+,e,c,GS	64K		9.95
JK	Joker Poker	+,e,c	64K		39.95
AS	MicroGammon II	+,e,c,GS	64K		9.95
PB	Monte Carlo	GS	512K	K/M	39.95
AS	Roulette	+,e,c,GS	64K		9.95
AP	Strategic Craps	+,e,c,GS	64K		39.95
AX	Strip Poker	+,e,c,GS	48K		29.95
AX	Strip Poker (GS)	GS	512K		34.95
PH	System 21 Blackjack	+,e,c,GS	64K		49.95
AP	Vegas Video Poker	+,e,c,GS	48K		29.95
BV	Video Vegas	+,e,c,GS	64K		29.95
Graphics Chess Games					
EN	50 Annotated Chess Classics	+,e,c,GS	64K		19.95
EN	Bobby Fischer's Career	+,e,c,GS	64K		22.50
OD	Chess 7.0	+,e,c,GS	48K		69.95
SW	Chessmaster 2000	e,c,GS	64K		39.95
EN	Guide to Chess Openings	+,e,c,GS	64K		34.95
EN	King's Indian Defense	+,e,c,GS	64K		19.95
EN	Naidorf Sicilian Defense	+,e,c,GS	64K		19.95
EN	Paul Whitehead Teaches Chess	+,e,c,GS	64K		34.95
SP	Sargon II	+,e	24K		9.95
SP	Sargon III	+,e,c,GS	128K		39.95
Graphics Card Games					
AX	Bridge 5.0	+,e,c,GS	48K		29.95
AX	Bridge 5.0 (GS)	GS	512K		34.95
AV	Card Games	+,e,c,GS	48K		19.95
SE	Card Partner Euchre	+,e,c,GS	48K		17.95
AV	Concentration	+,e,c,GS	48K		19.95
BV	Rainy Day Games	+,e,c,GS	64K		29.95
AS	Reversi	+,e,c,GS	64K		9.95
SI	Singles Night at Molly's	+,e,c,GS	48K		29.95
RH	Tournament Bridge	+,e,c,GS	64K		49.95

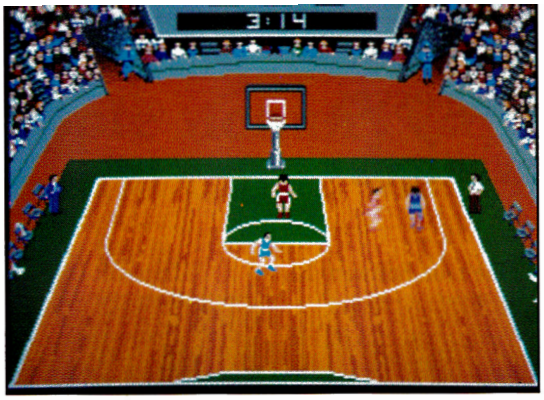
Chessmaster 2000, Silent Service GS, Infiltrator

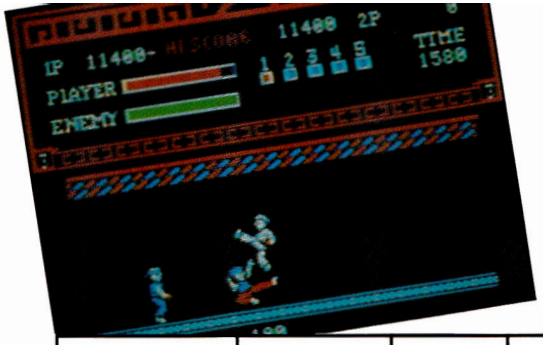


Winter Games,
Championship Wrestling,
America's Challenge



		Compatible Apple Models	Memory Requirement	Hardware Requirements	Price
Graphics TV-Show Games					
RS	Conjecture (Wheel of Fortune)	+,e,c,GS	64K		34.95
SD	Family Feud	+,e,c,GS	64K		14.95
SD	Jeopardy	+,e,c,GS	64K		14.95
MY	Wheel of Fortune	+,e,c,GS	16K		75.00
SD	Wheel of Fortune	+,e,c,GS	128K		14.95
Graphics Trivia Games					
DS	Mind Pursuit	+,e,c,GS	64K		29.95
GRAPHICS SPORTS SIMULATIONS					
Baseball					
RH	APBA Major League	e,c,GS	128K	8	59.95
PA	Baseball Fanatic	e,c,GS	128K	8	29.95
AI	Championship Baseball	e,c,GS	128K		39.95
SS	Computer Baseball	+,e,c,GS	48K		14.95
MA	Computer Statis Pro Baseball	+,e,c,GS	64K		35.00
AC	Hardball!	+,e,c,GS	64K	J	34.95
AC	Hardball! (GS)	GS	512K	J/M	44.95
ML	Micro League Baseball	+,e,c	48K		39.95
SF	Pure Stat Baseball	+,e,c,GS	64K		39.95
SF	Pure Stat Stadium Disk	+,e,c,GS	64K		19.95
SF	Pure Stat Team Disk	+,e,c,GS	64K		19.95
EX	Sporting News Baseball	e,c,GS	128K		39.95
EX	Street Sports Baseball	e,c,GS	128K		39.95
EX	World's Greatest Baseball Game	e,c,GS	64K		19.95
Basketball					
GS	GBA Championship Basketball: Two on Two	e,c	128K		39.95
AI	GBA Championship Basketball: Two on Two (GS)	GS	512K	J	44.95
MA	NBA Basketball	+,e,c,GS	64K		39.95
EA	One on One: Dr. J and Larry Bird	e,c	48K	J	14.95
SF	Pure Stat College Basketball	+,c,e,GS	64K		39.95
SF	Pure Stat Create Your Own Team	+,c,e,GS	64K		24.95
SF	Pure Stat Tournament	+,c,e,GS	64K		19.95
EX	Street Sports Basketball	e,c,GS	128K		39.95
Boxing					
AC	Fight Night	+,e,c,GS	64K	J	14.95
SO	Sierra Championship Boxing	+,e,c,GS	64K		34.95
GS	Star Rank Boxing II	e,c	128K	J	34.95
Football					
AC	4th and Inches	GS	512K	J/M	44.95
SS	Computer Quarterback	+,e,c,GS	48K	O	14.95
GS	GFL Championship Football	e,c,GS	128K		39.95
EA	John Madden Football	e,c			44.95





GBA Championship Basketball GS, Kung Fu Master GS

		Compatible Apple Models	Memory Requirement	Hardware Require-ments	Price
MA	Super Sunday	+,e,c,GS	64K		35.00
EX	World's Greatest Football Game	e,c,GS	64K		19.95
Golf					
AO	Famous Courses of the World I	+,e,c,GS	64K	C	19.95
AO	Famous Courses of the World II	+,e,c,GS	64K	C	19.95
MK	Golf Classic	+,c,e,GS	48K		34.95
OS	Golf's Best—Pinehurst 2	+,e,c,GS	48K		24.95
OS	Golf's Best—St.Andrews	+,e,c,GS	48K		24.95
AB	Hi-Res Computer Golf III	+,e,c,GS	48K	J	24.95
MS	Maxi Golf	+,e,c,GS	64K		9.95
AC	Mean 18	GS	512K	M	44.95
AC	Mean 18 Famous Courses Vol. II	GS	512K	M	19.95
AC	Mean 18 Famous Courses Vol. III	GS	512K	M	34.95
AC	Mini-Putt	GS	512K	J/M	44.95
OS	Pineview	+,e,c,GS	48K		9.99
MA	Tournament Golf	+,e,c,GS	64K		30.00
AO	World Class Leaderboard	+,e,c,GS	64K	C	39.95
EA	World Tour Golf	GS	512K	M	39.95
OS	Ye Old Course	+,e,c,GS	48K		9.99
Hockey					
AX	International Hockey	+,e,c,GS	48K		24.95
MS	Superstar Ice Hockey	N/A	128K	N/A	39.95
Karate					
BR	Karateka	+,e,c,GS	48K		34.95
DE	Karate Champ	e,c,GS	64K		19.95
DE	Kid Niki	e,c,GS	64K		34.95
DE	Kung Fu Master	e,c,GS	64K		19.95
EW	Taekwando Blackbelt	+,e,c,GS	64K	J	9.95
Sailing					
MS	America's Challenge	+,e,c,GS	64K		9.95
Skiing					
BV	Ski Crazed	+,e,c,GS	64K	J	29.95
Wrestling					
MS	Bop 'n' Wrestle	+,e,c,GS	64K	J	29.95
DE	Tag Team Wrestling	e,c,GS	64K		19.95
EX	Championship Wrestling	e,c,GS	64K		19.95
Mixed Games					
EX	California Games	e,c,GS	128K		39.95
EX	California Games (GS)	GS	512K		39.95
MS	Indoor Sports	e,c,GS	128K	J	29.95
EX	Summer Games	e,c,GS	64K		19.95
EX	Summer Games II	e,c,GS	64K		19.95
EX	Winter Games	e,c,GS	64K		19.95
EX	Winter Games (GS)	GS	512K		39.95
EX	World Games	e,c,GS	64K		39.95
EX	World Games (GS)	GS	512K		39.95

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Abracadata AB
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Eugene, OR 97402
(503) 342-3030

Access Software AO
545 West 5th South
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(801) 298-9077

Accolade, Inc. AC
20813 Stevens Creek Blvd.
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(408) 446-5757

ActionSoft AT
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Champaign, IL 61820
(217) 398-8388

Activision AI
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Applications Plus AP
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(612) 432-5560

ArtSci, Inc. AS
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North Hollywood, CA 91601
(818) 985-2922

Artworx Software Co. AX
1844 Penfield Road
Penfield, NY 14526
(716) 385-6120

AV Systems, Inc. AV
1445 Estrella Drive
Santa Barbara, CA 93110
(805) 569-1618

Baen Publishing Enterprise BA
260 Fifth Avenue
Suite 3S
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(212) 532-4111

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Suite 201
Oakland, CA 94612
(415) 332-3638

Baudville BV
5380 52nd Street
Grand Rapids, MI 49508
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Beagle Bros BB
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San Diego, CA 92121
(800) 345-1750
(800) 992-4022 (CA)
(619) 452-5500

Blue Lion Software BL
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Cambridge, MA 02140
(800) 333-0199
(617) 876-2500

BrainBank Inc. BK
220 Fifth Avenue
New York, NY 10001
(212) 686-6565

Britannica Software BT
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San Francisco, CA 94107
(415) 546-1866

Broderbund BR
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San Rafael, CA 94903-2101
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(805) 379-9401

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(602) 829-9614

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Wilmington, CA 90744
(213) 835-9687

Data East USA DE
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San Jose, CA 95112
(408) 286-7074

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Chatsworth, CA 91311
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(415) 571-7171 x555

Davell Custom Software DV
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Cleveland, TN 37320
(615) 336-3055

Earthware Computer Services EW
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(415) 571-7171 x555

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San Francisco, CA 94114-6490
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Redwood City, CA 94063
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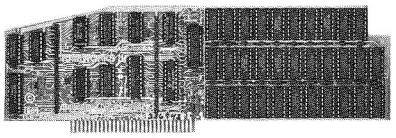
Waldwick, NJ 07463
(201) 444-5700

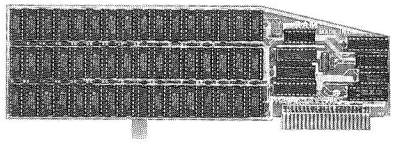
A Comparison Between the #1 Maker of Apple Memory Cards (Applied Engineering) and the #2 Maker (Apple Computer)

FOR THE IIe



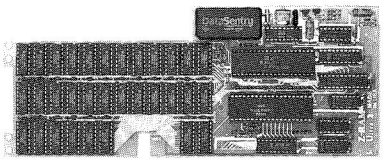
	RamWorks III®	Apple's™ Card
Maximum Desktop	3017K	1012K
Maximum Number of Records in Database	22,600	6350
Maximum Number of Lines in Word Processor	22,600	7250
Maximum Clipboard Lines	2042	255
Autoloads All of AppleWorks	YES	NO
Multiple Disk Save	YES	NO
Built-in Printer Buffer	YES	NO
Compatible with All Versions of AppleWorks	YES	NO
Displays Time & Date on AppleWorks Screen	YES	NO
RGB Option	YES	NO
16 Bit Co-Processor Port	YES	NO
Built-in Hi-Res Diagnostics	YES	NO
Memory Expansion Port	YES	NO
80 Columns Built-in	YES	NO
Maximum Total Functions	6	1
Software Standard	YES	YES
Made in	USA	Singapore
Warranty	5 years	90 days

FOR THE IIGS



	GSRAM™ GSRAM Plus™	Apple's™ Card
Maximum Desktop	8000K	1012K
Maximum Number of Records in Database	22,600	6350
Maximum Number of Lines in Word Processor	22,600	7250
Maximum Clipboard Lines	2042	255
Autoloads All of AppleWorks	YES	NO
Multiple Disk Save	YES	NO
Built-in Printer Buffer	YES	NO
Displays Time & Date on AppleWorks Screen	YES	NO
Time and Date Macros	YES	NO
3.5 Disk Cache	YES	NO
Built-in Hi-Res Diagnostics	YES	NO
Memory Expansion Port	YES	NO
ROM Expansion Port	YES	NO
Number of RAM Banks	6	4
Maximum Memory on Main Card	1.5 or 6 MEG	1 MEG
Software Standard	YES	YES
Made in	USA	Singapore
Warranty	5 years	90 days

FOR THE IIc



	Z-RAM Ultra™	Apple's™ Card
Compatible with All IIc's	YES	NO
Maximum Desktop	727K	1012K
Maximum Number of Records in Database	22,600	6350
Maximum Number of Lines in Word Processor	22,600	7250
Autoloads All of AppleWorks	YES	NO
Multiple Disk Save	YES	NO
Built-in Printer Buffer	YES	NO
Compatible with All Versions of AppleWorks	YES	NO
Displays Time & Date on AppleWorks Screen	YES	NO
16 Bit Co-Processor Port	YES	NO
Built-in Hi-Res Diagnostics	YES	NO
Built-in ProDos, DOS 3.3 Clock	YES 1	NO
Built-in CP/M Capability	YES 2	NO
Maximum Total Functions	5	1
Software Standard	YES	YES
Made in	USA	Singapore
Warranty	5 years	90 days

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1) Only on Ultra 2 or 3, 2) only on Ultra 3

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continued

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Mountain View, CA 94043
(415) 960-0410

Garde Games of Distinction GG
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Madison, CT 06443
(800) 367-1435
(203) 245-9089

Infocom IF
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Cambridge, MA 02140
(617) 492-6000

Interstel Corp. IN
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Webster, TX 77598
(713) 486-4163

Island Software IS
P.O. Box 300
Lake Grove, NY 11755
(516) 585-3755

Joker Software International JS
1399 South 700 East
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(800) JOKER PC
(801) 485-6080

Lance Haffner Games LH
P.O. Box 100594
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(615) 242-2617

Leisure Genius LG
2/4 Vernon Yard
London, England W11
2DX
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Lucasfilm, Inc. LF
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(415) 960-0410

Masterplay Publishing Corp. MC
8417 Sun State Street
Tampa, FL 33614
(813) 888-773

Micro League Sports Assoc. ML
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Microillusions MI
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Granada Hills, CA 91344
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(301) 771-1151

Milliken Publishing Co. MK
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(314) 991-4220

Mindscape MS
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(312) 480-7667

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(301) 254-9200

Muse Software MU
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Navic Software NA
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33410
(305) 848-7850

New World Computing NW
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Mountain View, CA 94043
(415) 960-0410

Odesta OD
4084 Commercial Avenue
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(312) 498-8852

One Step Software OS
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(800) 525-4653
(704) 525-6688

Origin Systems OR
136 Harvey Road
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Londonderry, NH 03053
(603) 644-3360

Paragon Software PR
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Suite A
Greensburg, PA 15601
(412) 838-1166

PBI Software PB
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(800) 843-5722
(800) 572-2746 (CA)
(415) 349-8765

Performing Arts Software PA
320 North Bazil Ave.
Indianapolis, IN 46219
(317) 897-3591

Polarware Software/ Penguin PO
1055 Paramount Pkwy.
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Batavia, IL 60510
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(312) 232-1984

Professional Handicapping PH
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(208) 342-6939

Quality Software QA
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Random House RH
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Robert Scott Enterprises RS
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Auburn, WA 98071

Seven Hills Software SE
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Tallahassee, FL 32304
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ShareData, Inc. SD
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Adventure Gamers Applaud *Pirates!*

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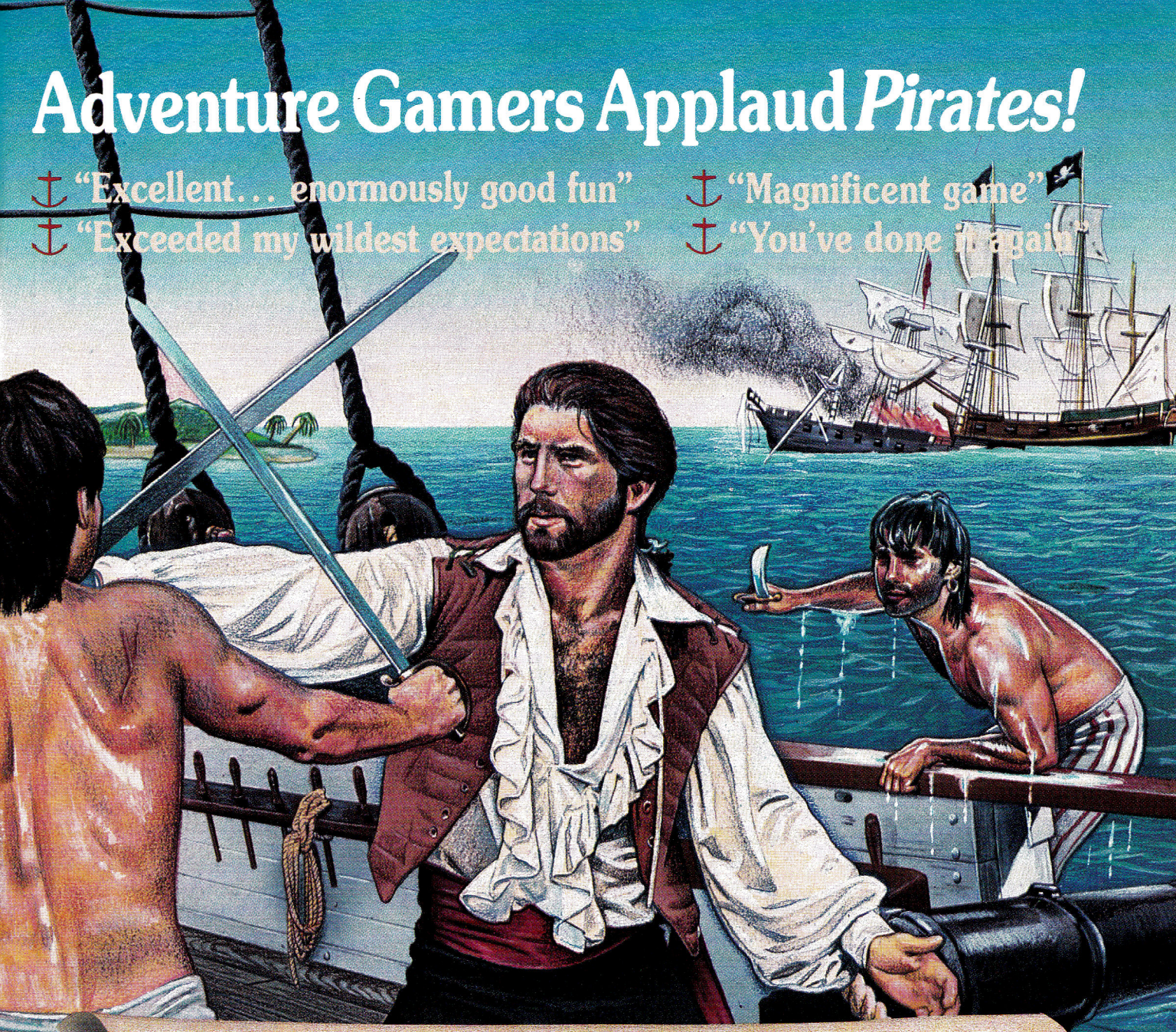
⚓ "Exceeded my wildest expectations" ⚓ "You've done it again"



*"**PIRATES!** is excellent... a great swashbuckling game,* **enormously good fun**... *it should keep you playing for months."*
(Popular Computing Weekly, U.K.)

"... your game has **exceeded my wildest expectations**... *I have run up more game time on the computer in 3 days than in the entire month previous."* **(C.J.M., Buffalo, N.Y.)**

"This is one of the most **magnificent games** *I have ever had the pleasure of playing! It has exactly the balance of realism, playability and silliness that I most adore."* **(J.P.S., San Diego, CA)**

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(Larry Medlin, DallasGamers, in Game News)

PIRATES! It's another winner from Sid Meier, author and designer of the award-winning F-15 STRIKE EAGLE and SILENT SERVICE. His creative genius has combined the best of simulation, role-playing and strategy games in this high seas adventure.

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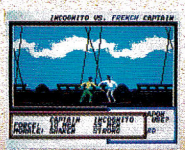
PIRATES! is available at your local "Valued MicroProse Retailer" (VMR). Call for locations nearest you. Get it today for Commodore 64/128, IBM-PC/compatibles and the Apple IIc and 128K IIe. Call or write for MC/VISA orders if product not found locally.



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Clarity



Open-Apple is Tom Weishaar's monthly newsletter for knowledgeable Apple II users. It's thin but packed tight with Apple II lore, humor, letters, tips, advice, and solutions to *your* problems. Compared to other Apple II publications, *Open-Apple* has the highest new-idea-per-issue ratio, the clearest writing, the funniest cartoons, the longest index, the best warranty (all your money back if you're not satisfied), *and* it takes up the least shelf space.

II cue #47

Once you buy a large storage device such as 3.5 drive or a hard disk, it's very important to start using "folders" (subdirectories) to organize the data on your disks. Remember that you can put one folder inside another to help keep things organized. If you have more than 64 items in a folder, AppleWorks can't access that folder. If you have more than 200, all disk operations on that folder become unacceptable slow. For more, see the February 1988 *Open-Apple*, page 4.5.

From our fan mail:

"Lee Raesly directed questions and added his input to a panel of four Apple II stalwarts....A brief recounting of their answers may be of interest to many of you:

Q. What magazines are available?

A. *WAP Journal, A+, AppleWorks Journal, Byte, CAll Apple, inCider, Open-Apple, Nibble.* (After *WAP Journal Open-Apple* was the unanimous favorite.)"

Washington Apple Pi Journal
Washington D.C., January, 1988, page 10

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(315) 393-6633

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(800) 831-2694
(318) 221-8718

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Software Toolworks SW
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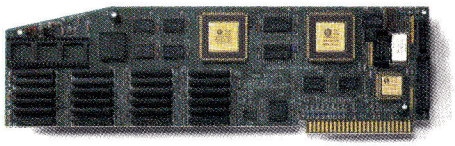

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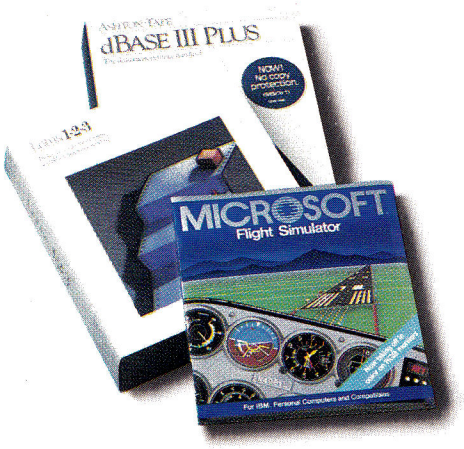

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PC Transporter supports up to 5 drives in a number of combinations.

For example, you can connect a 5.25 Applied Engineering 360K dual-drive system directly to the card. Then plug two daisy-chained Apple 3.5 Drives (not the Apple UniDisk 3.5) to the dual-drive system. For a fifth drive, use a ProDOS file as an IBM hard disk.

PC Transporter controls Apple and IBM compatible disk drives. It supports 3.5″ and 5.25″ MS-DOS and ProDOS formatted diskettes.



Versatile data storage.

PC Transporter reads MS-DOS and translates it into Apple native ProDOS. You can store IBM programs and data on any ProDOS storage device including the Apple 3.5 Drive, Apple UniDisk™ 3.5, Apple 5.25″ drive, SCSI or ProDOS compatible hard drives. (You can use the Apple UniDisk 3.5 with its own controller card for storing programs and data, but not for directly booting an IBM formatted disk.)

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PC Transporter memory choices.

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Note: The IBM mode is 128K less because the PC Transporter uses 128K for system memory.

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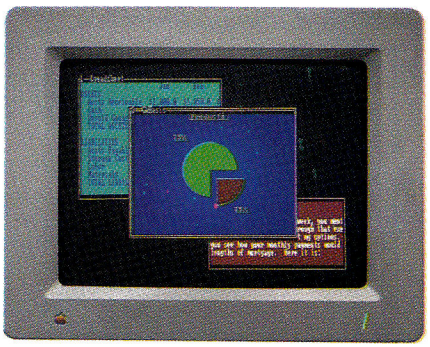

PC Transporter produces better IBM graphics than IBM. Analog is sharper than digital. So with an analog RGB monitor, PC Transporter's CGA graphics and text are superior to IBM's digital display — even while running IBM software!

And, you can also use an Apple composite monitor in IBM text or graphics mode.

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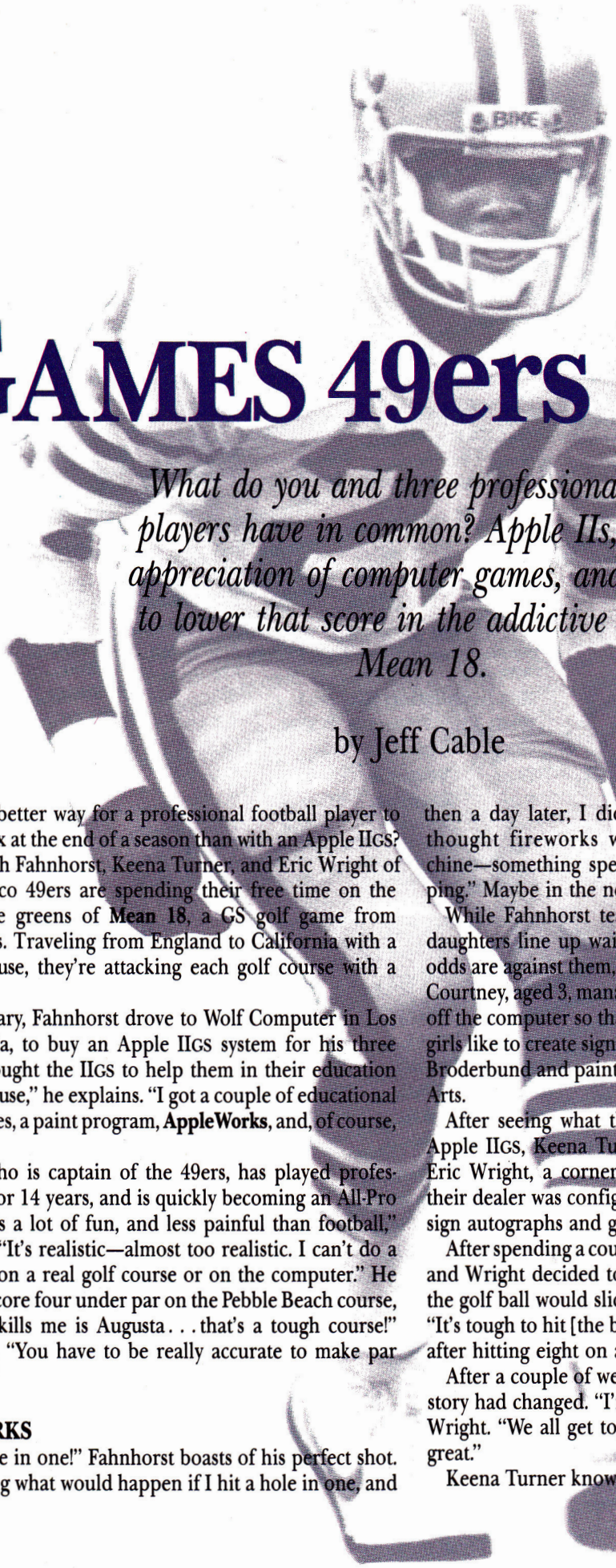


GAMES 49ers PLAY

What do you and three professional football players have in common? Apple IIs, a special appreciation of computer games, and the drive to lower that score in the addictive golf game Mean 18.

by Jeff Cable

What better way for a professional football player to relax at the end of a season than with an Apple IIGS? Keith Fahnhorst, Keena Turner, and Eric Wright of the San Francisco 49ers are spending their free time on the golf course—the greens of **Mean 18**, a GS golf game from Accolade, that is. Traveling from England to California with a click of the mouse, they're attacking each golf course with a vengeance.

In early January, Fahnhorst drove to Wolf Computer in Los Gatos, California, to buy an Apple IIGS system for his three daughters. "I bought the IIGS to help them in their education and for my own use," he explains. "I got a couple of educational software packages, a paint program, **AppleWorks**, and, of course, some games."

Fahnhorst, who is captain of the 49ers, has played professional football for 14 years, and is quickly becoming an All-Pro at Mean 18. "It's a lot of fun, and less painful than football," says Fahnhorst. "It's realistic—almost too realistic. I can't do a good chip shot on a real golf course or on the computer." He did manage to score four under par on the Pebble Beach course, though. "What kills me is Augusta . . . that's a tough course!" Fahnhorst adds. "You have to be really accurate to make par on that course."

NO FIREWORKS

"I made a hole in one!" Fahnhorst boasts of his perfect shot. "I was wondering what would happen if I hit a hole in one, and then a day later, I did it. Actually, I was a little let down. I thought fireworks would start shooting out of the machine—something special. I expected more than a little clapping." Maybe in the next version, Keith!

While Fahnhorst teaches himself more about the IIGS, his daughters line up waiting for their turn at the machine. The odds are against them, but Tiffany, aged 8, Brittney, aged 6, and Courtney, aged 3, manage to get their 6-foot-6, 280-pound father off the computer so that they can have some fun, too. The three girls like to create signs and cards with **The Print Shop GS** from Broderbund and paintings with **DeluxePaint II** from Electronic Arts.

After seeing what the Fahnhorst family was doing with its Apple IIGS, Keena Turner, a linebacker, and his close friend Eric Wright, a cornerback, purchased similar systems. While their dealer was configuring their GS systems, they had time to sign autographs and get addicted to Mean 18.

After spending a couple of minutes on the practice tee, Turner and Wright decided to tackle the real game. With each swing, the golf ball would slice to the right or hook a little to the left. "It's tough to hit [the ball] perfectly straight," explained Wright after hitting eight on a par-five hole.

After a couple of weeks and many hours of golf practice, the story had changed. "I'm getting pretty good at this game," says Wright. "We all get together and play a couple of rounds. It's great."

Keena Turner knows how time flies when you're having fun:

"You start playing golf, you get addicted, and next thing you know, it's two in the morning and you have to kick everybody out and get some sleep."

These late-night golf games are nothing like the ones you see on television. Golf etiquette and quiet spectators are nowhere to be found. Remember, they're football players, not badly dressed golfers.

FOOTBALL IS WORK

What was Turner's reaction when he learned about **4th and Inches**, a football game soon to be released for the Apple II? "No way, I don't want a football game. The Apple computer is for fun, and football is work! That would be the last piece of software on my list."

Keith Fahnhorst, however, is waiting anxiously for the product to ship: "I want it! I think it would be fun."

These professional athletes have already accomplished a lot in their lifetimes, but a natural question arises: What's their biggest accomplishment? Was it winning the 1981 Super Bowl, the 1984 Super Bowl, or was it making that hole in one on Mean 18?■

Jeff Cable is an application specialist at Wolf Computer and is also a free-lance computer consultant. Write to him at Wolf Computer, 105 North Santa Cruz Avenue, Los Gatos, CA 95030.

Product Information

AppleWorks 2.0
Claris Corporation
440 Clyde Avenue
Mountain View, CA 94043
(415) 960-2790
$249
Reader Service No. 325

DeluxePaint II
Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
(415) 572-2787
(800) 562-1112
$99.95
Reader Service No. 326

4th and Inches
Accolade Inc.
20813 Stevens Creek Blvd.
Cupertino, CA 95014
(408) 446-5757
$44.95
Reader Service No. 327

Mean 18
Accolade
20813 Stevens Creek Blvd.
Cupertino, CA 95014
(408) 446-5757
$44.95
Reader Service No. 328

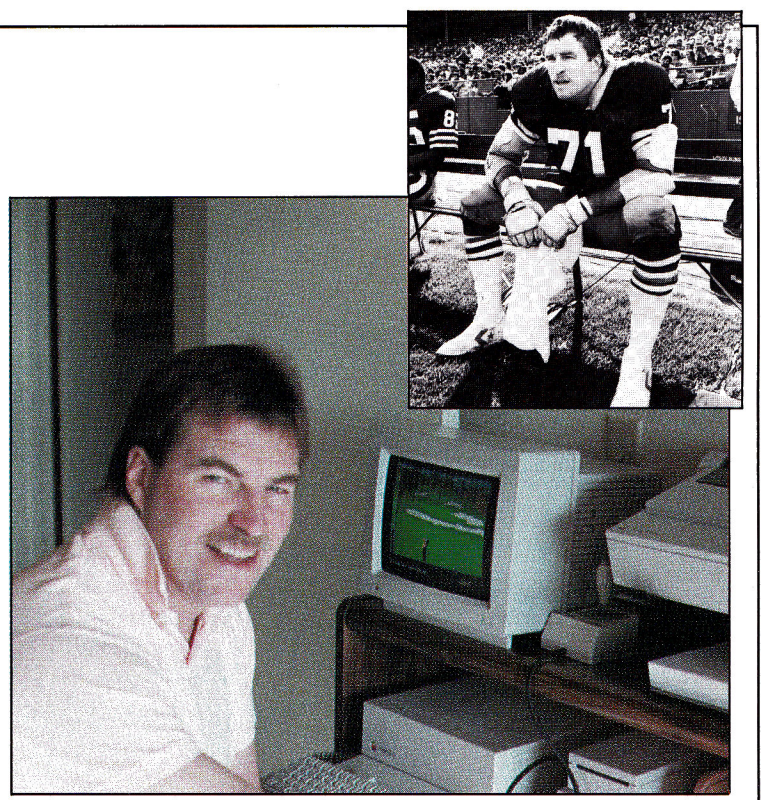
The Print Shop GS
Broderbund Software
17 Paul Drive
San Rafael, CA 94903-2101
(415) 492-3500

After the Games

Besides playing, San Francisco 49ers Keith Fahnhorst, Keena Turner, and Eric Wright have some serious plans for their new Apple systems.

Fahnhorst says he wants to use his word processor for business correspondence and personal letters. "I'm taking a class at a nearby college to learn more about AppleWorks," he says, "and I'm also getting some private training. Not only do I want to write business letters on the computer, I want to create a personal database of names and addresses of friends."

Keena Turner is looking forward to mastering the AppleWorks database to keep track of his sideline businesses. Turner and five other 49ers own a restaurant in Cupertino, California, that happens to be directly across the street from Apple Computer headquarters. "I can think of a million things to do with this computer," says Turner. "It's amazing how I can play a great game on this thing, then pop in a different disk and have a powerful business system."□ **—J.C.**



Keith Fahnhorst at work and play.

NEW GAMES



Now appearing on the IIGS: The Three Stooges.

edited by Pat O'Dell

Product descriptions contained in this section are based on information supplied to us by the respective manufacturers. These announcements are provided solely as a service to our readers and do not constitute endorsement by inCider *of any given product.*

OFF TO EUROPE

More fun for kids in search of adventure and excitement: Broderbund has added another title to its popular **Carmen Sandiego** series. Where in Europe Is Carmen Sandiego? covers 34 countries and sports several new features, including an on-screen Crimestopper's Notebook so that kids can write down clues as they find them.

Where in Europe Is Carmen Sandiego? sells for $44.95 from Broderbund Software, Inc., 17 Paul Drive, San Rafael, CA 94903-2101, (415) 492-3200. School Editions and Lab Packs are available for teachers.

MONSTER MATCH

Ultima V and 2400 A.D., two new games from Origin Systems, pit you against creatures from the world of **fantasy**. Ultima V is available for $59.95; 2400 A.D. sells for $39.95. For more information, contact Origin Systems, Harvey Road, Londonderry, NH 03053, (603) 644-3360, or circle Reader Service number 351.

COMICAL CREATIONS

Infocom's three newest games are **comic books** on disk: Lane Mastodon vs. The Blubbermen, Pit of A Thousand Screams, and ZorkQuest: Assault on Egreth. They're the first in a new series called Infocomics, games that use cinematic effects such as zoom, pan, and dissolve, and let you follow the story line from the viewpoints of several characters.

Infocomics are priced at $12 each from Infocom, Inc., 125 CambridgePark Drive, Cambridge, MA 02140, (617) 492-6000. For more information, circle Reader Service number 352.

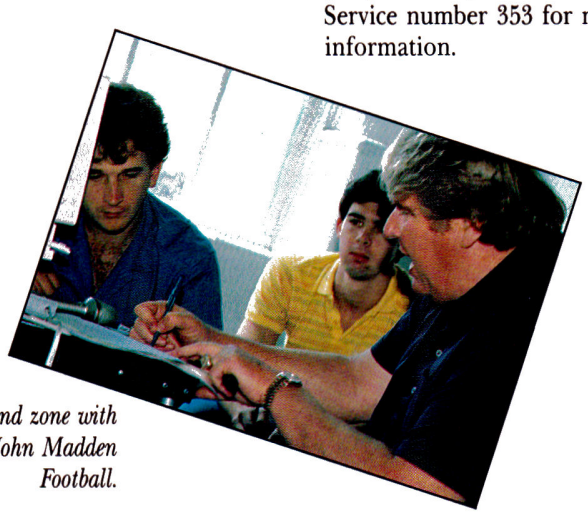
LEGENDARY GAMES

Get some help with your quarterback sneaks, end runs, post patterns, and so on from John Madden, former coach of the Oakland Raiders and current **football** analyst for CBS. Electronic Arts has added John Madden Football to its Sports Legends series. You choose whether to be the coach or a player. Pick from nearly 250 plays taken from Madden's personal playbook, or create your own with the Chalkboard option.

John Madden Football retails for $44.95. Contact Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404, (415) 571-7171, or circle Reader Service number 353 for more information.



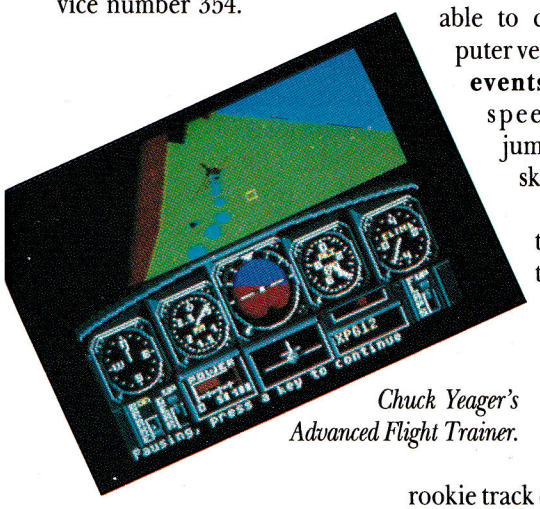
Carmen Sandiego's latest adventure involves 34 European territories.



Go for the end zone with John Madden Football.

FANTASTIC FANTASIES

Electronic Arts has created three more **fantasy adventure** games to keep you glued to your monitor. Bard's Tale III: Thief of Fate returns you to the scene of the original Bard's Tales with seven quests to perform. In Deathlord, you have to stop the Lord before he can murder the Emperor of the mythical land of Lorn. And in Wasteland, you'll journey into America's future after World War III, where you'll struggle to survive. All three games are available for $49.95 each from Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404, (415) 571-7171. For more information, circle Reader Service number 354.



Chuck Yeager's Advanced Flight Trainer.

FLYING HIGH

Chuck Yeager's Advanced Flight Trainer is now available on the Apple II, so you can **fly** with the best. And with Strikefleet, you can command a whole **fleet** of ships and aircraft, right down to the helicopters. Take turns as captain of each vessel: Order both games for $29.95 from Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404, (415) 571-7171, or circle Reader Service number 355 for more information.

MIXED BAG

Epyx is introducing a whole slew of new games. Death Sword will send you back to the **Dark Ages** on a mission to rescue a captive princess. It's available for $24.95. For a change of pace, try Street Sports **Soccer**, where you can play on the street or in a city park. Street Sports Soccer sells for $39.95.

With Sporting News Baseball, you can **play ball** with the pros—*The Sporting News* furnished all the statistics. You can even create your dream team from 100 former all-star players. The game's available for $39.95.

Relive the excitement in Calgary with The Games—Winter Edition. You'll be able to compete in computer versions of **Olympic events** such as luge, speed skating, ski jumping, and figure skating.

When you get tired of sports, turn to L.A. Crackdown and Impossible Mission II. In L.A. Crackdown, you're an experienced **detective** helping a rookie track down members of a drug ring. In Impossible Mission II, you'll try to stop **the evil "Elvin"** from taking over the world as it exists in the 25th century. The games retail for $39.95 each.

For more information, contact Epyx, P.O. Box 8020, Redwood City, CA 94063, (415) 369-2999, or circle Reader Service number 356.

MORE AND MORE

If your lust for excitement still isn't satisfied, you can turn to two new games from Paragon Software: Twilight's Ransom and Wizard Wars. The first **adventure** takes place in the real world: You're trying to rescue a kidnapped woman and solve the mystery surrounding her disappearance. The second puts you in the world of **fantasy**, surrounded by wizards and elves. For more information, contact Paragon Software, 600 Rugh Street, Suite A, Greensburg, PA 15601, (412) 838-1166, or circle Reader Service number 357.

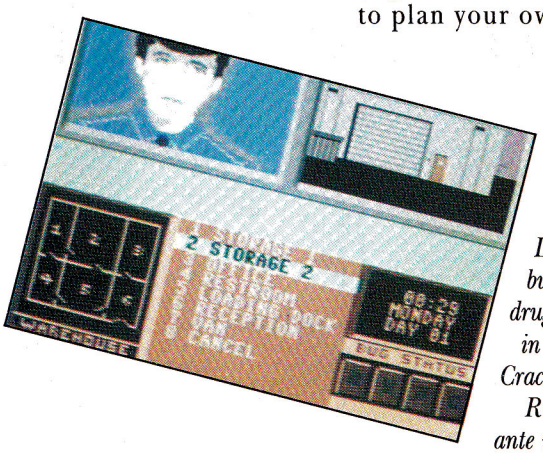
HIT 'EM AGAIN!

You can get out your aggressions with two new games from Activision. In Rampage, you become a **monster** run amok, climbing skyscrapers and eating people. In Star Rank Boxing II, from Gamestar, you'll pick your weight class, then slug it out. You'll even be able to plan your own training schedule to prepare for the **fight**. The games are priced at $34.95 apiece from Activision, 2350 Bayshore Parkway, Mountain View, CA 94043, (415) 960-0410. For more information, circle Reader Service number 358.

ADVENTURES ON SCREEN

Cinemaware Corporation is giving you plenty of chances to be a different person for an hour or a day with its line of **adventure games**: S.D.I., Defender of the Crown, The King of Chicago, and Sinbad and the Throne of the Falcon. From Al Capone to Sinbad, you'll have lots of opportunities for exciting exploits. The four games are available for $49.95 each. Contact Cinemaware through the distributor, Mindscape, Inc., 3444 Dundee Road, Northbrook, IL 60062, (800) 443-7982. Circle Reader service number 359 for more information.

GS owners have a special reason to thank Cinemaware—Rocket Ranger and The Three Stooges take full advantage of your computer's **graphics capabilities** and also offer **digitized sound effects**. Rocket Ranger takes you back to 1940, where you fight the Nazis à la Indiana Jones. And The Three Stooges certainly needs no explanation! Contact Cinemaware, 4165 Thousand





Left, bust a drug ring in L.A. Crackdown. Right, ante up with Joker Poker.

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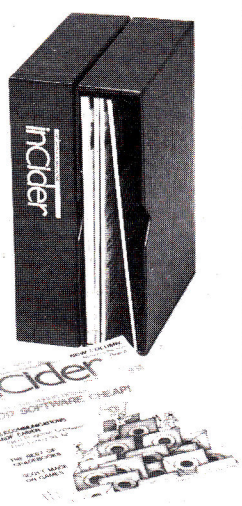

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SPRING FEVER

If the onset of spring leaves you depressed because **football** season's over and other sports have taken its place, give 4th & Inches a try. It's available for $29.95 from Accolade, 20813 Stevens Creek Boulevard, Cupertino, CA 95014. For more information, circle Reader Service number 361.

PLAYING FOR KEEPS

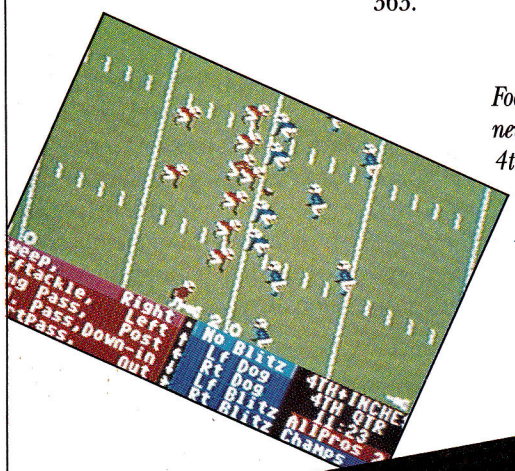
With Joker Poker, you can earn the opportunity to play for cash as well as for the high score on the computer screen. Joker Software is sponsoring a **national poker contest**; finalists will compete in a playoff at Las Vegas's Golden Nugget Casino.

The game lets up to 90 people play at once. There's no limit to the number of cards each player can hold—he or she can keep calling for more as long as they'll improve the hand.

Joker Poker retails for $39.95 from Joker Software International, 1399 South 700 East, Salt Lake City, UT 84105, (801) 485-6080 or (800) 24JOKER. Circle Reader Service number 362 for more information.

EAST MEETS WEST

Kid Niki, new from Data East, is the latest in **arcade games**: It features a punk version of a ninja warrior. Kid Niki fights to save his girlfriend from dragons and monsters. The game has several levels, and one or two people can play it. It's priced at $34.95 from Data East USA, Inc., 470 Needles Drive, San Jose, CA 95112, (408) 286-7074. For more information, circle Reader Service number 363. 363.



Football season never ends with 4th & Inches.



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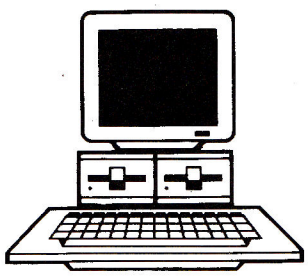

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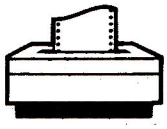

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Maxell 5.25" SS/DD *(box of 10)* 10.
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Verbatim DS/DD *(box of 10)* 20.
3M 3.5" DS/DD *(box of 10)* 20.
C. Itoh 3.5" DS/DD Color Disks *(box of 10)* 25.

Printers

Brother
M-1109AP *ImageWriter Comp.* 249.
Epson LX-800 Call
FX-86e Call
FX-286e Call
EX-800 or EX-1000 Call
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LQ-1050 or LQ-2500 Call
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Microline 182P *(120cps Dot Matrix 10")* 249.
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Apple Serenade

by Cynthia E. Field, Ph.D.

The pure, sweet joy of Mozart's violins, the quirky rhythms of jazz, the city sounds of Gershwin's Rhapsody, the wail of a blues horn—when you're talking *music*, what's an *Apple II* got to offer?

Plenty. You're missing out on a lot of fun if you haven't yet discovered your Apple II's musical talent. For composition, editing, instruction, or performance, your Apple II—alone or connected to electronic hardware—is one versatile instrument.

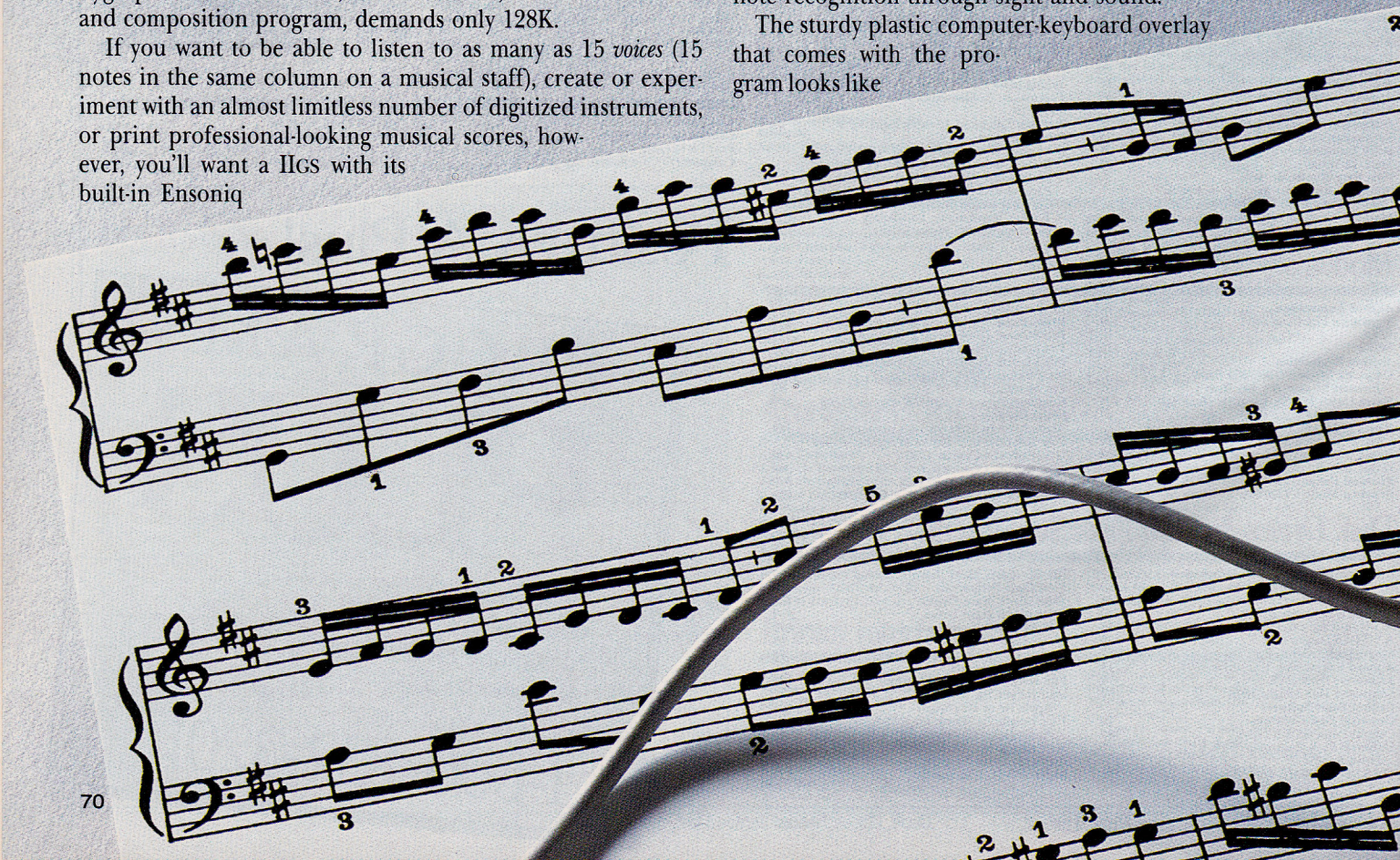
Let's look first at music software you can boot up right out of the box—no special equipment required. (See the accompanying sidebars for more information on music hardware.) At least three programs—**The Notable Phantom** from Britannica Software, **Music Theory** from MECC, and **Stickybear Music** from Optimum Resource—run on only 48K. Others, such as **The Music Class** from Coda Music Software and **Bank Street MusicWriter** from Mindscape, need just 64K to operate. Even Pygraphics' **Music Writer**, a full-featured, advanced notation and composition program, demands only 128K.

If you want to be able to listen to as many as 15 *voices* (15 notes in the same column on a musical staff), create or experiment with an almost limitless number of digitized instruments, or print professional-looking musical scores, however, you'll want a IIGS with its built-in Ensoniq music-synthesis chip. Not only can GS owners run most of the non-GS software named above, but a whole repertoire of GS music programs is just now beginning to crescendo. At press time, **KidsTime II** (Great Wave Software), **Music Construction Set** (Electronic Arts), and **Instant Music** (also from EA) were on the market, while Activision was about to release **The Music Studio 2.0.** And at least three publishers—Electronic Arts, Pygraphics, and Coda—were developing other GS-specific programs: **Deluxe Music Construction Set**, **The Music Writer GS**, and **The Music Class GS**, respectively.

THEORY: AN APPLE FOR THE MUSIC TEACHER

The Notable Phantom is an inexpensive, entertaining introduction to music theory for children aged 5–10. Through a series of custom-option games featuring ghosts, bats, spiders, and the Phantom, children learn the names of notes and practice note recognition through sight and sound.

The sturdy plastic computer-keyboard overlay that comes with the program looks like



Say it with music—Apple music. Whether you play the cello or the kazoo, Apple II hardware and software will help you expand your knowledge, nurture your talent, develop your repertoire, and enhance your appreciation.

a miniature (one and one-half octave) piano keyboard. The child presses the appropriate key in response to each challenge presented by the program's little ghouls.

Older children can read music from the accompanying songbook, which features many popular tunes. Younger kids can play the songs that come on the program disk. Children of any age can "play" the piano overlay to compose their own songs and save them to disk.

MECC's **Music Theory** takes up where The Notable Phantom leaves off. This 18-module program is designed for children aged 10 and up, and, though intended for an academic setting, could also work well at home.

Each module contains sequential lessons; students can choose the level of difficulty they prefer. For instance, Name the Note includes five challenge levels involving naturals, sharps, and flats on the treble and bass staffs. In Rhythm Play, you respond with the number of notes, syncopated or not. Your Apple plays a musical phrase, then you hit the N key on the computer keyboard to tap out the phrase in the correct rhythm. Lessons display graphics illustrations of staffs, clefs, notes, and accidentals.

Music Theory's interface is dated (DOS 3.3, uppercase letters only), and its "music" is single-voice, but neither circumstance detracts from the program's successful fulfillment of its objectives.



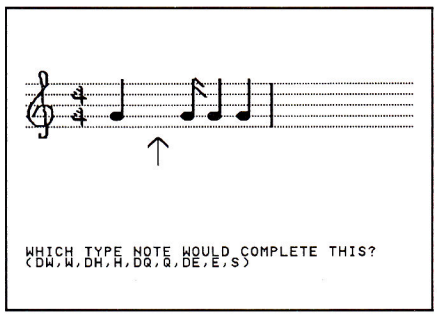
```
        MUSIC THEORY - VOLUME 1
           AVAILABLE PROGRAMS

 1 AURAL INTERVALS    10 RHYTHM
 2 COUNTING           11 RHYTHM PLAY
 3 ENHARMONICS        12 SCALES
 4 FIND THE HALF      13 SEVENTHS
 5 INTRODUCTION       14 TERMS
 6 KEY SIGNATURES     15 TRIADS
 7 MISSING NOTE       16 VISUAL INTERVALS
 8 NAME THE NOTE      17 WHOLE-HALF
 9 NOTE TYPES         18 WRONG NOTE

TYPE THE NUMBER OF THE PROGRAM YOU WANT.
(IF YOU WANT PROGRAM
DESCRIPTIONS, TYPE 'D'.) ■

 Make sure your caps lock key is down.
```

MECC's Music Theory is designed for students aged 10 and up.



Each Music Theory module includes several levels of difficulty and illustrations of musical notation.

Nevertheless, MECC has hinted that it's considering a GS version, but that won't be available "for a long time."

The Music Class, a five-package series of interactive lessons from Coda Music Software, is designed for musicians 8 years old and up. Each package includes Fundamentals, Rhythm, Ear Training, Music Symbols, and Note Reading. Each offers at least three separate modules on two double-sided disks.

The Fundamentals program, for example, includes lessons that teach note reading, major and minor scales, intervals, and rhythm. In some lessons, multiple-choice questions are interspersed among animated-graphics tutorial screens. Other lessons, such as those featuring Mr. Metro Gnome or Cat Steps, take the form of games.

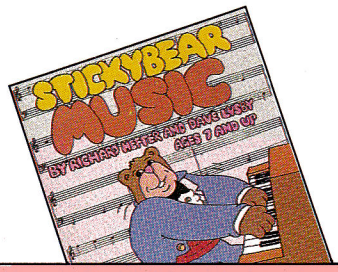
According to Coda's Tom Johnson, The Music Class is popular in schools, but is gaining acceptance in the home and in the studios of private music teachers, as well. Johnson points out that a growing number of private instructors use computers as adjuncts to traditional music lessons. "It increases the value of lessons," he explains. "While one student works on theory on the computer (headphones eliminate distraction), the other receives traditional instruction from the teacher on an instrument. The conventional half-hour lesson expands to a full hour. The student learns more; the parents are happier. And the music instructor is happier."

BACH, ROCK, OR BACHARACH?

Music-theory programs certainly have their place. But what if you're ready to compose? Or want to enjoy music in a painless, albeit more superficial, way? You've got at least seven programs from which to choose.

Stickybear Music offers the basic tools of single-voice music composition for youngsters aged 7 and up. This keyboard-controlled, menu-driven program includes appealing graphics.

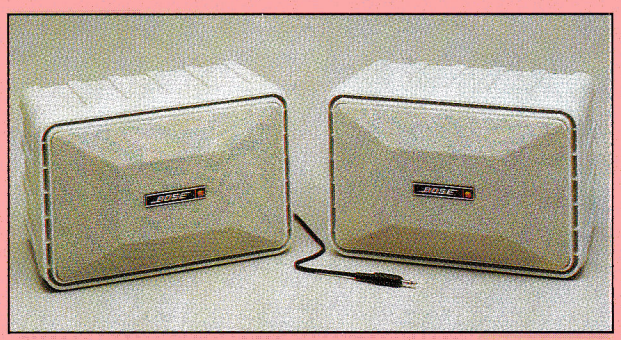
To compose original songs of up to four "pages" apiece (each screen features three double staffs), select a time signature (3/4, 2/4, or 4/4), add accidentals, and choose a tempo from the



Basic Hardware Options

Want more from your musical Apple? Off the shelf, your Apple IIe's sound capabilities are limited: Its small internal speaker cone can generate only a click as it vibrates. With some sophisticated machine-language programming you can modify pitch by accelerating the click, creating musical sounds that are adequate for your first foray into electronic music. But if you want to move into stereo sound, multipart harmony, increased volume, and better control, your Apple II will need some help: hardware add-ons.

If you have a IIc or a GS, start by attaching a small external amplifier, such as Radio Shack's battery-operated model (less than $10), to the audio-output port. Connected to a large speaker, you can bypass your computer's internal speaker and greatly magnify the machine's volume. You can't get stereo, but you can at least get more powerful sound. Some monitors have audio-input and volume controls, too.



For more control over your music, such as treble, bass, and two-speaker output, use a Y-adapter cable (available from Radio Shack for less than $5) to attach your Apple IIc or GS to a stereo amplifier and external speakers. Powered speakers such as **Bose Roommates** or the 6-inch-high **Realistic Minimus** minispeakers, with built-in amplifiers specially designed for computerized sound, are another alternative. They'll give your Apple true stereo if you've got a sound card or digitizer board installed.□

—Margaret Gorts Morabito and Cynthia E. Field

Product Information

Bose Roommate Speakers
Bose Corporation
The Mountain
Framingham, MA 01701
(617) 879-7330
$229 pair

Reader Service No. 315

Realistic Minimus 0.6 Amplified Minispeakers
available through Radio Shack stores
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Reader Service No. 316

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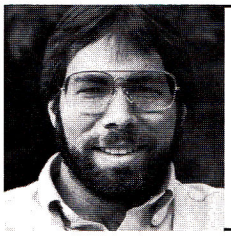

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Steve Wozniak, the creator of Apple Computer

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six available. Use the cursor keys and the return key to pick a note (a dotted half or an eighth, for instance) from the graphics note menu. Play the pitch you want on the piano-like keyboard at the bottom of the screen. Move the right- or left-arrow key, or the J and K keys, to highlight the "ivory" you want. Press the return key to see your choices reflected automatically on the musical staff.

Stickybear Music lets you edit your composition, name it, format a data disk to save it, and print sheet music. The program supports many popular printers and interfaces and includes a built-in printer test.

Sound Cards

Even hooked up to amplified (powered) speakers or your stereo system, your Apple is confined to a single voice and limited instrument sounds. For serious music making, such as multipart, polyphonic (multi-instrument) songs and true stereo, you'll need an internal stereo sound card. At $150–$200, cards for the Apple IIe and II Plus have to carry all the sound chips you'll need to make music: They bypass your computer's tiny speaker altogether. The IIGS sound system is slightly different: With stereo and polyphonic capabilities built in, it requires a sound card simply to let you "access" its stereo output. IIe sound cards come with their own amplifiers on board, ports for attaching external speakers, and volume control.

A IIe sound card lets you create and play songs in six to 12 parts with up to four voices playing together (depending on your card). Your GS can play 15-part compositions, each part having its own instrument sound—an entire orchestra at your fingertips.

Applied Engineering's **Phasor** card adds two-channel output, two volume controls, four sound chips, and a four-watt stereo amplifier to your Apple II Plus or IIe. It requires 64K and fits into any slot except #3.

You can connect external speakers, headphones, or your stereo amplifier's auxiliary inputs directly to the Phasor. You have to supply the RCA connectors. With the Phasor and external speakers, your Apple II can produce 12 voices simultaneously: The unit's four integrated sound chips can each synthesize three voices, one of which is percussion.

The Phasor is compatible with software written for other major sound cards, such as Sweet Micro Systems' Mockingboard (now discontinued, but available from Mindscape bundled with Bank Street MusicWriter) or the **Echo Plus**; it houses rocker switches you configure to match these boards.

The Phasor comes with three editing programs for music, sound, and speech. The music editor is rather difficult to use, but gives programmers plenty of control over the hardware: It holds an on-screen staff of up to 3357 notes, rests, and other commands; you can select note positions, pitch, and key and time signatures; entries can be single or tied notes, rests, triplets, or accidentals.

The sound editor controls each chip's tone, noise width, envelope length, and volume. If you're an experienced programmer, the sound-builder module lets you create a varied range of customized sound effects you can save and reuse in your own BASIC programs.

Although it comes with an attractive demo sequence, the speech editor isn't as powerful as the music and sound-effects software. The Phasor card speaks through only one of its channels and reads strings of syllables in monotone with a nasal twang. The program is phoneme-based, so you can create an unlimited vocabulary, however. You can also control volume, rate, and inflection.

Although the **Echo Plus** sound card, from Street Electronics, is most widely known for speech, it produces stereo music and sound effects, too. You may need some extra equipment: The female voice requires an extended-memory 80-column card, and ProDOS for BASIC programming.

Install the Echo Plus in any slot except #3. Two speaker ports on the card handle monophonic and stereo sound. Two volume controls manage left and right sound channels, each producing three different voices simultaneously.

BASIC experts can do limited music programming with the Echo software: a one-part song in either of two voices, with an eight-octave range, accompanied by a three-note chord. The program offers commands such as Play, Tempo, Voice, and Decay, to which you add a string of parameters specifying variables such as note, sharp, flat, octave, length of note, rest, chord, speed, voice/instrument, and length of note fade-away.

To take full advantage of the Echo Plus' musical capabilities, you'll need a music editor, available separately from Street Electronics. A number of commercial music programs on the market, such as Electronic Arts' Music Construction Set, are also compatible with the Echo Plus and let you compose multipart songs.□ **—Margaret Gorts Morabito**

Product Information

Echo Plus
Street Electronics Corp.
6420 Via Real
Carpinteria, CA 93013
(805) 684-4533
$179.95
Reader Service No. 317

Phasor
Applied Engineering
P.O. Box 5100
Carrollton, TX 75011
(214) 241-6060
$179
Reader Service No. 318

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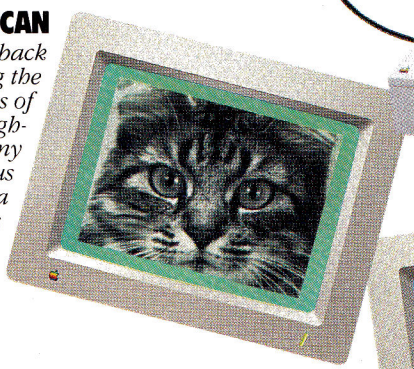

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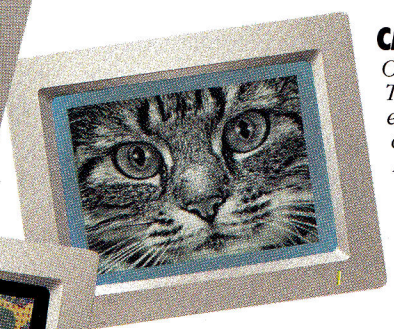

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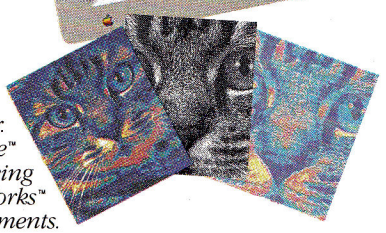

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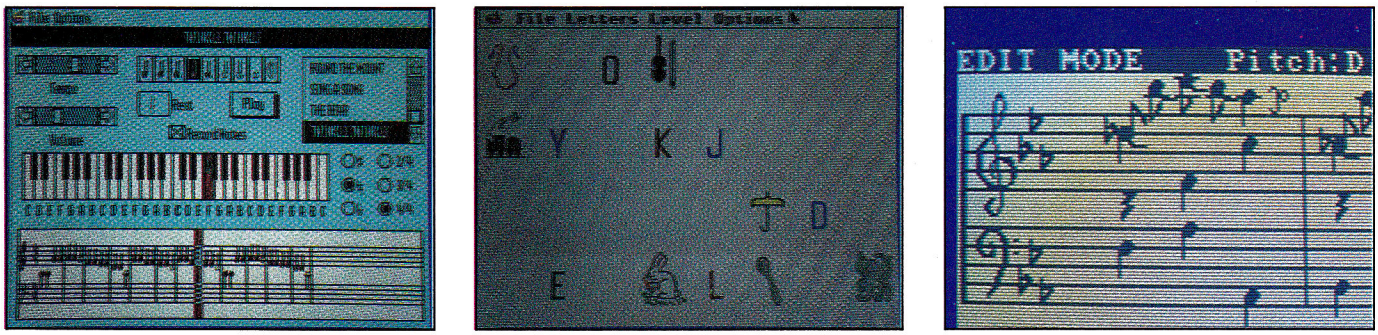

Left and middle, Great Wave's KidsTime II comes with built-in songs, an early-learning program, and a graphics-based music-composition module with Mac-style interface. Right, Mindscape's Bank Street MusicWriter offers more advanced music-editing functions, including alteration of tone through manipulation of a sound's "envelope."

The accompanying *User's Guide* offers theory, exercises, and sheet music for songs such as *Three Blind Mice*, *Greensleeves*, and *A Tisket, A Tasket*. Children can load and listen to the many songs stored on the program disk or on the Music Library 1 disk with its 40 additional songs.

KidsTime II is one of the few children's software packages created specifically for the 512K GS—or is it the other way around? The package consists of two separate programs: ABKey, a fun, attractive early-learning program that helps kids recognize letters (upper- and lowercase), pictures, and corresponding words; and KidsNotes, a beautiful graphics-based music-composition program for young children that adults will enjoy, too.

Both programs feature the Apple standard (Macintosh-style) interface with pull-down menus and mouse input. Moreover, both programs exploit the GS' super-hi-res graphics and music synthesizer, though not fully: Music is single-voice only.

KidsNotes' interface is especially appealing because it offers ample notation (including 16th notes); tempo and volume sliders; and accidental, time, and key-signature buttons. Just click your mouse button on any one of these options or hit a key on KidsTime II's on-screen piano keyboard. Your choice is reflected automatically on a staff at the bottom of the screen.

The program comes with 17 songs, including *Mary Had a Little Lamb*, *London Bridge*, and Bach's *Prelude*. With parental assistance, even a 3-year-old can learn to select one of these songs, play and sing along with it, and enter his or her own "variations." Though not crucial for children in this age bracket, a sheet-music printing routine would be a worthwhile addition.

Bank Street MusicWriter, in many ways more advanced than the other programs mentioned so far, helps you compose, edit, and play music featuring six color-coded voices over a five-octave range. Composition and editing functions make this program's working style similar to "the way a fine word processor handles text," as the manual describes it. One singular advanced feature lets you shape a tone by altering aspects of the sound's "envelope": duration; maximum volume; and peak-, sustained-, and decay-volume times. Other program capabilities include options for changing the direction of a note's stem, ordering up to 16 levels of nested repetition, and linking two works in memory and saving them to disk as a "medley chain."

Bank Street MusicWriter requires a Sweet Microsystems Mockingboard synthesizer (now discontinued, but available from Mindscape bundled with MusicWriter). You can purchase the program and the appropriate card for your II Plus, IIe, or IIc from Mindscape.

Music Construction Set for the 256K GS comes with 16 digitized instruments—pick one to play notes on the treble staff and another to play those on the bass staff. The program's instrument library includes a banjo and grand piano you'd swear were real, plus nontraditional instruments such as the springomatic and the hollowbell that your younger friends might laud as "unreal."

Sporting a modified GS interface, Music Construction Set is easy to learn. You can play and vary the compositions that come on the program disk, or you can write and print original music (but no text). True to its name, the program offers musical bits and pieces—notes, rests, accidentals—that work somewhat like press-on letters. Use the mouse to select a note; glide it to place the note on the staff. The same procedure works for rests, accidentals, triplets, quintuplets, ties, and octave up/down symbols.

Creating music this way is flexible but painstaking. Although you'll enjoy Music Construction Set's ease of use and excellent sound, you may long for a more efficient way to enter notation.

Your patience could pay off handsomely when the company releases **Deluxe Music Construction Set** this year. Product literature describes this program as "the ultimate music software for your Apple IIGS." As currently proposed, it'll offer everything from full-score printing with lyrics and special symbols to complete MIDI compatibility. (The original MCS supports MIDI output only.) In addition, Deluxe Music Construction Set promises two tracks per staff and an on-screen keyboard (KidsTime II for adults?) for easier music writing.

The Music Studio is a worthy alternative for those who want to begin composing on the 512K GS *now*. Although the latest version of The Music Studio (2.0) was in beta form when I tested it in January, it appears to offer many of the features GS owners want, including a busy graphics interface with icons aplenty.

Want to listen to your composition? Click on the "ear" icon. An improvement over Music Construction Set, The Music Studio offers notation and symbols in pull-down menus. Click on the eighth note, for instance, and it remains the "active" note: You don't have to "mousey" on over to the toolbox and pick up every eighth note you need. A press of the spacebar is all it takes to "flip" a note's stem. Notes below or above a staff are easily identified by the lines that appear above, below, or through them.

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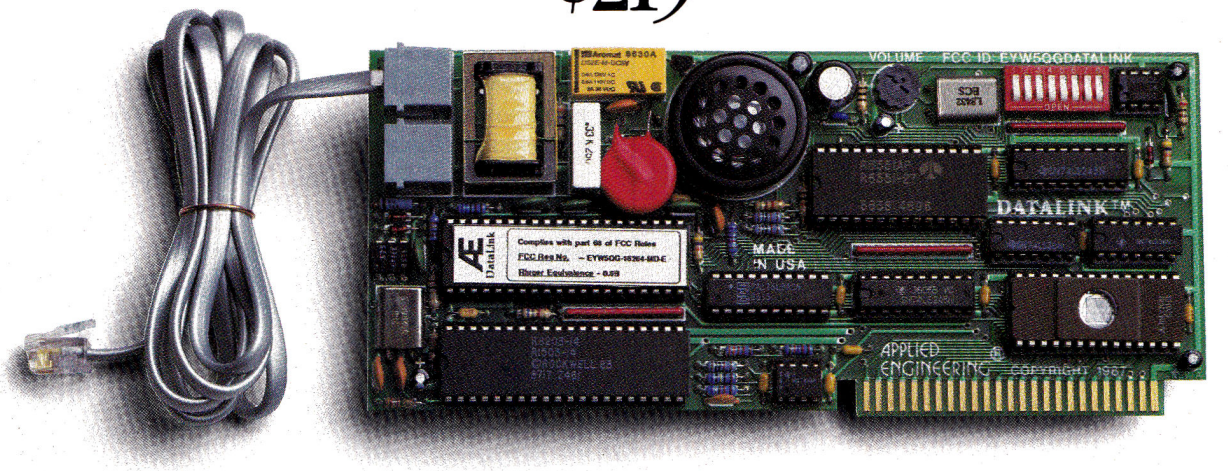

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Max. transmission rate	1200 baud	1200 baud
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Software included	YES	NO
Hayes AT command set	YES	YES
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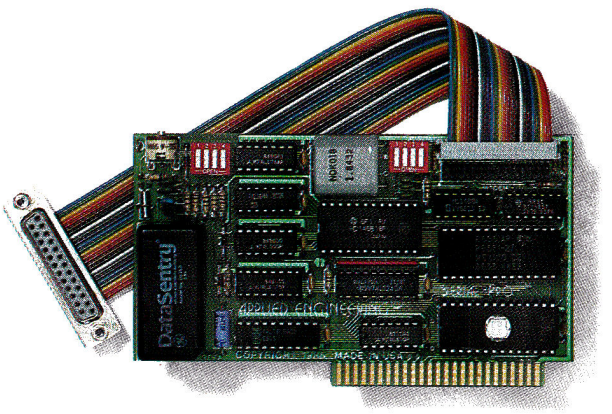

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The program features two working modes: Music Composing Screen, which uses conventional notation, and Music Paintbox, which lets you write free-form music by plotting color-coded rectangles of various widths (durations). The program uses a separate color for each of the 15 instruments available at any given time.

The Music Studio offers four tracks, sound-envelope editing to create your own digitized instruments, and full MIDI support. On my beta version, printing seemed inordinately slow and incomplete; volume and tempo notation was missing. This edition also lacked any font choices for displaying titles, notation, or lyrics.

The Music Writer for the IIe and IIc probably offers every feature the professional composer, orchestra conductor, or mu-

Sound Digitizers: C-C-Catch the Wave

Something like a modem, a sound-digitization card for the IIe or GS converts analog sound waves from the "real world" to the on-or-off digital signals ("bits") your Apple can read and manipulate. It lets you capture voices, music, and sound—about ten seconds' worth at a time—and use them in computer-generated music and speech.

Once the card has digitized and recorded a sound, accompanying software lets you manipulate it until it suits your needs. You can speed up or slow down the playback, reverse it, make it stutter, adjust the volume, fade in or out, edit sections of the sound, or splice sounds together. You can control the length and quality of the sound and incorporate it into commercial music packages or your own music and game programs.

Sound digitizers are available for both the IIe/II Plus and the IIGS. Decillionix, for example, manufactures a unit for the 8-bit Apples called the **DX-1**. Applied Visions produces a digitizer called **FutureSound** specifically for the GS.

FutureSound includes a built-in stereo-output board so that your GS can output true stereo through right and left ports, and a stereo-headphone set. It offers 15 sound tracks and is compatible with a number of commercial music programs for the GS.

The system comes with everything you need to get started: stereo-output cable to connect your headphones or two RCA phono jacks to your stereo; recording cable with microphone jack, two RCA phono jacks, and Ensoniq connector cable; a microphone, detailed documentation, and special software. The board fits any available GS slot, although the company recommends #6.

FutureSound loads prerecorded digitized sounds and records original sounds. The software displays on screen a graphics rendition of any prerecorded sound so that you can see its shape while editing and manipulating it. The sound editor gives you control over playback speed, reverse, stutter, volume, fade-in and fade-out, editing and deletion, splicing, and modification of the *sampling rate* (number of times per second a digitizer board captures a sound) to manipulate the length of a sound and its quality.

sic director could want. How can a program of that stature be improved? By restyling it to suit the GS, of course—and Pygraphics is already doing just that.

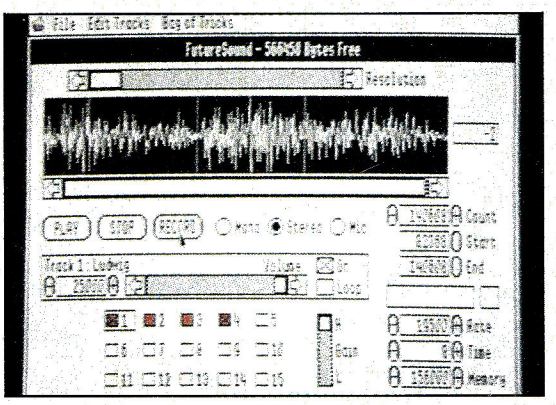
The Music Writer GS maintains, but reconfigures and reorganizes, the IIe/c version's innumerable features—the options that make it a peerless, full-score notation and composition program. (At press time, release of the finished GS version was expected in March; I previewed an incomplete beta copy.) Within the nine pull-down menus of its new Apple standard interface, The Music Writer GS offers eight palettes of musical symbols, including Notation, Groupings, Articulations, Dynamics, Ornaments (glissando, tremolo), Special (lyrics, text), Clefs (with Time and Bars), and Keys (15 key signatures).

FutureSound's mouse-controlled main screen is divided into four sections: sound graphing; recording and playback; time, rate, and memory monitoring; and track control. FutureSound lets you record in mono or stereo, or through a microphone. In mono mode, the maximum sampling rate is 31.5 kilohertz (31,500 cycles of a sound wave per second, nearly twice the speed of the highest note your ear can hear); in stereo, it's 19.5 kilohertz with direct-line input.

What do you do with the sounds you record with your GS? FutureSound lets you use them in existing commercial music programs and in your own music, games, and simulations. Musicians can edit and arrange short tracks; programmers can create sound effects for their own GS routines and other applications in the C language.

The GS has the built-in ability to create stereo sound, but it doesn't have stereo-output ports. MDIdeas' **SuperSonic** card provides those ports and, with the addition of a piggyback board, can offer sound digitization as well.

You can connect a stereo system, headphones, amplified speakers, and nonamplified speakers to the card. (Two amplifiers on board can drive 8-ohm speakers.) The SuperSonic card plugs into the Ensoniq sound chip in the GS mother-



FutureSound includes an editor to permit splicing, deletion, and modification of volume, length, and speed.

Continued on p. 80

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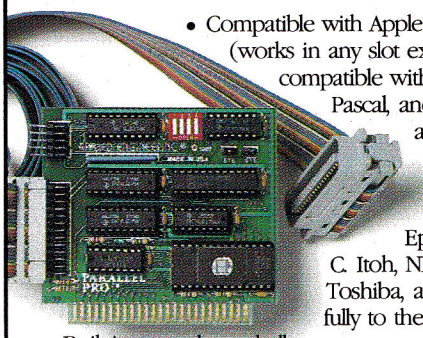
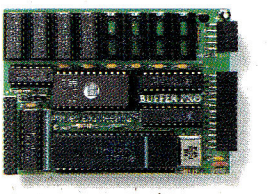


• Compatible with Apple IIe, IIGS, and II+ (works in any slot except 3). • Fully compatible with ProDOS, Dos 3.3, Pascal, and CP/M. • Works automatically with all software. • Supports almost all parallel printers including: Epson, IBM, Okidata, C. Itoh, NEC, Star Micronics, Toshiba, and more. • Conforms fully to the Centronic Standard • Built-in control panel allows easy access to set-up information • Automatic formatting of basic listings. • Built-in self test and Buffer Pro™ support. • Extensive graphics print capability for the hi-res, double hi-res, and the IIGS super hi-res screens • Buffer option available (see below). • Includes 6-ft. cable for connecting to your printer.

Buffer Pro™



Buffer Pro adds memory to Parallel Pro, freeing your Apple from running the printer. With Buffer Pro, you can continue to use your Apple while the printer is printing. To add Buffer Pro to Parallel Pro, simply unplug the cable on Parallel Pro and plug Buffer Pro where the cable was, then plug the cable onto Buffer Pro, That's it!

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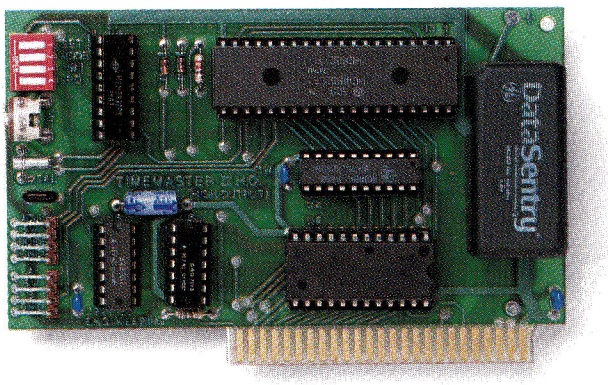

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CP/M is a registered trademark of Digital Research, Inc.

The program includes full editing, formatting, file-handling, printing, and MIDI-interface capabilities. If you're a professional musician, or hope to be someday, you owe it to your career to investigate The Music Writer GS. The program comes with a 30-day money-back guarantee and toll-free support.

ON A LIGHTER NOTE: JAMMING WITH THE 512K GS

Instant Music is the only program I know of in which you can use the mouse to play along with the computer's synthesized music. One of Instant Music's most intoxicating features, "mouse jamming" lets you improvise on one of the four instruments

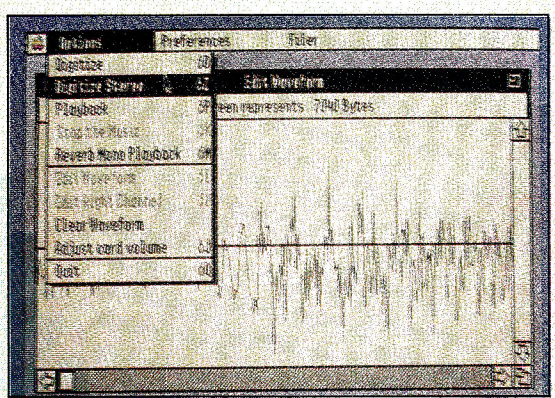
Sound Digitizers

Continued from p. 79

board. Once it's installed, the GS detects its presence automatically. You must install the digitizer in the slot your software accesses, so the slot number varies with the program you're using. The SuperSonic digitizer also requires a 256K RAM-expansion card and a sound source. (The company recommends a compact-disc player.) The card doesn't have separate volume controls; you manipulate volume through your application software. Commercial programs compatible with the SuperSonic card include Music Construction Set and The Music Studio.

Sound signals enter your GS through the digitizer; the Ensoniq chip then samples them. The Ensoniq chip digitizes one channel at a time, so when you record stereo with the SuperSonic digitizer, you have to record one channel after the other, then play back two together. With 1 megabyte of RAM, you can digitize 38 seconds' worth of sound. The sound is stored as bytes in your GS' memory, which you can access when you're ready to edit or save to disk.

Once you've recorded a sound, you can look at it from edit mode. The sound editor is menu-driven; its sampling rate varies from 10K (kilobytes) per second to 27K per second. An on-screen window gives you a visual picture of your sound data in memory and lets you scroll through them. Use a mouse to select the portions of a waveform (sound) with



A SuperSonic piggyback board provides sound digitization and an on-screen editing window showing waveforms in memory.

playing on the program's four tracks. Glide the mouse across the score in whatever pattern you choose and your Apple plays nearly faultless music. The program has the "artificial intelligence" to select the nearest note that will harmonize with the rest of your music.

You can automatically switch instruments, change volumes, tempos, rhythms, even transpose, by pointing and clicking the mouse and using the GS keypad. Want to create your own music? Click on the lightning-bolt icon, select one-, two-, or three-note chords, draw lines (long or short with various slopes) across the screen, and watch the program fill in the "notes" instantly.

Continued

which you want to work. Editing features let you digitize an incoming sound, play sounds back, and edit and view them in windows. You can vary pitch, sampling rate, and volume; create a reverberation effect that gives you quasi-stereo sound from monophonic; repeat playback; and select a slot assignment.

The SuperSonic's documentation is brief. It provides examples to follow, but no instructions on using recorded sound in other programs. The hardware assumes you're experienced in sound digitization; it's not for beginners.□

—Margaret Gorts Morabito

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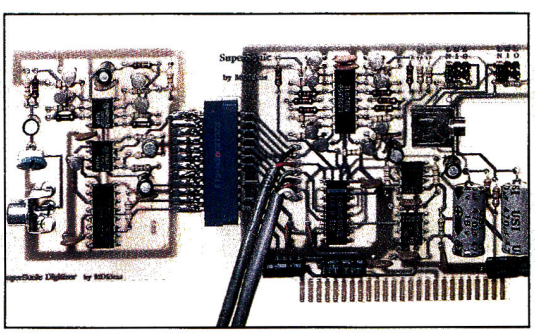

MDIdeas' SuperSonic set offers stereo-output ports on the main board and digitization via a piggyback card.

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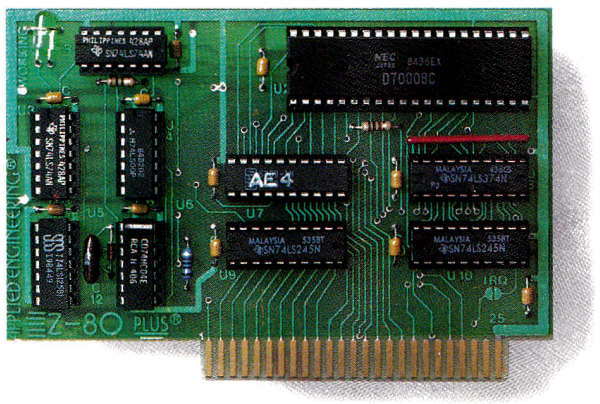

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The new 5.1 boasts advanced features like built-in disk emulation for popular memory expansion boards, boosting both system speed and storage capacity. And menu-driven utilities that let you get to work faster. The Z-80 Plus also lets you run older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

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

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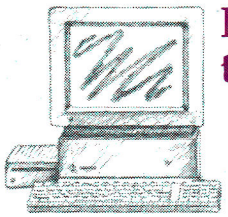

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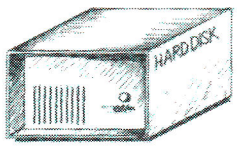



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The program lacks conventional music notation. No staffs, no clefs, no ordinary notes. Music takes the form of color-coded rectangles that appear on screen as a sort of high-tech, horizontal player-piano roll. Good-sized instrument and music libraries come on the program disk; you can increase your inventory and repertoire with the add-on disks **It's Only Rock 'n' Roll** and **Hot & Cool Jazz**.

Instant Music isn't for professional musicians—unless they want to unwind or create musical doodles. But for any GS owner wanting a recreational music program that ranks right up there with Shanghai and Mean 18, Instant Music is it.

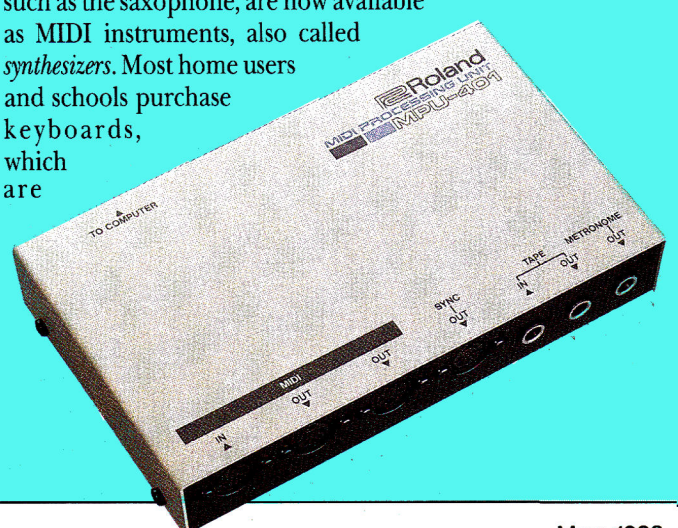
CODA

Like music itself, music software might be considered a great equalizer. It doesn't matter if the only instrument you've played is the remote control on your audio/video equipment. And it

Making Music with MIDI

Although sound cards add parts, instruments, and stereo output to your Apple, serious musicians will want to look at MIDI (musical-instrument digital interface) sound production, which lets you compose more easily and is used for live performance. Similar to the ASCII standard for representing alphanumeric characters in computer code, the MIDI communications standard lets manufacturers use one set of sound code in building their musical instruments, interfaces, and software. A MIDI keyboard, for instance, works with any personal computer equipped with just about any MIDI interface. For the best in electronic music production, MIDI clearly tops your list of requirements. A MIDI system will cost you more than other music-hardware options, but it gives you more flexibility and power. At the low end, you could pay about $500–$550 for an instrument and an elementary recording program. For more flexibility, you may end up paying $1000 or more for a school or home studio.

To get going with MIDI, you'll need a musical instrument equipped with MIDI input and output, a MIDI interface unit to create a channel for communication between your Apple and the instrument, and software to let you and your Apple interact with the hardware. Piano keyboards, guitars, drums, and other traditional instruments, such as the saxophone, are now available as MIDI instruments, also called *synthesizers*. Most home users and schools purchase keyboards, which are



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doesn't matter what Apple II model you own. If music and computers rank high on your list of hobbies or professional interests, why not blend the two? You may unearth a latent talent—and you'll at least discover another way to have fun with your Apple.■

Cynthia E. Field is the author of Field Trip, inCider*'s column on educational software, and Press Room, our column on desktop publishing. She is a free-lance journalist specializing in computer-related topics. Write to her at 60 Border Drive, Wakefield, RI 02879. Enclose a self-addressed, stamped envelope if you'd like a personal reply.*

For Product Information see p. 85.

versatile enough to produce the sound not only of the piano and organ, but the clarinet, trumpet, brass band, and any number of other instruments and effects as well. Many sounds are preset, but you can also program your own. You can play polyphonic songs and compose for four simultaneous instrument sounds.

A MIDI system turns your Apple into a sound-recording and -editing unit. When you play multipart, multi-instrument songs on your synthesizer, you can also record them on disk, then play them back and edit them on your Apple. With a MIDI interface, you can also run *voice librarian* software, which creates and stores sound patches your MIDI synthesizer can display, edit, print, and mix. MIDI also lets you add a drum machine to your system.

MIDI interfaces are of two types: external and internal. An external unit, such as Roland's **MPU-401** with **MIF-APL** card, is a combination package. The internal card connects to the external MIDI hardware with cables; the external unit in turn connects to your MIDI instrument via cable. It also includes a built-in metronome and ports for connecting drum machines and other instruments. This type of MIDI interface is powerful and more expensive than a one-piece internal card.

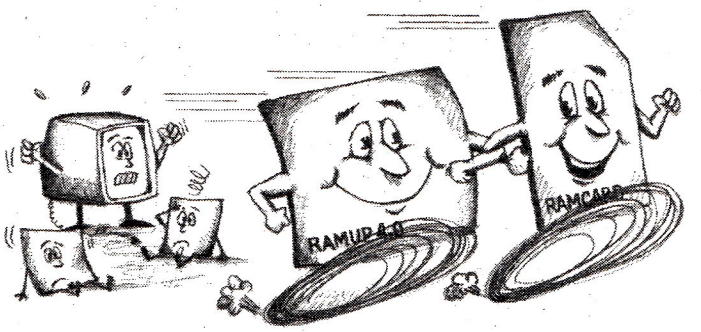
Single cards, such as Sonus' **Personal Musician**, sit inside your Apple and connect to your MIDI instrument via cable from the back of the card. It's a little easier to deal with a one-piece setup, but you don't get as many bells and whistles. Expect to pay about $100–$125 for an internal MIDI interface and about $300 for an external system.

MIDI software lets you interact with your musical instrument and interface. On the simplest level, you can get software that will load and run preprogrammed songs from disk. You just select a song or batch of songs from a menu, then sit back and listen while your MIDI instrument performs for you. These programs are fun to listen to and are impressive examples of what you can do with MIDI, but they're limited.

For people who want to compose, there's a wide range of MIDI software, from general-purpose composition packages

Continued on p. 84

New! RAMUP 4.0



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Making Music with MIDI

Continued from p. 83

to professional-level composition, editing, and printing software. Prices rise as the number of options increases.

MIDI software lets you save and edit compositions you play on your instrument, create multipart songs using the software's track and channel features, and transpose songs and parts of songs up and down the scale, to name just a few features. You'll also hear about MIDI *sequencers* and *editors*, programs that let you record and modify the music you play on your instrument. MIDI instructional programs teach chords, notes, keyboard technique, harmony, and notation.

Prices of MIDI software vary widely. Programs that simply play preprogrammed songs cost as low as $40 apiece. A full-fledged sequencer/editor, such as Roland's **Muse**, costs around $150.

PERSONAL MUSICIAN

Personal Musician, Sonus' MIDI card and recording-software package for the IIe or GS, provides a solid, low-cost entry point into MIDI recording for home users or beginner-level school music programs.

The package comes with an internal MIDI interface card, two cables to attach your Apple to your MIDI instrument, basic composition software with seven demonstration songs, and documentation. The software has few editing features, but lets you record songs of up to 2500 notes each in four *tracks*: You record four parts of one song separately, then play them back simultaneously. With a low-cost MIDI keyboard, such as the Casio CZ-101, you can record a different instrument on each track, creating the sound of a four-piece band.

Personal Musician software constructs songs from *sequences*: You record songs in eight separate pieces you'll tack together sequentially to create a complete song. It's essentially a play-by-ear composition program that doesn't rely on standard musical notation. The program's counter keeps track of beats in groups of four, regardless of time signature.

The package's MIDI interface card is easy to install and provides ports to connect MIDI in and out cables to your instrument. Sonus doesn't include any documentation for the interface card. The software is primarily for composition with limited editing features.□

—Margaret Gorts Morabito

Product Information

MIF-APL, $130
MPU-401, $275
Muse, $150
Roland Corporation
7200 Dominion Circle
Los Angeles, CA 90040-3647
(213) 685-5141

Reader Service No. 322

Personal Musician
Sonus Corporation
21430 Strathern Street
Suite H
Canoga Park, CA 91304
(818) 702-0992
$129.95 5¼-inch
$139.95 3½-inch

Reader Service No. 323

Product Information

Bank Street MusicWriter
Mindscape
3444 Dundee Road
Northbrook, IL 60062
(312) 480-7667
$49.95 ($149.95 with Mockingboard)

Reader Service No. 306

Deluxe Library:
It's Only Rock 'n' Roll,
Hot & Cool Jazz,
$29.95 each
Deluxe Music Construction Set,
price undetermined
Instant Music, $49.95
Music Construction Set, $49.95
Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
(415) 572-ARTS

Reader Service No. 307

KidsTime II
Great Wave Software
5353 Scotts Valley Drive
Scotts Valley, CA 95066
(408) 438-1990
$39.95

Reader Service No. 308

The Music Class:
Fundamentals, Rhythm, Ear Training, $49 each
Music Symbols, Note Reading, $39 each
Coda Music Software
1401 East 79th Street
Bloomington, MN 55425
(612) 854-9554

Reader Service No. 309

The Music Studio 2.0
Activision
2350 Bayshore Parkway
Mountain View, CA 94043
(415) 960-0518
$99.95

Reader Service No. 310

The Music Writer,
$595 professional,
$295 special edition
The Music Writer GS,
$595 professional,
$295 special edition,
$119 consumer model
Pygraphics
P.O. Box 639
Grapevine, TX 76051
(800) 222-7536
(800) 481-7536

Reader Service No. 311

Music Theory
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$55

Reader Service No. 312

Notable Phantom
Britannica Software
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San Francisco, CA 94107
(415) 546-1866
$9.95

Reader Service No. 313

Stickybear Music, $39.95
Music Library 1, $39.95
Lab Pack, $75
Optimum Resource
10 Station Place
Norfolk, CT 06058
(203) 542-5553

Reader Service No. 314

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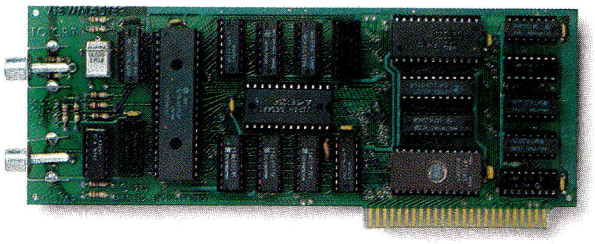

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SUPRTERM		✓					✓	✓	
WIZARD 80					✓		✓	✓	
VISION 80	✓	✓			✓				
OMNIVISION		✓					✓	✓	
VIEWMAX 80	✓	✓			✓			✓	
SMARTERM	✓	✓				✓	✓		
VIDEOTERM		✓	✓		✓	✓		✓	

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Part 2

Database Membership Rosters

Use last month's template to print selected reports and highlight specific information.

by Ruth K. Witkin

In last month's AppleWorks in Action, ("Database Membership Rosters: Part 1," p. 70), you first created a database of computer SIG (special-interest group) members, then printed reports. This month, you'll print more reports, including three tables listing selected records, a report showing active members, and a two-column label listing.

Use the AppleWorks Startup and Program disks to load the file named *COMP-SIG*. You should now see multiple-record layout in the Review/Add/Change screen, with the cursor on the *Arnold* record. Press OA-Z to zoom in on that record so that you can review the categories.

SIG DATE shows the date the person joined the special-interest group; *STATUS* either holds a number 1 for an active member or remains empty, indicating an inactive or former member; and *LICA* (short for Long Island Computer Association, the parent association under whose aegis the SIG operates) holds Yes for a paid-up member or No for someone who isn't.

The *SPARE* category (of which there should be least one in every database) awaits a call to duty. If you remember later something your database simply can't do without, you can overtype *SPARE* with that category name and make your entries. This saves the time you'd spend re-creating custom screens and report formats that disappear when you insert a category. Now press OA-Z to zoom into multiple-record layout.

Report: ADDRESS LIST — Page 1, 4-1-88
Selection: STATUS equals 1

FIRST	LAST NAME	STREET	CITY	ST	ZIP	HOME PHONE
Rich	Arnold	1741 Claymoe Ave.	Bluestone	NY	11510	718-555-6994
Karl	Barber	82 Berry Hill Lane	Abner	NY	11803	516-555-6588
Syd S.	Chazen	155 Elm St.	Floral Park	NY	11004	718-555-9373
Adelaide	Chen	12 Blanchard Rd	Abner	NY	11803	516-555-4631
Gil	Freeson	110 Moon Crescent	Wren Cove	NY	11542	516-555-1234
Carole	Kendrick	333 Sharon St.	Port Henry	NY	11622	516-555-7317
Anthony G	Romano	2402 Benton St	Abner	NY	11803	unlisted
Robert E.	Zelaznic	3 Hummingbird Hill	Wren Cove	NY	11542	516-555-5776

Figure 1. *Report 1: List of active numbers.*

SELECTING ACTIVE MEMBERS

This month's column spotlights record selection. Let's say you want to see the names of active SIG members only. To select those records, press OA-R to bring up the Select Records screen, a list of all categories from which you can choose the one containing the selection information. Type **12** to choose *STATUS* and press Return. Keep an eye on *Selection* at the top left of the screen, where AppleWorks displays the results of your actions.

You're now faced with a wealth of comparison criteria, with *equals* highlighted. Press Return to confirm *equals*. AppleWorks asks for comparison information, so type **1** and press Return. You have no other comparisons, so press Escape. Of the ten records in this database, AppleWorks displays eight that match the criterion. Simple.

You can see the selected records in single-record layout. Press OA-Z to zoom into the Arnold record. Now hold down the open-apple key and tap the down-arrow key as AppleWorks displays, in succession, Records 1, 2, 3, 4, 6, 7, 9, and 10. If you overshoot and reach the Insert New Records screen after Record 10, press Return to confirm *No*.

REPORT 1: A LIST OF ACTIVE MEMBERS

Printing selected records is just as easy as displaying them. Turn on your printer so that you'll be ready. Now press OA-P, then Return to bring up the Report Catalog. You can now see the report formats you created last month: ADDRESS LIST, ADDRESS LIST 2, and LABELS LIST.

Use ADDRESS LIST (Figure 3 in April's column) to print a report that looks like that shown in **Figure 1**. Press Return to select *ADDRESS LIST*. The selection criterion is still in effect, as shown next to *Selection*. Press OA-P, then Return to confirm the printer (or type the number corresponding to the printer, then Return), type today's date, and press Return twice to confirm the date and one copy. The printer whirs, and here's your report.

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Variable-zoom FatBits	✔	✔
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4 Independent 16 color gradient palettes	✔	
Resize & bend objects	✔	✔
Distort objects	✔	
Anything can be a brush	✔	✔
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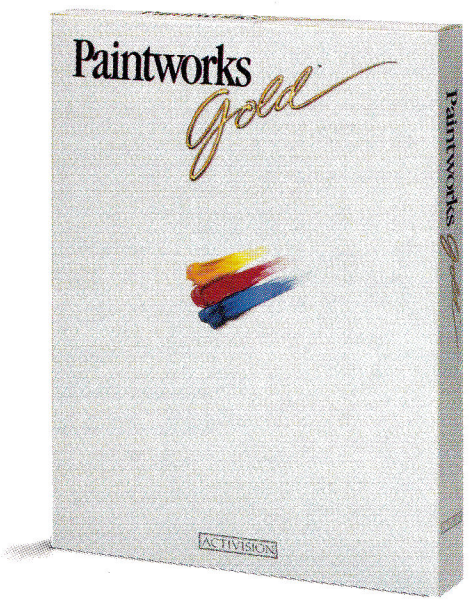
Smear, shade, & smooth colors	✔	✔
Automatic corner rounding	✔	
Autotightening lassos	✔	
On-line Help	✔	
Total	**21**	**9**



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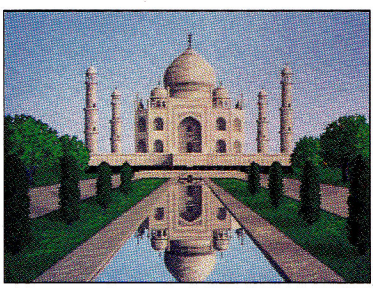
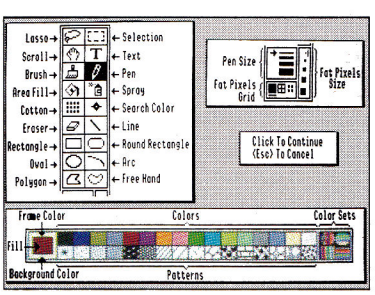


Two styles of 3-D put your pictures in perspective. To create the reflection, just rotate the Taj Mahal, mask all but the water, and use the palace itself as your brush. Fill the skies with gradient color for a setting fit for a king.



The variable-zoom FatBits editor lets you magnify up to 4X, then use any tool in either window. Here you can see the smoothing effects used to create the subtleties in the leopard's face.



Over 80 new features, including on-screen gradient fill tools and variable FatBits controls. And if you forget the commands, three help screens like this one are just a click away.

ACTIVISION®

Unless you remove the selection criterion at the display end, it'll permeate every report, including the ones you'll soon create. So, press Escape twice to return to the Review/Add/Change screen, press OA-R, then type **Y** to select all records.

REPORTS 2 AND 3

The next selection involves two criteria—active SIG members who haven't joined LICA, the parent computer organization, yet. Your printed report should look like the one in **Figure 2**.

You can select records in the Report Format screen the same way you do in the Review/Add/Change screen. To see how, press OA-P to bring up the report menu, and hit Enter twice to display the *ADDRESS LIST* report format again. Now press OA-R, then hit Return to confirm *No*. (You want to continue the selection process, not halt it.) Notice that the area next to *Selection* is empty, so you'll have to start the selection from scratch.

For the first criterion (active SIG member), type **12** to choose *STATUS* and press Return twice, the second time to confirm *equals*. Type **1** and press Return. You have two criteria this time, so press Return again to confirm *and*. For the second criterion (not a LICA member), type **13** to select LICA and press Return twice, the second time to confirm *equals*. Type **No** and hit Return again. You have no more criteria, so press Escape.

Except for the selection criteria AppleWorks displays, the screen looks the same as before. You can see the selected records by previewing the report: Press OA-P, type **2** (or the number that selects *The Screen*), and press Return twice. AppleWorks now brings up the Chazen and Chen records, the only ones that fit the criteria. Press Return to go back to Report Format. Press OA-P, type your printer number, and press Return three times to print this report.

The next report (**Figure 3**) selects a record based on three criteria. Anyone joining a SIG is expected to be a paid-up member of LICA within three months of joining the SIG. You're still in the Report Format screen, so press OA-R, then Return to confirm *No*.

For the first criterion (active SIG member), type **12** and press Return twice, the second time to confirm *equals*. Type **1** and press Return twice, the second time to confirm *and*. For the second criterion, (not a LICA member), type **13** and press Return twice, the second time to confirm *equals*. Type **No** and hit Return twice, the second time to confirm *and*.

For the third criterion (at least three months since joining the SIG), type **11** to select *SIG DATE* and hit Return. AppleWorks knows you're working with a date and modifies the comparison criteria accordingly.

Today's date is April 1, 1988, which means that anyone who joined the SIG before January 1, 1988, is due to join LICA. Type **3** to select *is before* and press Return. Type **Jan 1, 1988** and hit Return again. Three criteria is the AppleWorks limit, so it now returns you to the Report Format.

Now preview this report: Press OA-P, type **2** (or the number that selects *The Screen*), and press Return twice. AppleWorks displays the Chen record, the only one that fits all three criteria. Press Return to go back to the Report Format. Press OA-P, type your printer number, and press Return three times to print this report.

REPORT 4: ADDING/COUNTING THE RECORDS

The next report uses the 1s in the *STATUS* category to count active records, as shown in **Figure 4**. This report is a modification of the ADDRESS LIST 2 report

```
File:   COMPSIG                                                    Page 1
Report: ADDRESS LIST                                               4-1-88
Selection: STATUS equals 1
  and      LICA equals NO
FIRST     LAST NAME    STREET              CITY          ST  ZIP    HOME PHONE
--------- ------------ ------------------- ------------- --- ------ ------------

Syd S.    Chazen       155 Elm St.         Floral Park   NY  11004  718-555-9373

Adelaide  Chen         12 Blanchard Rd     Abner         NY  11803  516-555-4631
```

Figure 2. Report 2: Active members who haven't joined LICA.

```
File:   COMPSIG                                                    Page 1
Report: ADDRESS LIST                                               4-1-88
Selection: STATUS equals 1
  and      LICA equals NO
  and      SIG DATE is before Jan  1 88
FIRST     LAST NAME    STREET              CITY          ST  ZIP    HOME PHONE
--------- ------------ ------------------- ------------- --- ------ ------------

Adelaide  Chen         12 Blanchard Rd     Abner         NY  11803  516-555-4631
```

Figure 3. Report 3: Active members due to join LICA.

```
File:  COMPSIG                                                          Page 1
Report: ACTIVE COUNT                                                    4-1-88
FIRST     LAST NAME    STREET              CITY          ST  ZIP    HOME PHONE     BUSINESS PHONE  OCCUPATION      STA
--------- ------------ ------------------- ------------- --- ------ -------------- --------------- --------------- ---

Rich      Arnold       1741 Claymoe Ave.   Bluestone     NY  11510  718-555-6994   212-555-9090    Accountant      1

Karl      Barber       82 Berry Hill Lane  Abner         NY  11803  516-555-6588   718-555-7200    Materials Man   1

Syd S.    Chazen       155 Elm St.         Floral Park   NY  11004  718-555-9373   212-555-0723    Customer Rep    1

Adelaide  Chen         12 Blanchard Rd     Abner         NY  11803  516-555-4631   516-555-2305    Engineer        1

Steven    Cohen        P.O. Box 234        Harris Place  NY  11764  516-555-0462   same            Hardware sale

Gil       Freeson      110 Moon Crescent   Wren Cove     NY  11542  516-555-1234   212-444-0078    Restauranteur   1

Carole    Kendrick     333 Sharon St.      Port Henry    NY  11622  516-555-7317   516-555-1212    Photographer    1

Robert J. Nelson       32 Albany Dr        Standish      NY  11050  516-555-2323   516-555-5678    Architect

Anthony G Romano       2402 Benton St      Abner         NY  11803  unlisted       718-555-4633    Systems Analy   1

Robert E. Zelaznic     3 Hummingbird Hill  Wren Cove     NY  11542  516-555-5776   212-555-8765    Stock Broker    1

                                                                                                                    8*
```

Figure 4. Report 4: All records with a count of active members.

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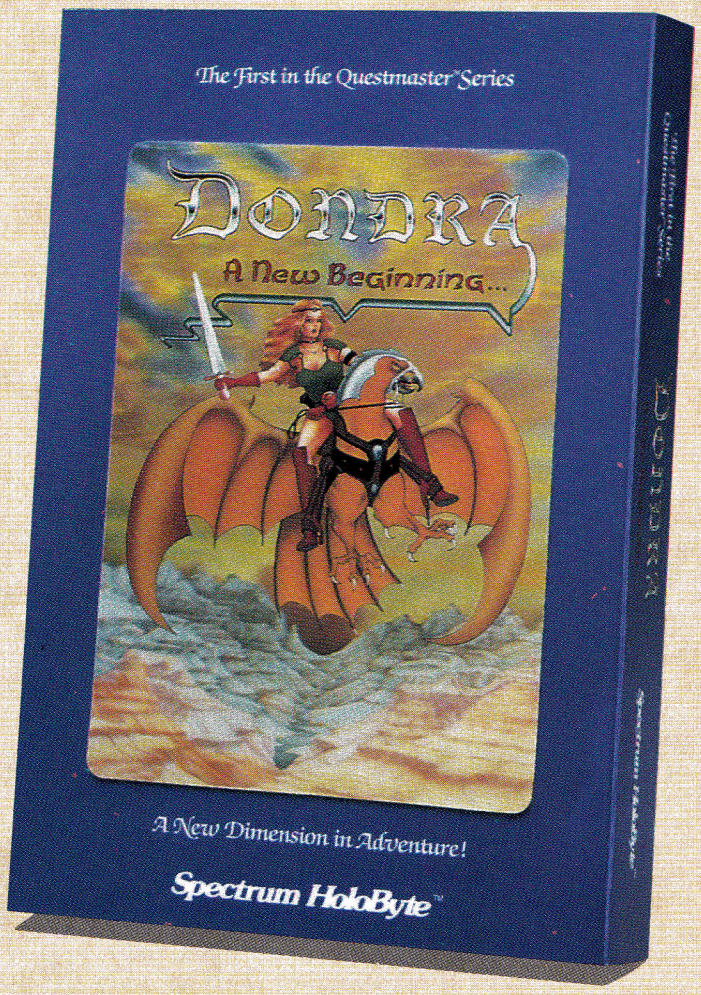

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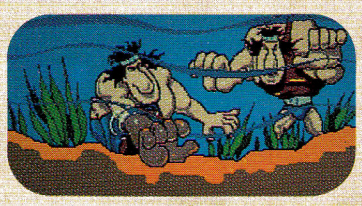


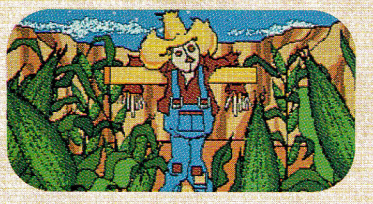

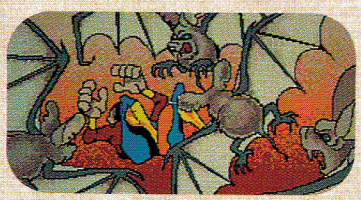

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Screens shown are Apple IIGS

```
File: COMPSIG                    REPORT FORMAT              Escape: Report Menu
Report: TWO COLUMN
Selection: All records

       BUSINESS & FINANCE SIG - APRIL 1988
================================================================================

FIRST <LAST NAME                 OCCUPATION
STREET                           HARDWARE
CITY <ST <ZIP                    SIG DATE: Jun 21 87
HOME PHONE: 718-555-6994         STATUS: 1
BUSINESS PHONE: 212-555-9090     LICA: Yes
------------------------Each record will print  6 lines-------------------------

--------------------------------------------------------------------------------
Use options shown on Help Screen                                  @-? for Help
```

Figure 5. Two-column label format.

```
        BUSINESS & FINANCE SIG - APRIL 1988

Rich Arnold                      Accountant
1741 Claymoe Ave.                Apple IIe
Bluestone NY 11510               SIG DATE: Jun 21 87
HOME PHONE: 718-555-6994         STATUS: 1
BUSINESS PHONE: 212-555-9090     LICA: Yes

Karl Barber                      Materials Manager
82 Berry Hill Lane               Apple IIc
Abner NY 11803                   SIG DATE: Dec 20 86
HOME PHONE: 516-555-6588         STATUS: 1
BUSINESS PHONE: 718-555-7200     LICA: Yes

Syd S. Chazen                    Customer Rep
155 Elm St.                      none yet
Floral Park NY 11004             SIG DATE: Mar 17 88
HOME PHONE: 718-555-9373         STATUS: 1
BUSINESS PHONE: 212-555-0723     LICA: No

Adelaide Chen                    Engineer
12 Blanchard Rd                  Apple IIgs
Abner NY 11803                   SIG DATE: Dec 14 87
HOME PHONE: 516-555-4631         STATUS: 1
BUSINESS PHONE: 516-555-2305     LICA: No

Steven Cohen                     Hardware sales
P.O. Box 234                     Apple IIe
Harris Place NY 11764            SIG DATE: May 23 87
HOME PHONE: 516-555-0462         STATUS:
BUSINESS PHONE: same             LICA: Yes

Gil Freeson                      Restauranteur
110 Moon Crescent                Apple IIgs
Wren Cove NY 11542               SIG DATE: Mar 24 87
HOME PHONE: 516-555-1234         STATUS: 1
BUSINESS PHONE: 212-444-0078     LICA: Yes
```

Figure 6. Report 5: Records in label format showing some category names.

you created last month. First, return the selection to *All records*: Press OA-R and type **Y** for *Yes*. Press Escape to return to the Report Menu.

Next, duplicate the ADDRESS LIST 2 report format (Figure 4 in last month's column): Type **4** to choose *Duplicate an existing format* and hit Return. Type **2** to choose *ADDRESS LIST 2* and hit Return again. Type **ACTIVE COUNT** (the new report's name), press OA-Y to delete the leftover characters, and hit Return. Now press OA-R and type **Y** to return the selection to *All records*.

Your aim is to squeeze the *STATUS* category into the right-hand column of the report. Press the right-arrow key 11 times to move the cursor to the *STATUS* column. Now press OA-< twice to switch *STATUS* to the right of *OCCUPATION*. Press OA-left arrow nine times to reduce its width.

With your cursor still on the *STATUS* column, press OA-T; AppleWorks adds the 1s in the column, which will produce a count of active members. Press Return to confirm no decimal places, type **1** for one blank space between columns J and K, and hit Return. The 9s and the double line in column J indicate that these numbers are totaled.

Press the left-arrow key to move to *OCCUPATION*. Now press OA-left arrow four times to make room on the printed page for the *STATUS* category.

Be sure your printer is on. Press OA-P, then Return three times to confirm the printer, the date, and one copy. And here's a list of all your records with a count of active members. As mentioned in last month's column, Bill Neef of Grass Lake, Michigan, suggested this neat counting technique.

REPORT 5: A TWO-COLUMN LABEL LIST

Figure 5 shows the report format for **Figure 6**, a trim, two-column version of the label report (LABELS LIST) you produced last month. (See last month's Figure 5.) The first- and last-name categories as well as the city, state, and zip categories are combined on their own lines, similar to a mailing-label format. The less-than symbol (<) indicates a left-justified category.

When the Bard's scared sober, trust a thief

. . . like me.

When the Bard's Tale began, we lived a charmed life. Good ale. Good song. Good company. Mangar came along, but we cut him to pieces before he could blink. Soon the world got bigger, and its problems got bigger. We wandered the wilderness for months to find the pieces of that infernal Destiny Wand. But once we reforged it, Lagoth Zanta was history.

Back then, being a thief was dull. Pick this lock. Disarm that trap. When things got hot, they'd tell me "Into the shadows, wimp." I should've lifted their gold and split long ago. But it's too late now.

We battle through the seven worlds. Cast Warstrike and Rimefang over and over. Cut down the endless Hookfangs and Slathbeasts. And suddenly, The Archmage is powerless. The Warrior is weak. The Bard can't play. *Now* they say I'm the only hope. I'm slick. I'm sneaky. And *I'm* going to fight the Mad God . . . alone.

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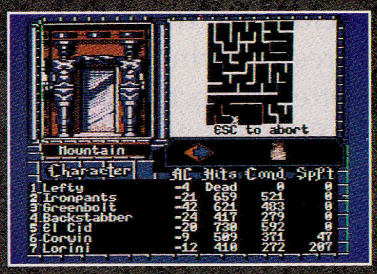

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Press Escape to return to the Report menu. Type **4** to select *Duplicate an existing format* and press Return. Now type **3** to select *LABELS LIST* and hit Return again. Type **TWO COLUMN** (the name of this report), press OA-Y to delete the leftover characters, and press Return. AppleWorks now brings up the Report Format screen with all categories in vertical layout.

Press the down-arrow key twice to move the cursor to the *L* in *LAST NAME*. Press OA-right arrow six times, then OA-up arrow to shift *LAST NAME* to the right of *FIRST*. To left-align the entries in this category, press OA-J. AppleWorks now inserts the less-than symbol before *LAST NAME*. Press the down-arrow key, then OA-D to delete the blank line.

Press the down-arrow key twice, and hold down the left-arrow key to move the cursor to the *S* in *ST*. Press OA-right arrow five times, then OA-up arrow to shift *ST* to the right of *CITY*. Press OA-J, and AppleWorks inserts a less-than symbol before *ST*. Press the down-arrow key, then OA-D to delete the blank line.

Hold down the left-arrow key to move the cursor to the *Z* in *ZIP*. Press OA-right arrow nine times, then OA-up arrow to shift *ZIP* to the right of ST. Press OA-J to left-justify. Press the down-arrow key, then OA-D to delete the blank line.

Hit the down-arrow key twice, then hold down the left-arrow key to move the cursor to the *O* in *OCCUPATION*. You want to start the second column with *OCCUPATION*, so press OA-right arrow 33 times. (Be sure to align the *O* with the first *8* in *1988* in the report title.) Press OA-up arrow five times to move *OCCUPATION* to the same line as *FIRST<LAST NAME*.

Now try it on your own. Use the same techniques to shift *HARDWARE*, *SIG DATE*, *STATUS*, and *LICA* below *OCCUPATION* as shown in **Figure 5**, and press OA-D to delete extra lines. When you're finished, your cursor should be on *LICA* and your screen should show the message *Each record will print 6 lines.*

Now that you're creating a two-column report, you need to center the report title. Press OA-N and hit Return to jump the cursor to the B in *BUSINESS*. Press the spacebar seven times to shift the title to the right, and hit Return again.

In a two-column report, you need to reduce the size of the left margin to center both columns: Press OA-O to bring up the Printer Options screen. Type **LM** and press Return. Type **1** and press Return again. Press Escape to return to the Report Format screen.

And finally, print this report: Press OA-P, type the printer number, and press Return. Press Return again to print one copy, and here's your attractive two-column report. Now press OA-S to save all report formats.

Incidentally, readers invariably ask me for copies of the first part of the article whenever I write a two-part column such as this one. Much as I'd like to comply, I don't have the reprints. Please address your request to *inCider* Editorial, 80 Elm Street, Peterborough, NH 03458.

Next month, you'll use the word processor to create a professional-looking, informative resumé that can help you land the job you want.■

Ruth K. Witkin is a consultant in computer applications for business. Her published works include the template disks and handbooks Success with AppleWorks I *and* II *(*inCider, *IDG Communications/Peterborough),* Managing with AppleWorks *(Howard W. Sams & Co.), and* Personal Money Management with AppleWorks *(John Wiley & Sons). Write to her at 5 Patricia Street, Plainview, NY 11803. Enclose a stamped, self-addressed envelope if you'd like a reply.*

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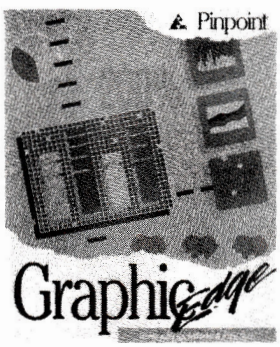

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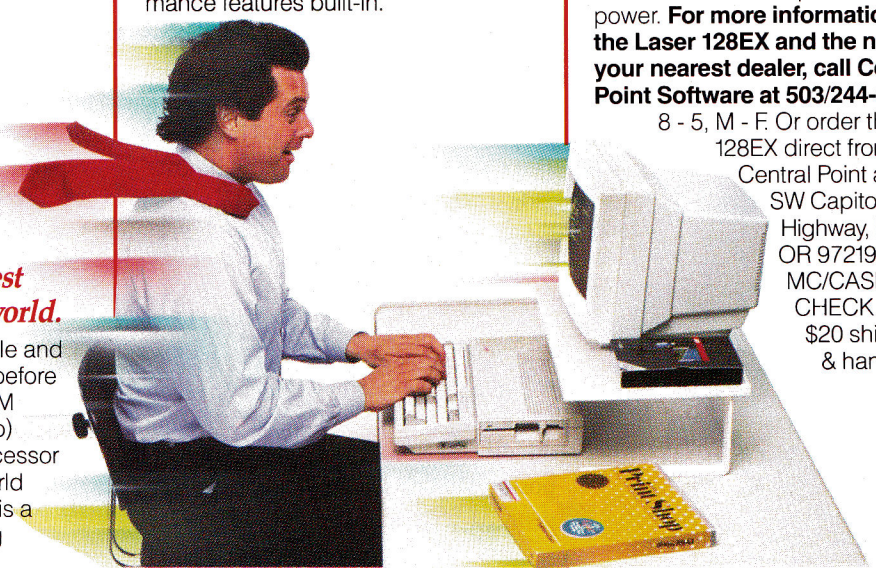

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Hi-Res Graphing Techniques

Your Apple's hi-res graphics and the right coordinates make your computer screen a colorful center of information.



by Dan Bishop

The shortest distance between two points is a straight line—a fact your Apple can demonstrate dramatically. With its 280-by-192 high-resolution graphics, your computer displays vivid graphics and functions, but you may have to manipulate your data to fit on screen. This month we'll review briefly hi-res-graphics commands and screen layout, then consider two fundamental procedures for handling graphics: relocating a graph's origin and normalizing data to fit the screen.

HI-RES-GRAPHICS COMMANDS

Your Apple reserves an 8-kilobyte (8K) block of memory for each hi-res graphics screen. This block begins at RAM location 8192 for page 1, so the first command in your program should be:

```
HIMEM: 8192
```

This command prevents your program code or string variables from attacking memory above location 8192.

When you want your program to change from a text-display screen to the hi-res screen, use the command HGR, which switches the display to a black screen consisting of 280-pixel columns by 160-pixel rows. (A pixel is a single graphics dot on screen.) There's also space for four text rows at the bottom.

The four text rows are useful for displaying information about the graph plotted on the upper part of the screen. Applesoft doesn't let you mix text and graphics easily on the same part of the screen, so use simple PRINT commands to place labels, graph dimensions, and so on, in the text window at the bottom of the display. (You must use a VTAB 21 to position the cursor on text-row 21 before printing text.)

If you want to increase your graphics display by 32 more pixel rows and eliminate the text window, the following command will add that space to your graphics screen, making its dimensions 280 by 192 pixels:

```
POKE -16302,0
```

To plot points or draw lines on the hi-res display, you must first define a color with the command:

```
HCOLOR = #
```

where the pound sign (#) may be any number from zero to seven, although zero and four will give black, thereby drawing black points on a black screen. Redrawing an object with HCOLOR = 0 amounts to erasing the object.

The only hi-res command for plotting points is HPLOT. To create a dot on the screen at column 170, row 135, for example, use the command:

```
HPLOT 170, 135
```

The (170, 135) in this command are the screen coordinates of the point you're plotting. Typically, you refer to the horizontal distance from the left edge (the number of pixel columns, 170) as the x-value. The second coordinate, 135, called the y-value, is the number of pixel rows down from the top of the screen.

You can also use HPLOT to draw lines on screen by including the keyword TO in the command. To construct a line, you need to know the x- and y-coordinates for the beginning and ending points of the line. The command takes the following form:

```
HPLOT x1, y1 TO x2, y2
```

For example, to draw a diagonal line from the upper-left corner of the screen to the lower-right corner, you'll want the line to begin at point (0, 0) and end at point (279, 159). The command to do this is:

```
HPLOT 0, 0 TO 279, 159
```

You may include more than one TO connector in an HPLOT command, creating a "connect the dots" sequence of continuous lines. For example, to draw a border around the screen, try using:

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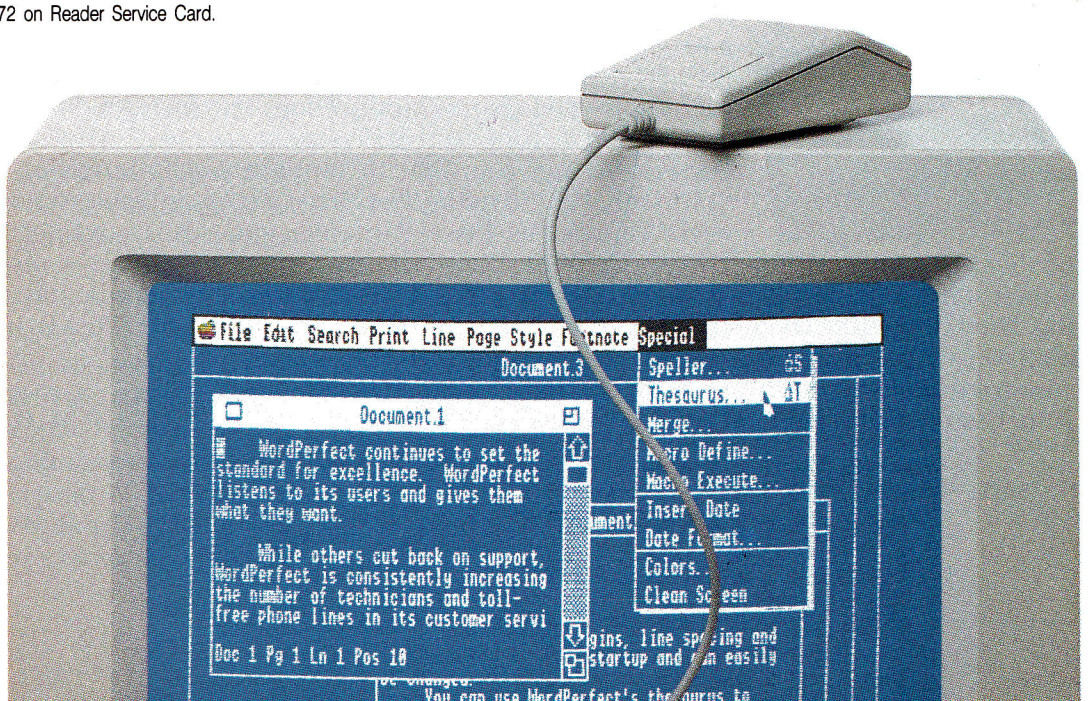



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HPLOT 0,0 TO 279,0 TO 279,159 TO 0,159 TO 0,0

If your system has more then 16K of memory, your Apple will support a second page of hi-res graphics you call with HGR2 rather than HGR. This screen is a full 280 by 192 pixels, with no text rows available at the bottom of the screen. Although you may have drawn graphics on either hi-res page 1 or hi-res page 2 previously, executing the HGR or HGR2 command clears automatically the page you're now calling to black.

Applesoft provides some POKE commands that let you switch back and forth between the two hi-res pages and the text display without erasing the graphics screens. The accompanying **Table** lists these commands.

Finally, to switch out of graphics mode and back to standard text-display mode, use the single command TEXT. If you're working on a graphics program and are stuck in graphics mode, type TEXT to return the display to text mode.

Listing 1 illustrates these commands with a simple program that draws an X through a box surrounding page 1 in mixed mode (graphics plus text window), switches to page 2 when you press Return, and draws a similar figure on that page. The program then switches back to page 1 in full-screen mode, and finally back to text mode to end the program.

RELOCATING THE ORIGIN

The graph style seen most often uses the two-dimensional Cartesian coordinate system, whereby the x-axis is a horizontal line and the y-axis is a vertical line. The one point in space where these two lines cross is called the origin of the graph. The values for both x and y at that point are zero (point 0, 0).

By convention negative x-coordinates are located to the left of the y-axis, and negative y-coordinates are located below the x-axis. **Figure 1** illustrates this relationship.

Unfortunately, most computer systems use the upper-left corner of the display screen as the point of reference for graphics. That is, the upper-left corner is the point where x = 0 and y = 0. With this

Table. *POKE commands that switch between text and hi-res without erasing hi-res graphics screens.*

```
TO SWITCH FROM:

       page 1 mixed text + graphics to page 1 full graphics:
                  POKE -16302,0

       page 1 mixed text + graphics to page 2 full graphics:
                  POKE -16302,0: POKE -16299,0

       page 1 full graphics to page 2 full graphics:
                  POKE -16300,0

       page 2 full graphics to page 1 mixed text + graphics:
                  POKE -16299,0: POKE -16301,0

       page 2 full graphics to page 1 full graphics:
                  POKE -16300,0

       text to page 1 mixed text + graphics:
                  POKE -16297,0: POKE -16301,0: POKE -16304,0

       text to page 1 full text + graphics:
                  POKE -16297,0: POKE -16302,0: POKE -16304,0

       text to page 2 full graphics:
                  POKE -16297,0: POKE -16299,0: POKE -16304,0
```

Listing 1. *Graphics program illustrating Applesoft's hi-res commands and hi-res screen displays. This program requires at least 24K of memory.*

```
1  REM  HI-RES GRAPHICS COMMANDS  [1886]
2  REM  AND PAGE SWITCHING DEMO  [1785]
3  REM  APPLESOFT ADVISER, MAY 1988  [2014]
4  REM  BY DAN BISHOP  [1097]
5  REM  ************************  [1223]
6  REM   [184]
10  HIMEM: 8192  [385]
20  GOSUB 200: REM  PAGE 1 GRAPHICS  [1601]
30  HOME : VTAB 21  [500]
40  PRINT "PRESS RETURN TO SWITCH TO PAGE 2."  [2536]
50  PRINT "THEN PRESS RETURN TWICE MORE TO END."  [2787]
60  INPUT X$  [316]
70  GOSUB 400: REM  PAGE 2 GRAPHICS  [1654]
80  POKE  - 16300,0: REM  BACK TO PG.1  [1822]
90  INPUT X$  [346]
100  TEXT : END   [423]
195  REM   [373]
196  REM  ******************  [1162]
197  REM    PAGE ONE GRAPHICS  [1639]
198  REM  ******************  [1122]
199  REM   [377]
200  HGR   [345]
205  HCOLOR= 3  [402]
210  HPLOT 0,0 TO 279,0 TO 279,159 TO 0,159 TO 0,0: REM
      DRAW FRAME  [3244]
215  HPLOT 0,0 TO 279,159: HPLOT 279,0 TO 0,159: REM
     DRAW DIAGONALS  [3223]
220  GOSUB 900: GOSUB 930  [939]
225  RETURN   [402]
395  REM   [318]
396  REM  ******************  [1149]
397  REM   PAGE TWO GRAPHICS  [1576]
398  REM  ******************  [1151]
399  REM   [322]
400  HGR2   [289]
405  HCOLOR= 7  [351]
410  HPLOT 0,0 TO 279,0 TO 279,191 TO 0,191 TO 0,0: REM
      DRAW FRAME  [3181]
415  HPLOT 0,0 TO 279,191: HPLOT 279,0 TO 0,191: REM
     DRAW DIAGONALS  [3160]
420  GOSUB 900: GOSUB 970  [888]
```

Listing continued.

Listing continued.

```
425  INPUT X$  [426]
430  RETURN  [352]
895  REM  [308]
896  REM  ********************  [1265]
897  REM  PRINT "PG."  [1068]
898  REM  ********************  [1267]
899  REM  [312]
900  HPLOT 130,55 TO 130,35 TO 140,35 TO 140,45 TO 130
     ,45  [2540]
905  HPLOT 155,35 TO 145,35 TO 145,55 TO 155,55 TO 155
     ,45 TO 150,45  [3069]
910  HPLOT 160,55  [593]
915  RETURN  [327]
925  REM  [338]
926  REM  ******************  [1169]
927  REM  PRINT "1"  [1014]
928  REM  ******************  [1171]
929  REM  [342]
930  HPLOT 140,100 TO 140,118  [1190]
935  HPLOT 141,100 TO 141,118  [1197]
940  HPLOT 138,119 TO 143,119  [1221]
945  HPLOT 138,120 TO 143,120  [1210]
950  HPLOT 138,100 TO 139,100 TO 139,101 TO 138,101  [2295]
955  RETURN  [367]
965  REM  [378]
966  REM  ********************  [1377]
967  REM  PRINT "2"  [991]
968  REM  ********************  [1379]
969  REM  [382]
970  HPLOT 135,120 TO 145,120 TO 145,130 TO 135,130 TO
     135,140 TO 145,140  [3390]
975  HPLOT 135,121 TO 144,121 TO 144,129 TO 134,129 TO
     134,139 TO 145,139  [3425]
980  RETURN  [392]
```

End of listing.

Figure 1. *Conventional Cartesian coordinate system.*

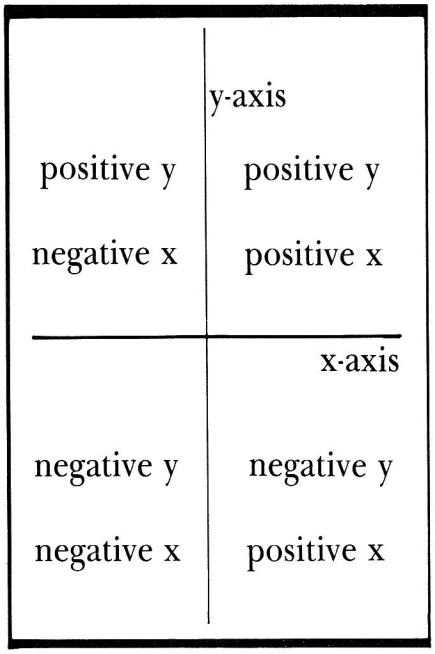
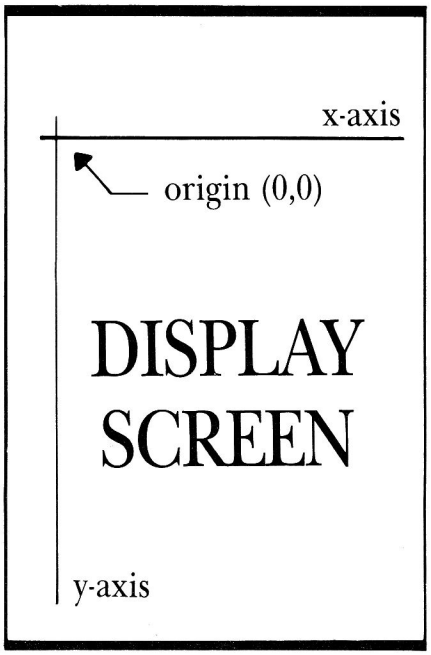


Figure 2. *Screen-coordinate convention most computer systems use.*



arrangement as is, the only points you could plot would be those with positive values for x and negative values for y. **Figure 2** illustrates this predicament.

There's an easy way around this problem: Move the point of reference from the upper-left corner to wherever you want to locate the origin on screen. To do this, add a constant value to *every* x (the horizontal x-offset, XO) and subtract every y-value from a constant (the vertical y-offset, YO) immediately before plotting the point on the display.

For example, say your screen allows 280-by-160-dot resolution, and you want the origin of your graph to appear in the middle of the screen. To accomplish this, you must displace the x-origin (on the pixel column where the vertical y-axis is located) from its standard location at the left edge by 140 columns. You must displace the y-origin (on the pixel row where the horizontal x-axis is located) from its standard location at the top of the screen down 80 rows.

To plot a point having actual coordinates of (12, 38) on this relocated graph, plot the x-value 12 columns to the right of the origin, which will be column 152. Plot the y-value 38 rows above the origin, which you relocated to row 80: Subtract the y-value (38) from 80, and plot the point in row 42. The point's screen coordinates are (152, 42). The following short program contains all the necessary code for accomplishing this task:

```
10 HIMEM: 8192
20 HGR : REM SWITCH TO HI-RES
   GRAPHICS
30 HCOLOR = 3 : REM SELECT HI-RES
   COLOR
40 HPLOT 152,42 :REM PLOT HI-RES
   POINT ON SCREEN
50 INPUT X$
60 TEXT:END
```

When you run this program, press Return to resume standard operation.

You can draw the axis lines on your graphs easily by adding the following code:

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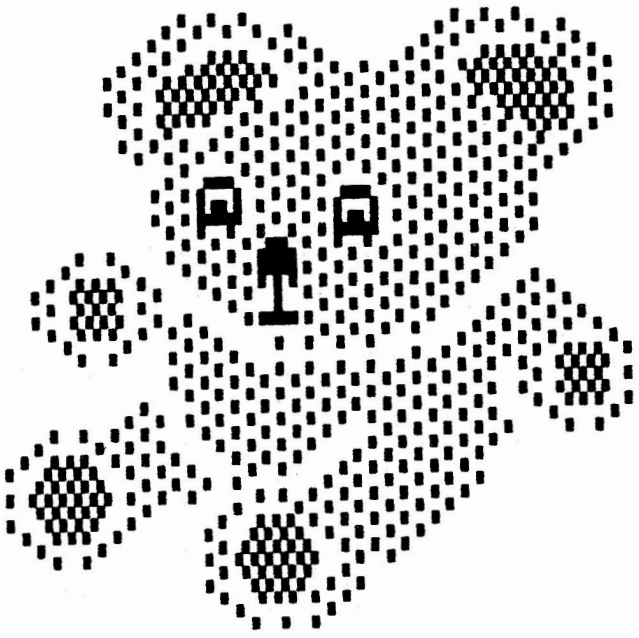

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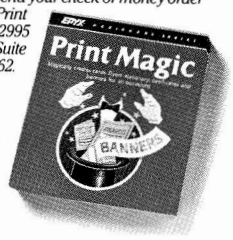

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BY EPYX

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```
33 HPLOT 0,80 TO 279,80 : REM X-AXIS
36 HPLOT 140,0 TO 140,191:REM Y-
   AXIS
```

GENERALIZED CONSTANTS

In the example above, you applied the constants used for the offsets, 140 and 80, directly to each HPLOT command as needed. Although this approach works, it suffers from one important drawback.

Say your program involves plotting 1000 points, several of which lie beyond the right edge of the screen. At the same time, you have extra blank space on the left. You can fit all the points on your screen by moving the origin just a little to the left. That is, you may need to change the x-offset from 140 to 115. If you had simply added 140 to all your HPLOT x-coordinates when you wrote the program, you'd have to go back and recalculate all the x-values and rewrite all those BASIC commands.

A better way is to treat the offsets as generalized constants. At the start of your program, use the following assignment statement:

```
15 XO = 140: YO = 80
```

Now, each time you need to use a horizontal or vertical offset, use XO or YO to write the program line, rather than calculate the actual x-value or y-value. The short program given becomes:

```
10 HIMEM: 8192
15 XO = 140: YO = 80 :REM DEFINE
   ORIGIN OFFSETS
20 HGR : REM SWITCH TO HI-RES
   GRAPHICS
30 HCOLOR = : REM SELECT HI-RES
   COLOR
33 HPLOT O,YO TO 279,YO : REM X-
   AXIS
36 HPLOT XO,O TO XO,191:REM Y-
   AXIS
40 HPLOT 12 + XO, YO - 38 :REM
   PLOT HI-RES POINT
50 INPUT X$
60 TEXT:END
```

Be careful to distinguish the letter O from the numeral zero when typing in these program examples. Now if you decide to change the location of the origin to better accommodate your graph's data, you need to change only line 15.

Adding the x-value to the horizontal offset to move the point farther to the right on screen is easy to visualize. Less obvious is why you must subtract the y-value from the y-offset. To see this, imagine you want to plot a point with a y-value of ten. The point should appear ten units above the x-axis. If the y-offset is 80, the routine draws the x-axis at pixel-row 80. To locate a point ten units above this line, it must appear in row 70. That is, the point's adjusted y-value will be 80 – 10, or YO – 10.

GRAPH NORMALIZATION

When you create a graph, you want the represented data to make full use of the available area on screen. Rarely, if ever, are raw-data values suitable for direct plotting. For example, say the range of x-values runs from – 500 to + 1000 and the range of y-values runs from – 1 to + 1.

If you designate one pixel per unit of measurement on your graph, and your graph offsets place the origin in the middle of a 280-by-160-pixel screen, any data with x-values outside the range – 140 to + 139 will be off screen. Similarly, data with y-values outside the range – 79 to + 80 won't appear. Since the y-values in this example lie between – 1 and + 1, all data points will appear either directly on the x-axis, or one pixel row above or below it, leaving most of the screen blank. This graph would convey no information at all.

Normalization is a technique that adjusts raw-data values so that all data fit on screen. You do lose the one-to-one correspondence between data units and rows and columns on the graph, though. For instance, each pixel row may now represent 12.5 data units. But if that's the case, the 80 rows from the origin to the top of the screen represent 1000 data units (80 times 12.5), letting a data element with a y-value of 1000 appear on the display.

You can also use normalization to expand narrow ranges to fill the available screen area. If y-values for a set of data range from – 1 to + 1, then setting each row of pixels to represent 1/80th of a unit, or 0.0125, gives your data the entire screen instead of just three pixel rows along the x-axis.

As you may suspect, normalization changes the physical appearance of the graph (but *not* the actual values of the data points). No longer does one inch in the horizontal direction correspond to the same number of units as one inch in the vertical direction. Always be careful when interpreting normalized graphs.

To normalize your data, you must first determine what dimensions you want the graph to have, measured in the units of your raw data. If you know what the actual x-range and y-range are, you can use these limits. For the example above, the x-values range from – 500 to + 1000 and the y-values range from – 1 to + 1. If you place the origin in the middle of the screen, at column 140, you have 140 pixel columns from the origin to the right edge of the screen that must accommodate the data range zero to + 1000. By dividing 140 pixels by 1000 units, you determine that 0.14 pixels must represent each data unit. You must multiply all x-values in your data by 0.14 to get them into the zero-to-140 range your screen allows. The normalization factor for the x-values, or XN, is 0.14.

Now consider the normalization factor for the y-values, YN. Your screen handles positive y-values in the range zero to + 80 (assuming the origin is the center of your screen). But the actual positive range for your data is zero to + 1. As before, divide the pixel range (80) by the data-value range (1) to obtain the normalization factor. YN for this example is 80, so multiply all y-values in your data by 80 to make the best use of the display screen. Note that you multiply the raw-data values by the appropriate normalization factor *before* applying the offset values.

To visualize how XN and YN work in the example above, say a point has actual coordinates of (500, 0.3). The normalized values will be 500 times 0.14 and 0.3 times 80, yielding normalized coordinates of (70, 24). Now you apply the offset calculations, which yield screen coordinates

Listing 2. Function Grapher produces a sine-wave plot. With simple modifications, it can graph a variety of math functions.

```
1  REM   FUNCTION GRAPHER  [1410]
2  REM  APPLESOFT ADVISER, MAY 1988   [2045]
3  REM  BY DAN BISHOP  [1096]
4  REM  ********************  [1054]
5  REM   [183]
10  HIMEM: 8192  [385]
15 XM = 2 * 3.14159:YM = 1: REM  SET LIMITS  [2480]
20 XO = 140:YO = 80: REM  SET OFFSETS  [2156]
25 XN = (280 - XO) / XM:YN = YO / YM: REM  SET NORMALI
     ZATION FACTORS  [4437]
30  GOSUB 200: REM  SET UP GRAPHICS AND DRAW COORDINAT
     E AXES  [3368]
35  GOSUB 500: REM  PLOT FUNCTION  [1593]
40  GOSUB 600: REM  PRINT TEXT  [1388]
45  INPUT X$: TEXT : END   [682]
195  REM   [373]
196  REM  ********************  [1246]
197  REM  HI-RES PG.1 GRAPHICS  [1734]
198  REM  SET-UP.  [900]
199  REM  ********************  [1249]
200  HGR   [345]
205  HCOLOR= 3  [402]
210  HPLOT XO,0 TO XO,159: REM  Y-AXIS  [1890]
215  HPLOT 0,YO TO 279,YO: REM  X-AXIS  [1899]
220  FOR I = XO TO 279 STEP (279 - XO) / 10  [2262]
225  HPLOT I,YO - 2 TO I,YO + 2  [1636]
230  NEXT I  [433]
235  FOR I = 0 TO 159 STEP YO / 10  [1712]
240  HPLOT XO - 2,I TO XO + 2,I  [1649]
245  NEXT I  [448]
250  FOR I = XO TO 0 STEP  - (279 - XO) / 10  [2379]
255  HPLOT I,YO - 2 TO I,YO + 2  [1666]
260  NEXT I  [208]
265  HPLOT 0,158 TO 279,158 TO 279,159 TO 0,159  [1966]
270  RETURN   [192]
495  REM   [418]
496  REM  **********************  [1375]
497  REM  LOOP TO PLOT FUNCTIONS  [2041]
498  REM  **********************  [1377]
499  REM   [422]
500  FOR I =  - XO TO 279 - XO  [1746]
505 X = I / XN:Y =  SIN (X)  [1735]
510  HPLOT XN * X + XO,YO - YN * Y  [2096]
520  NEXT I  [213]
525 T$ = "Y = SIN(X) FUNCTION"  [1674]
530  RETURN   [197]
595  REM   [263]
596  REM  ********************  [1136]
597  REM   PRINT TEXT MESSAGE  [1632]
598  REM  ********************  [1138]
599  REM   [267]
600  HOME : VTAB 21  [560]
605  PRINT T$  [401]
610  PRINT "EACH X-UNIT IS "XM / 10  [1797]
615  PRINT "EACH Y=UNIT IS "YM / 10  [1820]
620  PRINT "   **** PRESS <RETURN> TO END **** ";  [2424]
625  RETURN   [292]
```

of (210, 56). The HPLOT 210, 56 command places this point 70 columns to the right of the origin in column 210 and 24 rows up from the x-axis (56 rows down from the top of the screen).

Of course, generalizing your normalization calculations gives you the same advantages as generalizing offsets. You can define XN and YN at the start of your program with:

```
16 XN = 0.14: YN = 80
```

or better still:

```
14 XM = 1000: YM = 1
16 XN = (280 - XO)/XM: YN =
   YO/YM
```


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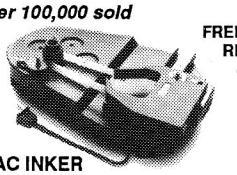

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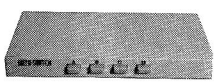

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where XM and YM are the maximum values for the x- and y-ranges. You may now use these variables throughout the program for all HPLOT commands, as in:

```
40 HPLOT 500*XN + XO, YO - 0.3*YN
```

You'll never have to change more than one BASIC line (line 14) to adjust the normalization process.

In some situations, you may know what your data ranges are. In other cases, you'll have to to make an educated guess. One possibility, particularly for points you'll calculate, is to run through the calculation twice. The first time through, determine the maximum x- and y-values to calculate the normalization factors. The second time through the calculation, the program plots the points.

FUNCTION GRAPHER

Listing 2, Function Grapher, is a short program that, as written, constructs a hi-res graph with origin in the center of the screen. It draws the x- and y-axes, along with ten hash marks in each direction. Then it plots a sine wave on the display.

Line 15 defines the maximum limits for x and y as XM and YM. To use the full screen, set YM at 1, and XM at 2 times pi. Because the origin offsets are set for the center of the screen (line 20), this allows room for two full sine waves—one on each side of the y-axis. Line 25 handles the normalization factors in a totally general equation based on the offsets and limits set in lines 15 and 20.

Function Grapher uses three FOR/NEXT loops in lines 220–265 to construct hash marks along the axes. These are also generalized, dividing the positive x and y lengths by 10, with the loop stepping through this distance as each mark is drawn. The text at the bottom of the screen displays the numeric value calculated to correspond to each of these marks as XM/10 or YM/10.

Finally, the program plots the sine function in the loop at line 500. By running the loop counter, I, from -XO to 279-XO, and basing the value of X on I/XN, the calculation is generalized to accommodate any desired x-offset from +2 (to leave room for the hash marks on the y-axis) and up.

To illustrate this flexibility, after the program's running, change line 20 to make the x-offset +2. Then change line 15 so that SM is 4*3.14159, 6*3.14159, or 8*3.14159. This causes only the positive x-region to appear on the display and produces more sine waves. Change YM to 2 to squash the sine waves to half their original height.

ADDITIONAL MODIFICATIONS

You can modify **Listing 2** to produce other functions as well. One of the easiest alterations is to convert it to display a cosine. Merely changing line 505 to substitute *cos* for *sin* gives you a program that plots cosines.

By selecting limits for line 15 carefully, you can plot other mathematical functions. The formula for a circle with radius equal to one is Y=SQR(1-X*X). Set both XM and YM in line 15 to 1, and change line 505 to read:

```
505 X = I/XN: Y = SQR(1 - X*X)
```

Be sure your offsets in line 20 are 140 and 80. Running this version plots the upper half of a circle. Unfortunately, the plot will look more like an oval because of the aspect ratio of your screen.

In an upcoming column, we'll deal with the aspect-ratio problem and apply graphing functions in high-resolution mode to additional topics.■

Dan Bishop owns and operates a microcomputer consulting business. Write to him at 4124 Beaver Creek Drive, Fort Collins, CO 80526.



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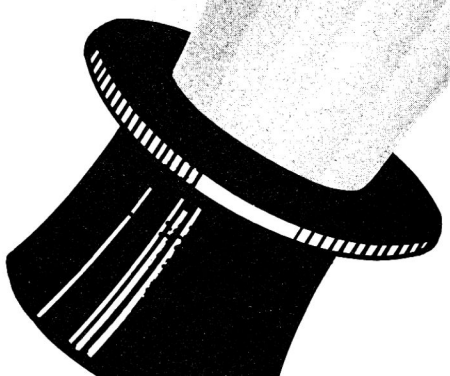

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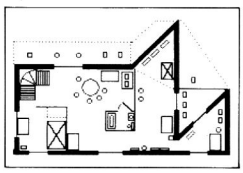

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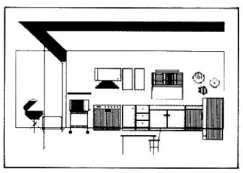

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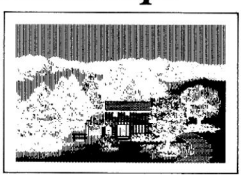

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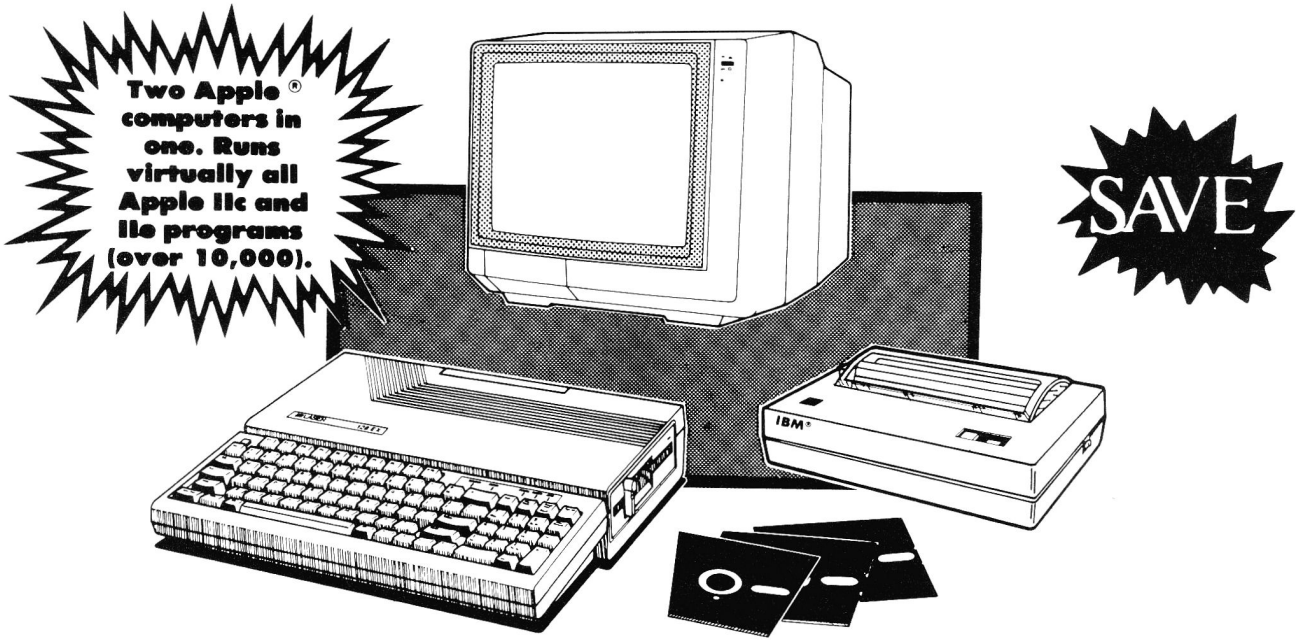

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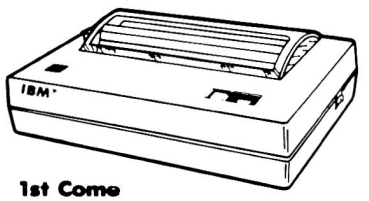

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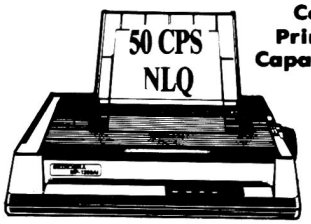

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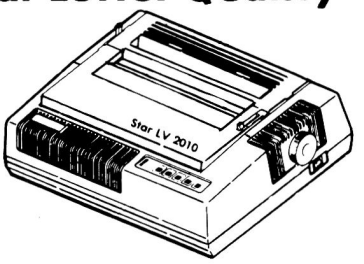

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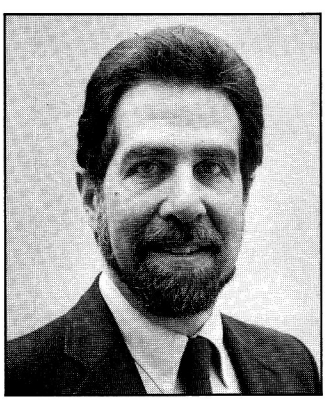

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Now that you know something about the city and its attractions, you'll want a place to stay. **The Source**'s ABC Online Travel Service, like similar features on other systems, provides information about 95 San Francisco hotels. And it's just as easy to get information about restaurants, tours, car rentals, and airline flights. Looking through travel newsletters on line, you'll discover which airlines have the best on-time record and which ones offer special travel bonuses and discount fares. Enter your credit-card number, address, and travel preferences, and, after verification, you'll be able to make airplane, car, and hotel reservations from your Apple II at home. When you're finally ready to leave, a quick on-line check of the daily weather forecast in San Francisco will help you decide whether to pack your winter coat.

Count on spending more than an hour to locate and save all the available information about San Francisco, especially if you're new to a service. Although on-line searching is much more convenient, it can become more costly than trips to the local library, newsstand, bookstore, and travel agent. Travel information on line, however, can sometimes save you money by narrowing the choices among vacation cities, hotels, and airline flights. What's more, you can easily find others on line eager to answer your questions about

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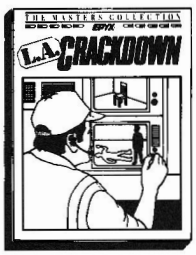

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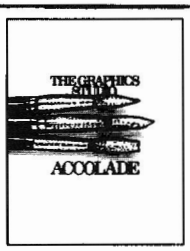

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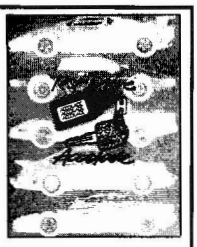

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their hometowns. Staying with friends they met on line, some people have managed to travel across the entire country.

SPECIAL-INTEREST GROUPS

Considering the entertaining discussions on line, you may never want to leave home. You don't need elaborate plans, just a few free minutes—which can easily become hours—to participate in special-interest groups. What's your interest? You'll find SIGs for dozens of topics, from aquaria and astronomy to space and sports, from auto repair and electronics to writing and wine.

To see what goes on, let's take a quick look at a few SIGs. Remember that SIG topics vary from service to service and that on-line services are constantly adding new SIGs. If you plan to subscribe to a national information service, you may want to check first to see whether it caters to your special interests.

If you've ever wondered about your family tree, visit the Genealogy Round-Table on GEnie, where experts and beginners share facts and stories. Don't just leave your last name and expect that someone will track all your ancestors back to Charlemagne, warns Mel Magree, the genealogy sysop (system operator). Do expect plenty of help with search techniques, software choices, and even facts that faraway members unearth for you. Like other SIGs, this one has some good stories—like the person who tracked his ancestry all the way back to the notorious pirate Captain Kidd.

GEnie's Scuba RoundTable gives divers a place to talk about the sport, their equipment, and their experiences. It also sponsors annual get-togethers for its members, who've dubbed themselves the Order of the Sleepless Knights.

If the mere idea of scuba diving gives you the bends, try checking out Delphi's Hobby Shop for information on model kits, reviews, and plenty of how-to tips. "We've remodeled the old Model-Builders SIG," report sysops Debbie and Charles Jones. "We've organized our library into miniature arts and crafts, military armor and dioramas, model railroading and rail-fanning, planes, cars, ship building, vintage military aircraft, radio control, model rocketry, and space."

Another Delphi SIG, the Micro Artists Network—better known as Maniac—focuses on computer music and graphics. "We do have a fairly extensive database of files and programs," according to sysop Bob Fried, "but the real reason people stop by is to escape the humdrum routine of reality and share a few strange moments with the regulars."

Several sysops describe their SIGs as "a little weird—places to escape and kick back." When I recently visited RockNet on CompuServe, sysop Les Tracy had posted a notice that said, "Entering the toxic zone." Tracy, operations manager and program director at KSMJ in Sacramento, California, is pleased that the people who post messages about all kinds

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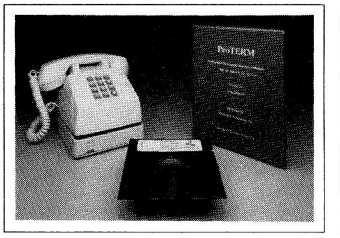

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of rock music include both amateurs and professionals. William Wittman, vice president of artists and repertoire for RCA Records, has produced records for The Outfield, Graham Parker, and Cyndi Lauper. Using his Apple IIe, Wittman especially enjoys RockNet as a way to keep in touch with the record-buying public. "You never know where a great song will come from," says Wittman, who pays attention to new bands recommended by RockNet members and sometimes even accepts demo tapes from those he knows well on line.

GAMES

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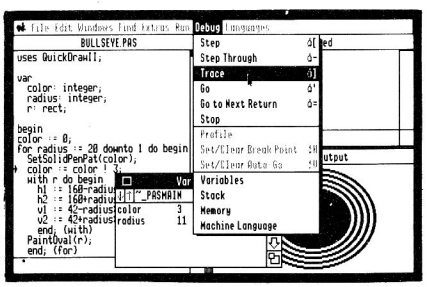

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for every type of computer and transcripts of special conferences with game designers," says Patricia Fitzgibbons, editor of *The Electronic Gamer*, an on-line gaming magazine produced by CompuServe's Gamer's and Multiplayer Games Forums.

Scorpia, the on-line name of GEnie's and Delphi's game-SIG manager, and an Apple IIe user, identifies similar features on those systems. She points out that you'll also find walkthroughs, maps, and vendor support for games from such companies as Origin, Sir-Tech, Epyx, Electronic Arts, Interstel, and Infocom. On-line gamers, who sometimes form teams and challenge each other to tournaments, enjoy discussions of sophisticated strategies in the various game SIGs.

But there's much more to on-line gaming than talk. You'll quickly discover real-time games to play with the host computer, with another user, or with dozens of users all at once. There are adventure games, role-playing games, war and strategy games, in addition to arcade games, card games, and play-by-mail games. Some role-playing and card games take place in the SIGs' real-time conference areas, where players enjoy the conversation perhaps as much as making moves. Some multiplayer games can last for weeks or months; some are endless. And at least one Apple II communications program, **Apple Conference Terminal (ACT)**, offers special features for gaming and conferencing on GEnie.

Bill Paxton, an insurance-company executive from Michigan and a lifelong gamer, still remembers that Memorial Day weekend in 1978 when he got his first Apple. Today he's still fascinated. "Places like the Gamers' Forum," he says, "represent the leading edge of the gaming industry, with the best players, designers, and vendors. In the on-line world, we're creating new styles of relationships and new codes of behavior."

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SOCIAL LIFE

Clearly, many intriguing people frequent the on-line services and almost all emphasize the social aspects of on-line entertainment and leisure activities. As individuals gather in on-line conference rooms to chat about common interests, real friendships develop. When Uni Molnar in New Jersey and Nancy Hinson in Georgia discovered a mutual interest in Def Leppard through RockNet, they met shortly thereafter and eventually married.

Bill Paxton suggests that the on-line conference room, for many, takes the place of the neighborhood bar. Not only are there conference areas available in particular SIGs, but there are also general conference rooms where people drop in just to chat, sometimes publicly, sometimes in private. Often called "CB simulation," this chat feature lets people adopt "handles," nicknames that ensure anonymity on line.

Free-wheeling and fast-paced, public conversations offer a new kind of social opportunity. Not all leisure time or on-line social life is devoted to private concerns, however. Increasingly, you can find opportunities not only to discuss, but also to act on, religious, social, and political convictions. In the Good Earth Forum on CompuServe, for example, or in the Public Forum NonProfit Connection on GEnie, people are developing new ways to use electronic networks for the public interest. This month, the Electronic Networking Association scheduled an international meeting on "Individuals and Organizations at Work in a Global Economy."

For many of us, just being on line is a form of entertainment; for *every* Apple II user, an on-line connection can serve as entertainment guide, critic, playmate, and conversationalist.■

Tom Sherman is a communications consultant specializing in computer-related activities. Write to him at 224 South Chester Road, Swarthmore, PA 19081, or contact him on line through GEnie (SHERMAN), CompuServe (72010,12), The Source (CPA177), Delphi (Sherm), The WELL (sherman), PeaceNet (tsherman), and PARTI on NWI, Unison, and The Source (Tom Sherman).

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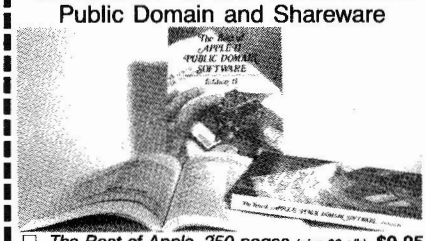

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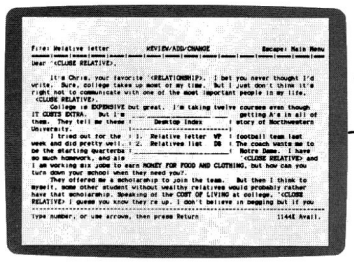

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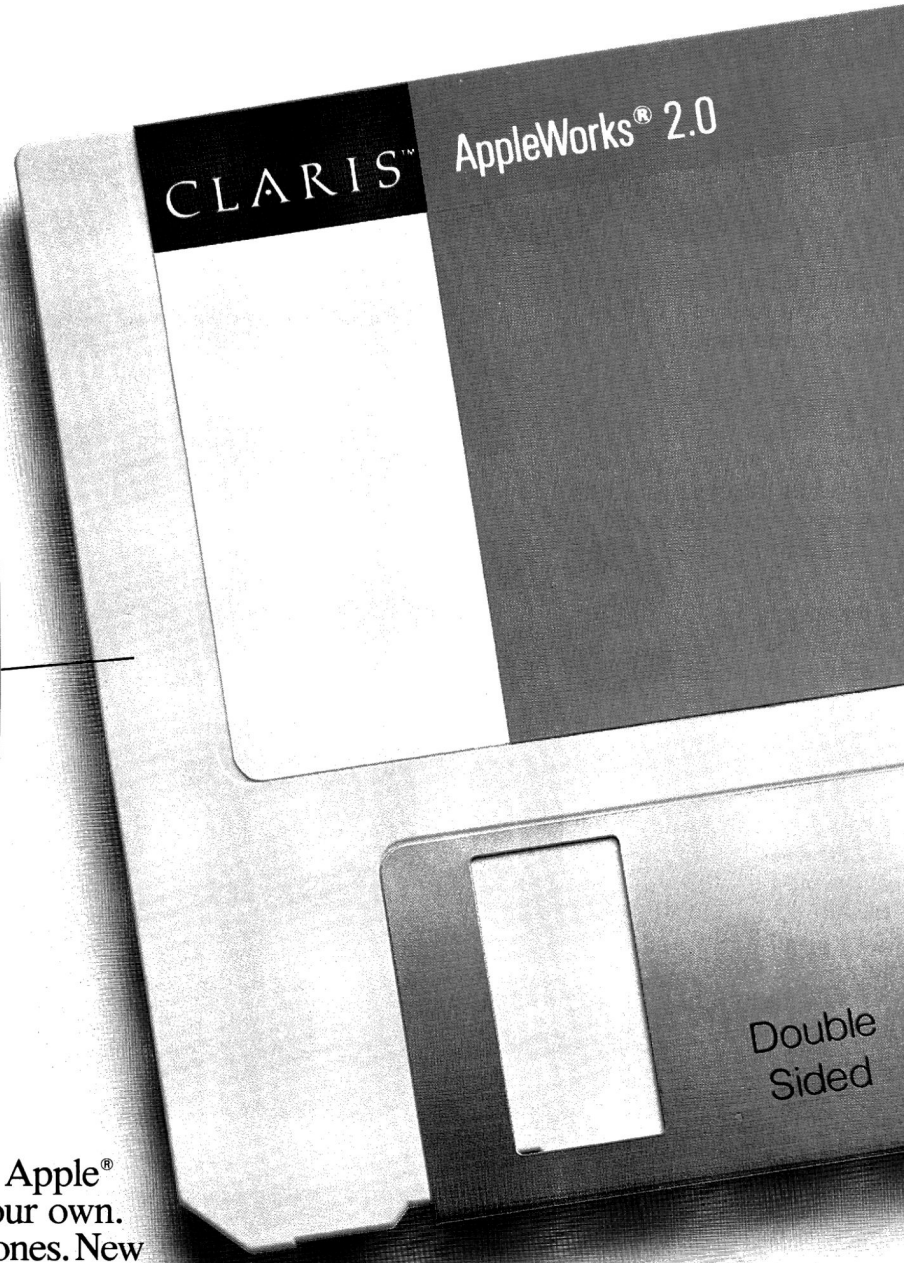

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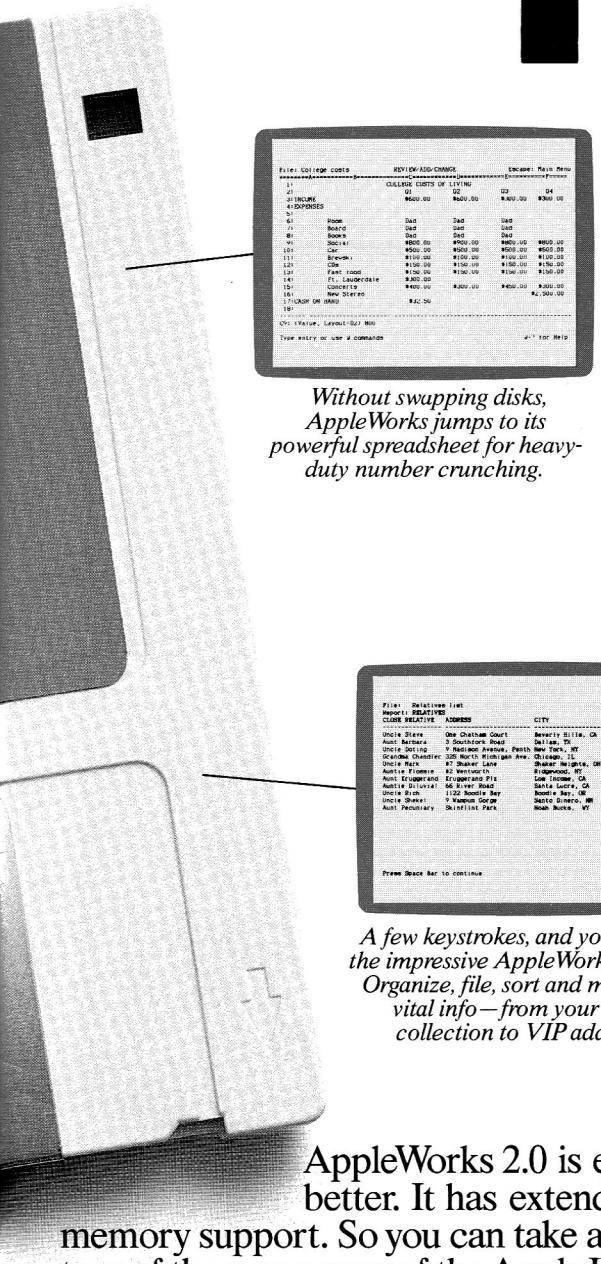

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Apple users know there's always an easier way to get the job done. A shortcut here, an elegant twist there—that's what Hints/Techniques is all about. It's an information swap for readers who want to share their programming pointers, DOS tips, hardware secrets, AppleWorks applications, WPL enhancements, and all those other insights that make you go "Aha!" in the night.

Cat.Text Program

by Eric Oshlo

You can read ProDOS directories from Applesoft BASIC programs just like any other sequential text file. Simply OPEN and READ a directory with common ProDOS commands such as INPUT.

The first two INPUTS when reading a diectory get the filename and column head. Each INPUT thereafter returns all data for one file listing. The program then handles the data as it would a standard string variable.

The accompanying Cat.Text **Program listing** demonstrates how to read ProDOS directories or subdirectories and store the filenames, prefixes, types, sizes, and last-modified dates in a TXT file with a Return between pairs of data. You can use a text file in this format to create an AppleWorks database file, where you can then alphabetize, sort, or otherwise manipulate the data to your heart's content.

Cat.Text asks for the starting directory/subdirectory to read and the complete pathname of the desired output TXT file where it will store the data. The program reads all files in the starting directory and any subdirectories contained in the starting directory. You can change the sections of the file data saved in the text file by changing the READ and DATA statements in line 10 and the PRINT MID$ statement in line 80.

Once you've stored the data in the TXT file, boot AppleWorks and create a new database from a text (ASCII) file. Type 8 when AppleWorks requests the number of categories in the new file.■

Write to Eric Oshlo at 20603 Denford Court, Katy, TX 77450.

Program listing. *Cat.Text.*

```
1     REM     CAT.TEXT by Eric Oshlo     [2017]
2     REM     Copyright 1988, inCider    [2193]
10    DIM F$(200),S$(75),L(7),S(7):D$ =     CHR$ (4): PRINT D$"PR#3": FOR
      I = 1 TO 7: READ L(I),S(I): NEXT : DATA
      15,2,3,18,4,25,9,31,9,48,6,66,7,73    [6272]
20    HOME : HTAB 18: PRINT "STORE PRODOS DIRECTORY IN TEXT
      FILE": PRINT : PRINT "Routine stores a File's Name, Type, Size, Modi-
      fied Date and Directory Path in a TXT file for use in creating an 8
      category AppleWorks Database."    [16532]
30    POKE 34,5: PRINT D$"prefix": INPUT P1$: HOME : INPUT "Starting
      Directory/Subdirectory: ";P$: PRINT : INPUT "Output Text File Path-
      name: ";OP$: PRINT D$"PREFIX"P$: PRINT D$"PREFIX": INPUT P$:
      PRINT D$"OPEN"OP$    [12036]
40    PRINT "Processing "P$;:L = 0: PRINT D$"OPEN"P$",TDIR": PRINT
      D$"READ"P$: INPUT F$: INPUT F$    [4609]
50
```

Digital Prism/ AppleColor RGB Monitor Fix

by Andre Cannizzaro

Upgrading your Apple IIe from a monochrome to an RGB display with Applied Engineering's RGB Prism card and the new AppleColor RGB monitor has one glitch: The combination is incompatible. Run a Beagle Bros utility disk with a color-chart program and you'll see that the color names don't match the displayed hues. By referring to the Prism's documentation and the IIGS display, you'll soon discover that the Prism output and the Apple IIGS input reverse the green and red color signals. But a quick trip to an electronic-surplus store (see **Table 1**) can solve this dilemma.

Table 1. *Parts list.*

QUANTITY	DESCRIPTION
1	15-pin D subminiature female panel-mount solder type
1	15-pin D subminiature male panel-mount solder type
2	1-inch metal standoffs with screws
1	2-foot 24-gauge wire

You'll also need a pencil-tip soldering iron, solder, wire cutters, wire strippers, and screwdriver.

To construct the proper assembly, attach the two DB-15 connectors back-to-back, making sure that the male and female connectors are on the outside of the unit. Using **Table 2** as your guide,

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Table 2. Connections.

DB-15 MALE (AE)	DB-15 FEMALE (APPLE)	SIGNAL
1	6	green video ground
2	5	green composite video
3	3	composite sync
4	4	no color
5	2	red composite video
6	1	red video ground
7	7	no color
8	8	no color
9	9	blue composite video
10	10	no color
11	11	no color
12	12	no color
13	13	blue video ground
14	14	no color
15	15	no color

solder the necessary wiring connection. (Remember that the red and green signal and ground pins aren't wired point to point.)

To test your completed hookup, attach the assembly's male connector to the AE Prism connector, and the male connector of the IIGS monitor cable to the assembly's female connector. Now boot up one of the Beagle Bros utility packages containing a color chart, or display text on your screen. Set the Prism text-color switches to the four choices, and the monitor should display the correct text color for each option.■

Write to Andre Cannizzaro at 1207 South Citrus Avenue, Escondido, CA 92027.

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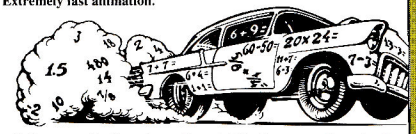

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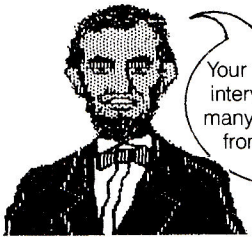

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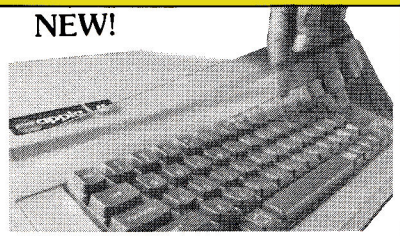

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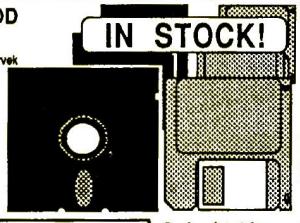
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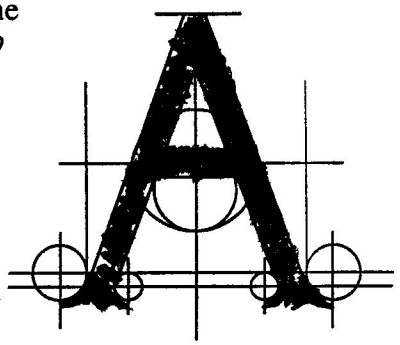

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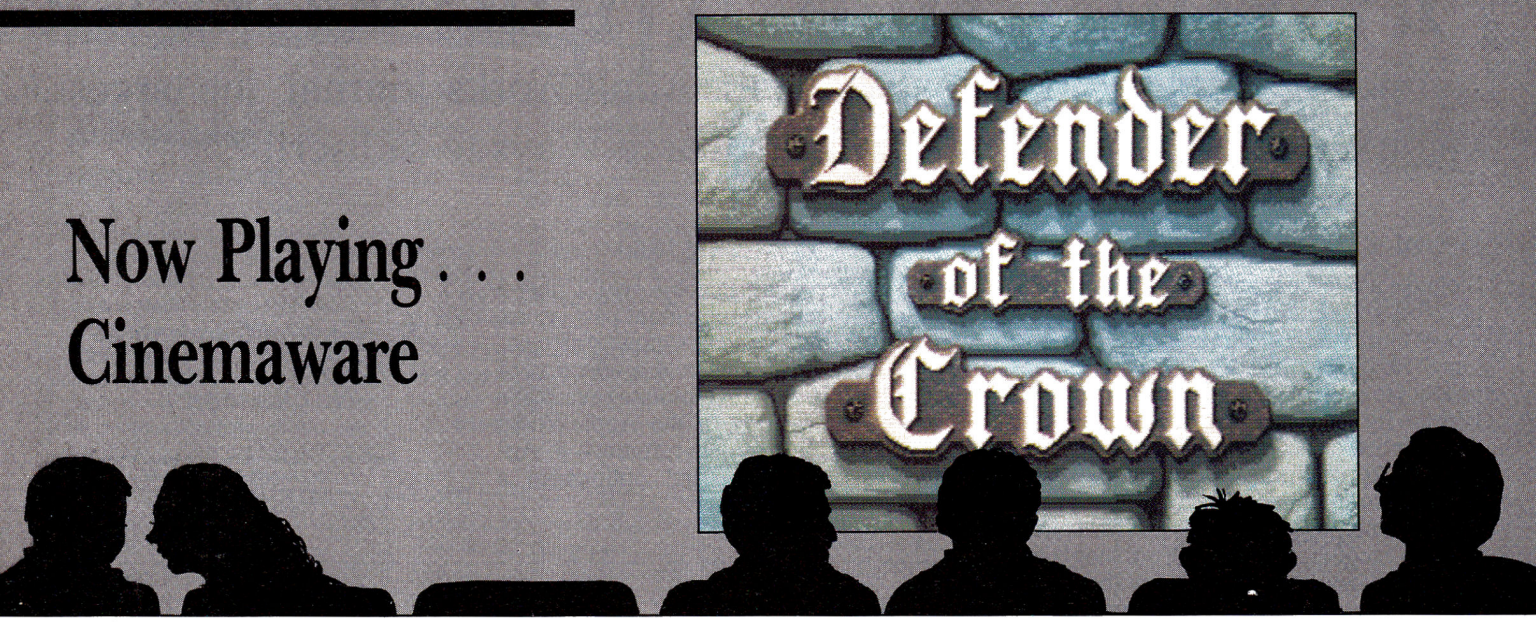


Cinemaware is here, and it's here to stay. Its first title, **Defender of the Crown**, will set the stage for what's sure to become a new standard in graphics adventure games—at least for the Apple IIGS.

Whether you're fencing with enemy guards, jousting to defend your honor, or launching boulders at the walls of an enemy castle, Defender's screens look more like paintings come to life than computer graphics. As you advance toward the gate of an enemy stronghold, guards meet you for battle. The castle in the background is illuminated by a slowly burning torchlight, casting a soft glow on the surrounding stone. Once you're inside, you can see your shadow moving against the back wall as you face another opponent.

As you continue your campaign to conquer the remaining territories of England and recapture the sovereign crown, your progress (or lack of it) appears on the game's main screen. A map of England shows the party occupying each territory, and a tally on the left side of the screen denotes your income, wealth, and army strength, as well as your leadership, jousting ability, and skill at swordplay. (Move over, Errol Flynn.) There's also a portrait of your character—smiling and attractive if you're faring well, but if you lose a battle or two, you begin to look more and more haggard.

Music and digitized sound effects add to the medieval flavor. A trumpet fanfare greets you and the royal guests as the knights gather for a joust, and swords clash as you battle your way into enemy territory.

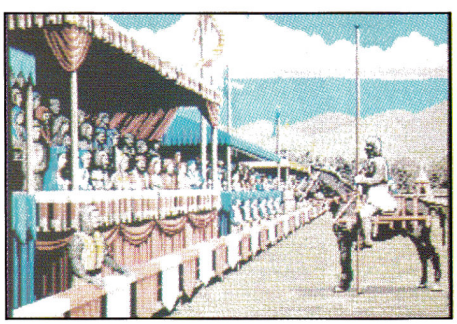
"This is what computer games are all about," says Editor in Chief Dan Muse. "People who normally don't think twice about games stop dead in their tracks when they see Defender of the Crown running on one of our GSs."

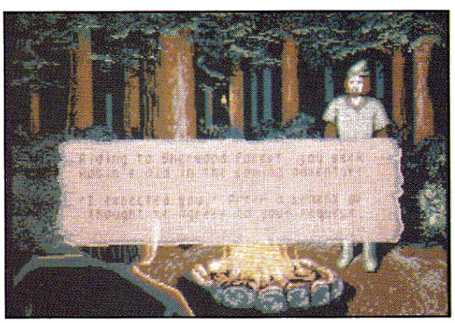
"It's amazing how realistic Defender of the Crown is," says Associate Editor Pat O'Dell. "It just doesn't seem like a computer game. It's almost as though you've become part of a novel."

Defender of the Crown is just the first in a series of games from Cinemaware. According to Robert Jacob, president of the company, other titles (to be released in the following order) include **Sinbad and the Throne of the Falcon**, **SDI** (yes, that stands for Strategic Defense Initiative), **Rocket Ranger**, **The Three Stooges**, and, last but not least, **King of Chicago**.

inCider previewed a copy of one old movie favorite in a new package. Senior Editor Paul Statt says, "The Three Stooges game has the funniest pictures I've ever seen on a computer. This may be what the future of 'interactive media' looks like. It also looks like Infocom's Infocomics—comic-book adventures that involve you by dropping you into the middle of an arcade game. Infocomics has broader appeal, though, with more intelligent story lines that interest adults, too. I like Cinemaware for the movies, but Infocom for cinema."

Defender of the Crown requires 768K and retails for $49.95. Future titles will carry similar price tags and memory requirements. Cinemaware is now showing at 4165 Thousand Oaks Boulevard, Westlake Village, CA 91362, (805) 379-9401. Don't miss it.■





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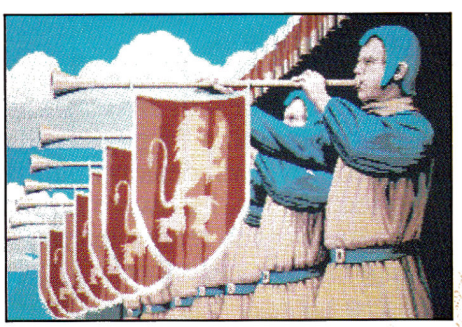

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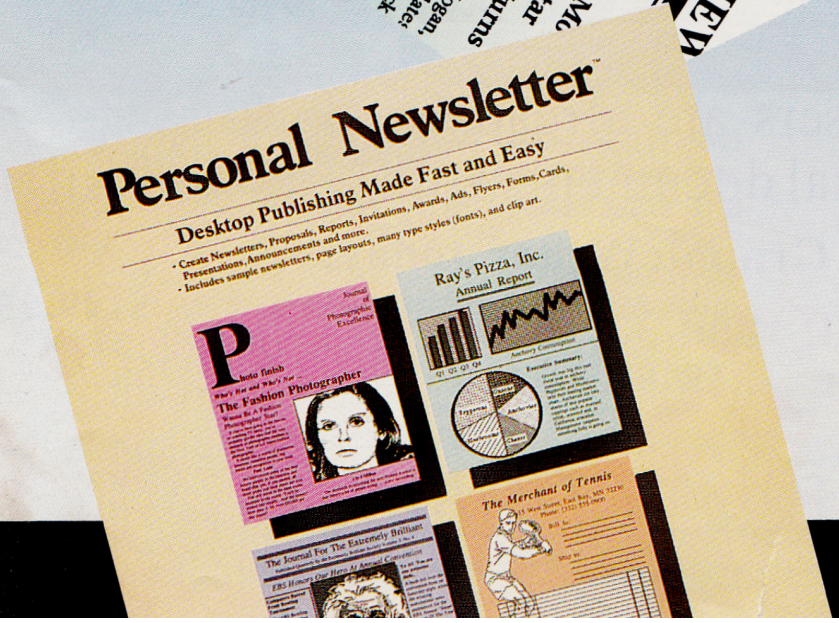

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